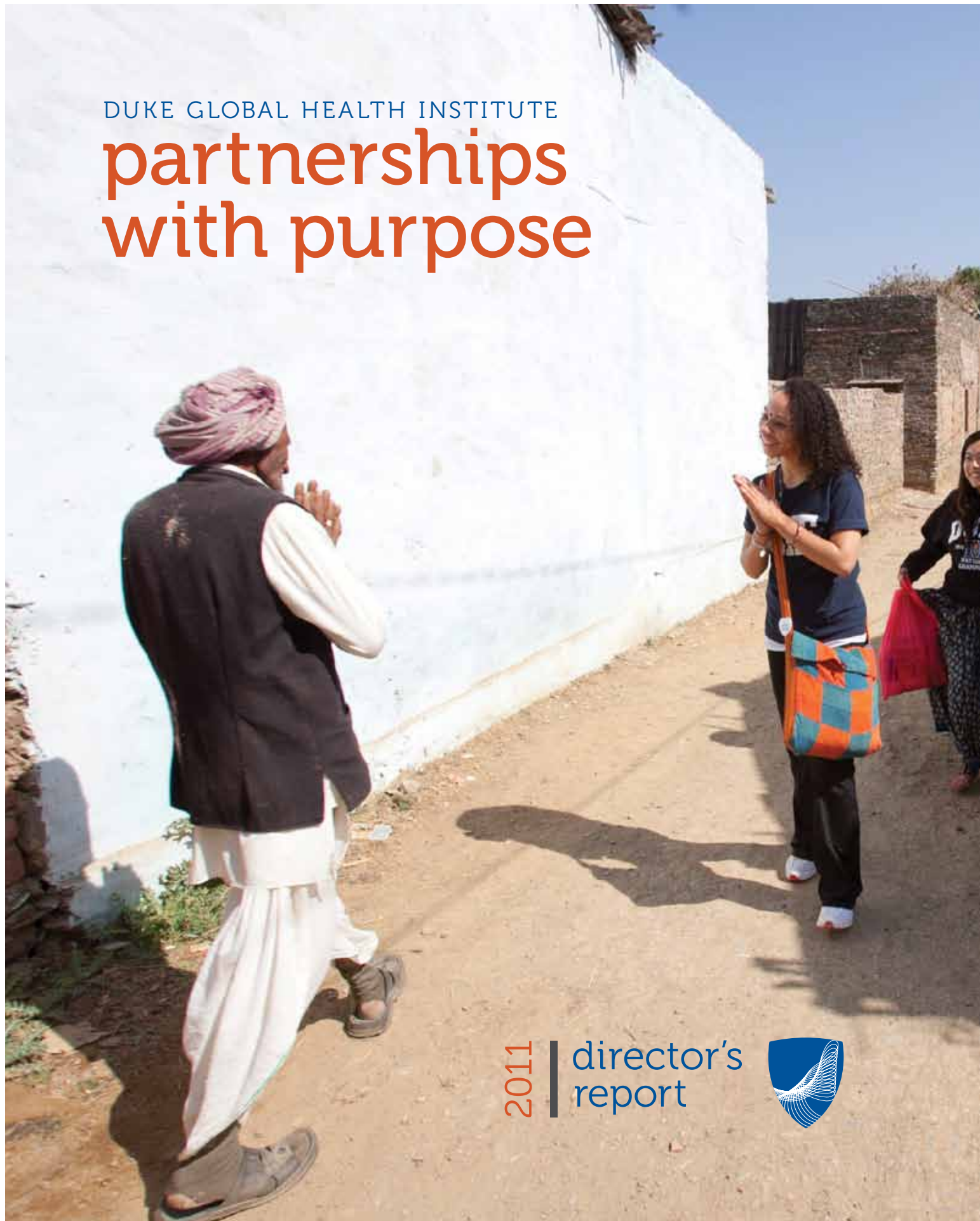


DUKE GLOBAL HEALTH INSTITUTE

partnerships with purpose



2011

director's
report





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director's message

The emphasis of this year's report is on the places, partners and purpose of the Institute's work. The very nature of what we do at the Duke Global Health Institute demands strong partnerships across the Duke campus and around the world with universities, non-governmental organizations, governments, corporations, and the media. When we plot our activities on a map, behind each marker are dozens of individuals, countless hours of work and deliberation, and meaningful collaborations that are resulting in a healthier world.

This report is filled with stories about how our faculty and students are working together with partners to address issues such as water and sanitation in India, access to health care and medicines in Kenya, mental health in Haiti, obesity in China, medical education in Tanzania and malnutrition in Uganda.

We are not only working on cutting-edge research, but also in many places around the world, such as in rural India and urban China through our Global Semester Abroad program for undergraduates. Faculty from Duke, UNC-CH and NC State are working together within the Triangle Global Health Consortium on a new graduate course dedicated to the burgeoning field of One Health.

I am most proud of our efforts with schools and

departments across the University to recruit talented and respected new faculty to Duke, particularly this year in the fields of public policy, economics, cultural anthropology, nursing, environment and medicine. In addition to our graduates, these faculty are DGHI's greatest legacy and will ensure a continued focus on global health at Duke for many years to come.

"Faculty are DGHI's greatest legacy... the energy and enthusiasm of Duke undergraduates grows stronger each year."

We believe we have built a strong foundation on which to enter the next phase of the Institute's development. Our Master of Science in Global Health continues to attract an impressive group of applicants from around the world. The energy and enthusiasm of Duke undergraduates grows stronger each year. Our portfolio of research grants is expanding and becoming more diversified. Our ability to influence global health research and policy continues to grow as we build name recognition and credibility within the global health community.

As we approach the Institute's fifth anniversary, we are taking stock of our accomplishments and planning strategically for the road ahead. I remain grateful for the support of University leadership, our Board of Advisors, faculty, students, staff and partners at Duke and abroad. It is because of their commitment that I am optimistic Duke will continue to be at the forefront of global health among universities in the United States and worldwide for the next five years and far beyond. 🇺🇸



Michael H. Merson, M.D.
*Wolfgang Joklik Professor of Global Health
Director, Duke Global Health Institute*

where we work

2
3



NORTH CAROLINA



HAITI

● PRIORITY LOCATIONS

DGHI allocates its resources to building capacity and partnerships in key areas of the world. These partnerships facilitate faculty research, student projects, and education and training opportunities, and are based on a bi-directional, mutually beneficial relationship with another institution. While these locations are a priority for DGHI today, we anticipate additional partnerships in the years ahead.

● STUDENT PROJECTS

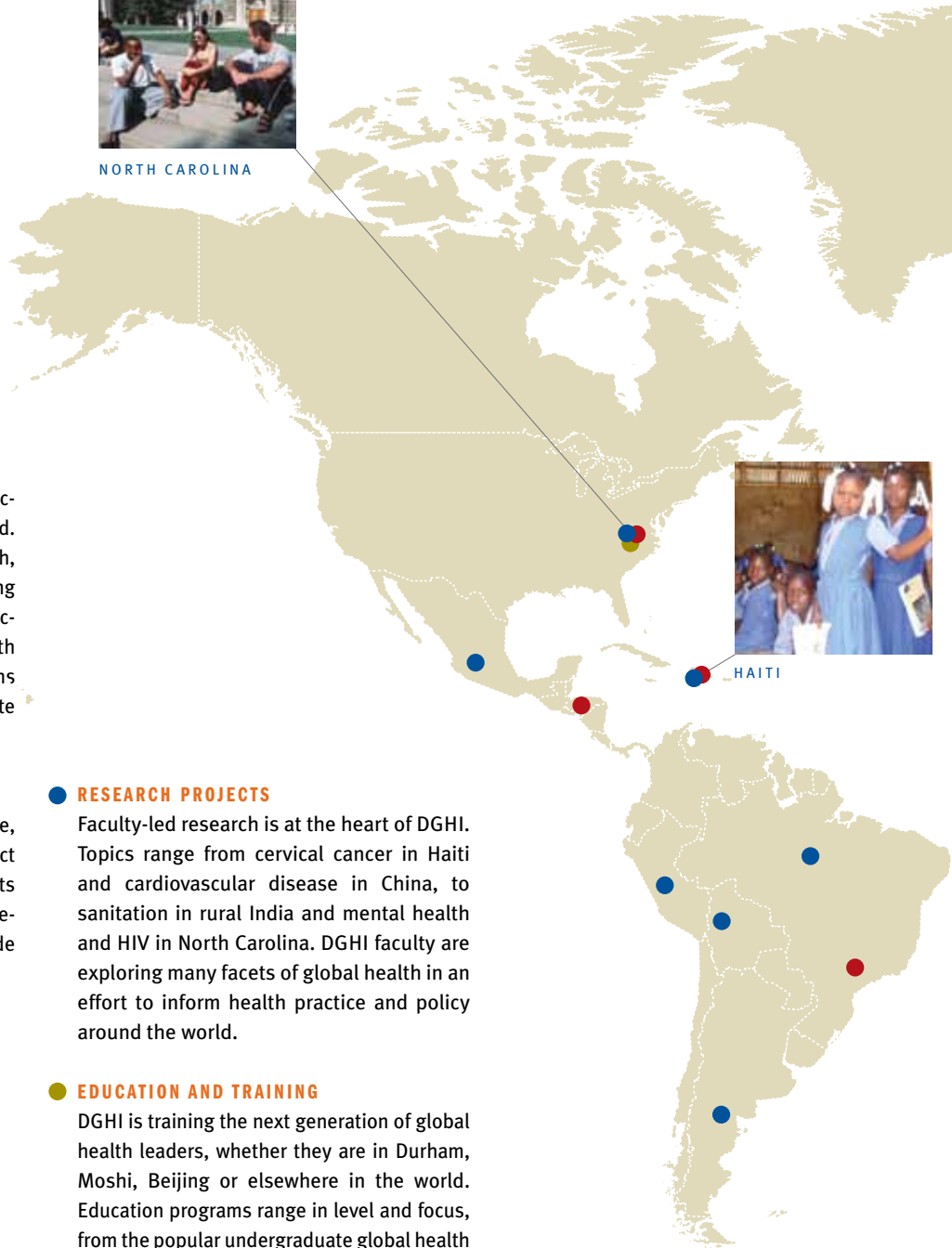
Each year, dozens of Duke undergraduate, graduate and medical students conduct global health research and service projects around the world. These experiences complement their time in the classroom and provide life-changing opportunities to learn.

● RESEARCH PROJECTS

Faculty-led research is at the heart of DGHI. Topics range from cervical cancer in Haiti and cardiovascular disease in China, to sanitation in rural India and mental health and HIV in North Carolina. DGHI faculty are exploring many facets of global health in an effort to inform health practice and policy around the world.

● EDUCATION AND TRAINING

DGHI is training the next generation of global health leaders, whether they are in Durham, Moshi, Beijing or elsewhere in the world. Education programs range in level and focus, from the popular undergraduate global health certificate to the training of medical professionals in Rwanda. 🇷🇼



USE YOUR SMARTPHONE TO LEARN MORE!

Use your Smartphone to view the interactive map of global health activities under way at Duke. Don't have a QR reader? Download one for free from your device's app store.



INDIA



CHINA



UGANDA



KENYA



TANZANIA

china



CHINA'S ASSAULT ON SALT

In rural China right now, there's a full-on assault on salt. Why? Because cardiovascular disease has been identified as the cause of three-quarters of all deaths in China, and salt intake is one of the primary reasons. Through the China International Center for Chronic Disease Prevention at The George Institute for Global Health, China, a large-scale, randomized study of a salt substitute is under way in 120 rural villages in Northern China, where salt intake is higher than average. Called LifeSeeds, the goal is to encourage individuals to use a low-cost salt substitute product as a way of controlling blood pressure, thus reducing the risk for cardiovascular disease.

Duke Global Health Institute director Michael Merson is an investigator on the China project, which is funded through a grant from the National Heart, Lung and Blood Institute at the National Institutes of Health and UnitedHealth Group.

"LifeSeeds will provide evidence-based solutions for treating cardiovascular diseases in rural China, where prevention and treatment programs are mostly absent at the village level," said Professor Wu Yangfeng, principal investigator of LifeSeeds.

Villagers from 120 rural townships in the five Northern provinces of Hebei, Liaoning, Ningxia, Shanxi and Shaanxi are participating in the LifeSeeds program. The program is training 98 community doctors practicing in the townships to identify cardiovascular disease and carry out the first-ever comprehensive health survey of local villagers. People will benefit from a community-based education campaign to encourage them to lower their salt intake—one of the leading contributors to heart attack and stroke.

"The LifeSeeds program complements and supports the government's efforts to transform the health of people living in rural China," said Wu.

After the initial pilot stage, the program will be expanded to more villages. If successful, LifeSeeds will be rolled out nationally across China.

Will this form of salt intervention work? That is yet to be seen, but researchers believe data from recent studies might compel individuals to change their habits. Recent studies by The George Institute in Australia show that excess salt is implicated in a range of serious illnesses including stomach cancer, kidney disease, osteoporosis and asthma, and could damage a man's sex life.

Though the research has just begun, researchers believe LifeSeeds has the ability to change and improve the health of millions of people living in rural areas.

EXPANDING TO CHINA: DUKE-KUNSHAN UNIVERSITY

As a university, Duke has embraced learning and service opportunities in China for decades. In January 2010, Duke and the city of Kunshan announced plans to construct a campus in Kunshan, China. The city of Kunshan has agreed to finance the construction of the campus, which will be operated by Duke University. The initial phase of construction is currently under way. The campus will include six buildings to house teaching, research and residential facilities.

The campus will serve as the China base for a number of academic programs and will be home to planned research centers devoted to the study of entrepreneurship, global health and Chinese enterprise. The Duke Global Health Institute has proposed three education programs on the Kunshan campus, including a Master of Science in Global Health (MSc-GH), a set of undergraduate global health courses and a global health track in the Fuqua Master of Management Sciences program.

We anticipate these programs will attract students in China, from Duke and other regions as well as expand DGH's interdisciplinary education reach to a new group of future global health leaders.



Kunshan, located outside of Shanghai, boasts one of the fastest-growing economies in China. The new partnership extends Duke's global presence and will be the university's second significant project in Asia. The Duke-National University of Singapore Graduate Medical School opened in April 2005.



TESTING OBESITY INTERVENTIONS IN CHINA

The rapid gains in China’s economic development during the past two decades have been accompanied by similar gains in the population’s waistline. Over 25 percent of Chinese women and more than a third of men are overweight or obese. Rates of obesity are highest in urban areas such as Beijing. By 2015, obesity rates in China may reach 50 percent, resulting in massive increases in chronic disease and health care costs.

With a grant from The George Institute for Global Health in Beijing, faculty at the Duke Global Health Institute and Peking University are implementing an innovative weight loss intervention for overweight and obese Chinese adults in Beijing. The study builds on the team’s collective experience, leverages existing technologies, and incorporates an evidence-based approach to weight loss, developed especially for delivery in socially-disadvantaged settings in the United States. The primary aim is to test the effect of a mobile phone-assisted lifestyle intervention on weight loss among 100 overweight/obese Chinese adults age 30-50, as compared to a control group.

The study is yet another example of the research partnerships between Duke and Chinese partners and is led by Gary Bennett, Sara Benjamin Neelon and Pao-Hwa Lin of Duke and Yanfang Wang of Peking University. The team is aided in project development by Jiani Sun, a Duke MSc-GH student.

“It has been very exciting for us to examine how our US-based obesity treatment studies work among Chinese populations,” said Bennett, associate professor of psychology and neuroscience and global health. “We are optimistic that these innovative and personalized approaches to obesi-

ty treatment will be effective in China and will help us to extend the reach of our interventions even further.”

Over a six-month period, study participants receive personalized behavior change goals to be self-monitored via text messaging, group counseling sessions and individualized counsel-

ing. Each participant will also receive a pedometer and a body weight scale. The intervention utilizes iOTA (Interactive Obesity Treatment Approach), a treatment strategy developed by Bennett, in which participants are provided with a series of personalized goals to change their lifestyle behaviors. These behavior changes, in turn, promote weight loss. Group sessions and individual counseling will be provided by trained coaches via telephone each month. 🇺🇸

Duke students spend half the semester in China and the other half in India, as part of Global Semester Abroad (GSA). See page 10 for details of the program.

“We are optimistic that these innovative and personalized approaches to obesity treatment will be effective in China.”



While in Beijing, GSA students visited health facilities and community organizations to learn about health and development in China.

haiti



BUILDING HOPE, RESEARCH IN POST-EARTHQUAKE HAITI

More than a year after the natural disaster, millions of Haitians are still living in makeshift tent cities and dealing with health emergencies like cholera. However, leaders of DGH partner Family Health Ministries (FHM) have worked tirelessly to provide relief in three Haitian communities.

For 17 years before the quake, FHM focused its work on maternal and child health, but program development was quickly replaced with emergency relief when the earthquake heavily damaged its three field sites in Leogane, Blanchard and Fondwa. FHM raised nearly \$700,000 in donations to respond to immediate health, food and infrastructure needs on the ground, and within three months, the nonprofit was able to bring its clinics and school back to full operation.

“There’s still a lot to do, but we have made progress. I’m optimistic that five or 10 years from now, we will look back and say we did it well,” said Kathy Walmer, FHM executive director and adjunct assistant professor of global health. “We’re eager to begin shifting our efforts back to programming.”

The foundation of FHM’s long-standing involvement in Haiti is a partnership with the local community to address cervical cancer. In the past five years, FHM staff screened more than 10,000 Haitian women for human papillomavirus (HPV), the primary cause of cervical cancer, and provided follow-up care. Cervical cancer is a curable disease, but has devastating consequences for untreated women and their families in low-resource settings. In an effort to raise awareness, an advisory group made up of 70 Haitian women has become FHM’s voice and advocate for women’s health in the community.

“We’re grateful for this eager group of women to help us assess local needs and educate their communities. One of our greatest needs is finding ways to reach many more women through the program,” said David Walmer, FHM chairman and associate professor of OB/GYN and global health.

With involvement from student researchers in the Duke Master of Science in Global Health program, FHM is developing and testing novel screening strategies with the goal of expanding access to preventive therapies for cervical cancer. The nonprofit also plans to build a state-of-the-art women’s and children’s hospital and research center. Although the earthquake slowed progress in recent months, David is convinced the Haitian people’s resiliency will help forge unprecedented progress.

“There’s still a lot to do, but we have made progress. I’m optimistic that five or 10 years from now, we will look back and say we did it well.”





ADDRESSING AN UNMET NEED OF HAITI'S EARTHQUAKE SURVIVORS: MENTAL HEALTH

The realities and challenges facing the people of Haiti extend far beyond housing, clean water, food and health care services. An initiative under way at Duke is addressing an often overlooked issue—the mental health of earthquake survivors.

Among other projects, the multidisciplinary initiative led by the Franklin Humanities Institute (FHI), and dubbed the Haiti Lab, is developing an assessment tool for identifying post-traumatic stress disorder or PTSD in the community, particularly among Haitian women. The project is under the direction of Kathy Walmer, a core faculty member of the Haiti Lab, and Deborah Jenson, co-director of the Haiti Lab, professor of French studies and a DGHI affiliate.

“There are limited mental health services in Haiti, in part because of the cultural stigma associated with it. But PTSD has become a major health issue following the earthquake and we have to address it. Otherwise, it will manifest itself in the years to come,” said Walmer, who is working with students in the independent study project.

Last fall, a group of undergraduate students conducted more than 50 interviews to assess PTSD incidence and to learn about the cultural aspects of shock, grief, distress and trauma in both pre- and post-earthquake situations among Haitian women. While the effects of the earthquake are very real to the Haitian population, students realized that some Haitians did not fully understand what causes an earthquake. Duke sophomore Nadine Michel said education about their circumstances is paramount for progress in the country.

“I have learned so much about PTSD, how to be culturally sensitive in doing research and the importance of mental health, especially in low-income countries like Haiti,” said Jenn Denike, an undergraduate student who is studying African and African American Studies and global health. “This project was a nice fit for my interests in Haiti and global

health, and I am excited to continue working with my peers to continue this research.”

The goal of the PTSD assessment tool is to pair the research and education with services through a Duke-led stress management training program under the direction of Benjamin Reese, Duke vice president for institutional equity and clinical psychologist, and Cynthia Frazier, clinical psychologist.

Women showing severe PTSD symptoms are currently being referred to local health care providers for follow-up, and those with mild to moderate symptoms

The Haiti Lab at Duke is a unique three-year initiative that brings innovative, interdisciplinary research to bear on the social, cultural and health needs of the Haitian community.

are participating in the educational program. To date, dozens of Haitian women have been able to discuss their daily obstacles and ways to manage them, as well as learn various self-help strategies to help reduce their high levels of stress, anxiety and depression. The program also prepares them

to be “allies” or peer supports to other women suffering from stress symptoms. “I’m hopeful for the new year upon us,” said Walmer. “We have to keep moving forward with an optimistic heart, and continue to work together with Duke and other organizations to meet the mental health needs of this community. After all, it’s about what we do collaboratively because that makes change possible.”

Jenson and Duke students interviewed earthquake survivors about the challenges they face and how they are dealing with the stress of rebuilding their lives.



[Read Deborah Jenson's poignant opinion piece on the history of cholera in Haiti. Jenson argues that once the cholera emergency is over in Haiti, the stigma attached to the disease will likely linger, only prolonging the suffering in a country that can hardly afford more agony.](#)

kenya



READYING FAMILIES, COMMUNITIES TO PREVENT HIV

A family and community-focused intervention in the Nyanza Province of Kenya, where HIV/AIDS prevalence is highest in the country, is using positive messages about mental health and sexuality to reduce HIV risk among adolescents. This kind of program, which is focused on strengthening adolescent-caregiver relationships, is unique in sub-Saharan Africa because of its focus on mental health.

With mentorship from DGHI faculty Kathleen Sikkema and Sherryl Broverman, postdoctoral associate Eve Puffer designed a nine-week, family-based program called READY: Resilience, Education, And skill Development for Youth and families in the remote community of Muhuru Bay. The program gathers family members for educational sessions on HIV and sexuality, emotional support and economic empowerment. A scientific evaluation of the READY intervention is under way, but preliminary observations show that families can change attitudes and behaviors regarding sexual activity among Kenyan youth.

READY is based on Puffer's earlier research, which found that adolescents with emotional problems are more likely to engage in sexual activity, and caregivers and other adults in the community often give adolescents mixed messages about sex. While abstinence is explicitly promoted in schools and churches, adolescents reported it is "normal" in their culture to become sexually-active at an early age, putting them at a high risk of contracting HIV.

"Rather than simply aim for positive change among individuals, we have strategically tailored the READY program to lead to family-level change as well as transform the social environment in which youth and families live," said Puffer, also a Fogarty International Clinical Research Fellow. "We think this context-specific intervention will prove itself as an alternative to the otherwise wide dissemination of strategies

that are not developed for any specific culture or location."

READY has been tested in Muhuru Bay churches, where many parents and caregivers said the training helped them understand the importance of supporting their children in more positive ways, like monitoring youths' behavior and delivering more consistent and clear messages related to sexual development and HIV.

Parents and caregivers said the training helped them understand the importance of supporting their children in more positive ways.

But with program implementation comes the need for flexibility to work through challenges. Initially, many men were not regularly attending the READY sessions because they viewed issues of communication and parenting as "women's issues." To address this, the male facilitators on the READY team, many of whom are community role models, personally visited the homes of these men

to explain its benefits. Through personal accounts of how the communication and parenting skills had improved their own lives, the READY facilitators increased male attendance and engagement in the session activities.

In the spirit of encouraging sustainable solutions to pressing health and family needs, many Kenyan church leaders have taken ownership of the ideals behind READY, serving as community advocates for open discussion about issues such as HIV and sex, family communication, parenting and emotional well-being.



The READY program brings families together to talk about sensitive issues, which are often not discussed in the home and can lead to risky behavior among youth.



AFFORDABLE DRUGS, COMMUNITY EDUCATION NEEDED TO TREAT MALARIA

Fever is a common symptom of malaria, but it's also often misdiagnosed. Many resource-poor areas like Kenya lack the resources to properly test, diagnose and treat patients, which have often led to prescription of drugs that may be ineffective, too costly or unavailable—and that's assuming Kenyans go to a hospital or dispensary for medical attention.

In collaboration with Moi University School of Public Health and the Webuye Health and Demographic Surveillance Site, DGH faculty Wendy O'Meara, who is based in Eldoret, Kenya, is conducting a mapping and facility survey of private clinics and retail medicine outlets that provide antimalarial medicines in Kenya's Webuye District. The project investigates drug availability, prices and provider knowledge, with the goal of promoting more rational use of medicines—the idea that medicines are prescribed, dispensed or sold and taken appropriately, and at the lowest cost to the community.

“One of the major concerns in the community is that mothers will first use unregulated and unlicensed drug retailers to buy over-the-counter medicines for their child's fever. We know there is a high mortality rate from malaria in the district hospital, so we are trying to understand what medicines mothers are receiving in these retail shops and the quality of those services,” said O'Meara. “Through health education and community mobilization, we'd like to empower communities to ask for drugs that are effective and increase awareness of the drugs they shouldn't give their children. One day we also hope to provide the Kenyan Ministry of Health with valuable information to inform policy about the diagnosis of malaria and improve awareness over poor diagnosis and over-diagnosis.”

Preliminary results, which have been shared with community elders, show most drug retail shop owners make decisions about what to give customers based on what the customers can afford, even if it's not the drug named on the prescription. O'Meara's research team also found

that clients prefer drug retailers because they can receive medicines on credit, rather than pay out-of-pocket at public health facilities. None of the shops in the survey stock chloroquine, a drug that has proven to be ineffective, yet many still stock another ineffective drug, sulphadoxine-pyrimethamine. In a complementary study, O'Meara found that people living in the Webuye District may also be using medicine retailers more often because the facilities are typically half the walking distance of the nearest public health facility.

Another study by Duke Master of Science in Global Health (MSc-GH) student Andria Smith will be conducted in coming months to assess whether rapid diagnostic tests for malaria can be given at medicine retailers as a way to improve the diagnosis and management of patients who present with fever.

Among other findings, researchers found that three in ten households opt to first self-treat for fever symptoms in the home rather than seek treatment, and only 20 percent of households surveyed own at least one bed net. To improve access to care and preventive measures, O'Meara hopes to use these findings to improve a community health worker program she is involved with through Academic Model Providing Access to Healthcare, or AMPATH. 🇰🇪

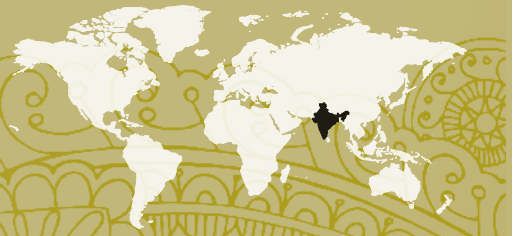
Kenyan surveyors are helping researchers assess the quality of services offered at local drug retailers, which are commonly used. Right: Researchers share results of the studies with elders at community meetings.

[HUBERT-YEARGAN CENTER FOR GLOBAL HEALTH PARTNERSHIP]

Moi Teaching and Referral Hospital and Moi University have become one of Duke's strategic partners. Since joining AMPATH in 2006, the Hubert-Yeargan Center for Global Health (HYC) has launched a Cardiovascular/Pulmonary Diseases Center of Excellence in Eldoret, as well as established Moi as a training site for the Global Health Residency/Fellowship Pathway. Residents and fellows typically make a five-week visit at the start of their training, come back to Duke to earn an MSc-GH degree, and return to Eldoret for up to 12 months to complete their research.

HYC has also coordinated bi-lateral education exchanges for numerous Kenyan and Duke medical students and residents, as well as initiated a number of research programs.

india



RESEARCH UNDER WAY TO EVALUATE THE IMPACT OF MATERNAL VOUCHER PROGRAM IN RURAL INDIA

The World Health Organization estimates that more than 1,000 women worldwide die every day of complications due to pregnancy. Although deliveries at hospitals and other health facilities have increased, birth outcomes in India have been slow to improve. While this is likely due to low quality of medical care, there is evidence that health care provider effort is low and incentives may be poorly aligned with patient health. To address these potential gaps in health care delivery, research led by DGHI health economist Manoj Mohanan will be critical in guiding program development across India to improve maternal and child health.

With \$1.4 million from the International Initiative for Impact Evaluation (3ie) and the Department for International Development (DFID)-India, Mohanan and collaborators from Stanford University, World Bank and the Indian-based organization Sambodhi, are conducting an evaluation of a voucher program in the Indian state of Gujarat that enables women from below-poverty-line households to access free maternity care at designated private health care facilities. Despite the absence of rigorous evidence on the effectiveness of this program, many other Indian states are implementing or planning their own versions of the voucher program—making the evaluation timely and relevant.

“Rigorous evaluations such as this one will enable governments to implement evidence-based policy,” said Mohanan, assistant professor of global health, who leads DGHI’s health systems strengthening research initiative. “There are a lot of new ideas that are being tried out in development and in the health sector; unfortunately the evidence on what really works is relatively thin.”

In a parallel project in Karnataka, Mohanan is evaluating the impact of a conditional cash transfer program, which pays women from poor households to deliver their babies in privately-owned obstetric facilities. In addition to the evaluation funding from 3ie and DFID-India, this project has received more than \$600,000 from the World Bank and Government of Karnataka. Mohanan and his co-investigators are also conducting an experiment to estimate the impact of offering providers incentives based on improvements in quality of care versus solely on improvements in maternal health outcomes. In preparation for the experimental evaluation, they are currently validating measures of quality of care reported in household surveys. The Karnataka study will identify and track 36,000 new mothers and infants from across the state.

These evaluation projects are critical to determining if these interventions work and are cost effective, which will inform program development and policy across India to improve maternal and child health.

CHINA AND INDIA: STUDY ABROAD PROGRAM COMPARES HEALTH, DEVELOPMENT

India and China are both rapidly developing in economic growth, population size and importance in the world. They are also grappling with similar concerns over how to address the implications of this development on health.

While India’s maternal mortality rate has been among the highest in low- and middle-income countries, more people now die annually from road traffic injuries than from maternal causes.

New health challenges have also beset China with its impressive economic growth in recent years and emergence as a world leader.

Twenty undergraduate students spent the spring semester in both India and China as part of the inaugural class of the Duke Global Semester Abroad (GSA) program. The Duke Office of Global Education, Sanford School of Public Policy, Department of Cultural Anthropology and DGHI partnered to offer the multi-cultural learning opportunity, which combines classroom experience with hands-on, community-based research and learning. The program splits students between both countries for the first eight weeks, and students switch locations halfway through the semester.

In Udaipur, India, where Duke has partnered with the award-winning, nongovernmental organization, Action Research and Training for Health (ARTH), students traced how development practice has evolved in theoretical and policy literatures, and examined the solutions against the reality on the ground through a community-based field study. From their base in Peking University Health Sciences Center in Beijing, students gained an intensive historical and contemporary overview of health systems and health policy. They visited hospitals and clinics around Beijing, seeing first-hand the challenges ahead as China seeks to further reform its health care system. Students also had the rare opportunity to visit reconstruction projects in the Wenquan earthquake zone of the Sichuan Province.



The GSA faculty directors are DGHI affiliates: Anirudh Krishna, associate professor of public policy and political science, and Ralph Litzinger, associate professor of cultural anthropology and women's studies. Krishna and Litzinger each taught one course and supervised a second course taught by local instructors from ARTH and the Peking University School of Public Health.

In its first year, the program attracted students from across the university, with majors in public policy studies, biomedical engineering, chemistry, economics, international comparative studies and more. A quarter of the students were also pursuing the DGHI global health certificate, which has become one of the most popular certificate programs on campus. The GSA program will be offered again in the spring semesters of 2012 and 2013.

KNOWLEDGE = CLEAN WATER

Without rigorous evaluations and attention to behaviors, a global health intervention alone is not enough to improve health outcomes in a low-resource setting. Duke researchers are evaluating the effectiveness of a water purification intervention in rural India and whether empowering households with information about how to keep water safe is as important as the technology itself.

In 2006, Subhrendu Pattanayak, then a fellow and senior economist at RTI International, and now Duke associate professor of public policy, environment and global health, partnered with Acumen Fund to conduct an impact assessment of an existing water purification and disinfection technology. The water purifiers, or Community Water Systems (CWS), were distributed to villagers in the state of Andhra Pradesh in southeastern India, and combine filtration and UV technology to raise local water sources to World Health Organization standards.

Following a baseline survey and a follow-up survey two years after the CWS water purification technology was installed in 25 communities, Pattanayak's research team found the technology failed to improve health outcomes among the villagers, particularly in reducing child diarrhe-

al rates, a common health concern cited by the community. Despite numerous advances in health technologies over the past several decades, waterborne diarrheal illness remains a significant burden among the poor and the number one environmental health concern, claiming the lives of more than 300,000 Indian children under the age of 5 in 2005.

"Our findings are particularly interesting because the private firm was not able to convince most households to pay a minimal amount for clean water, and even if they did, village-level disease was not reduced significantly," said Pattanayak. "In our assessment of what went wrong in the implementation of this project, we realized the families who received the CWS needed to also become educated about steps they can take in the home that promote clean water."

The research team discovered that poor health behaviors such as hand-washing and water storage were likely undermining the improvements in drinking water quality. They found that individuals were unaware these practices could turn their clean, safe drinking water into a dangerous source of diarrhea-causing pathogens. After all, it is hard to know if your water is dirty since it is impossible to see deadly *E. coli*.

Pattanayak and his research team, which includes DGHI faculty Marc Jeuland, Master of Science in Global Health student Sarah Lombardo and Amar Hamoudi of the Sanford School of Public Policy, have since returned to Andhra Pradesh to test the logic that empowering people with knowledge about the *E. coli* contamination of their drinking water would lead to improved household hygiene and water-handling. In partnership with RTI International and NEERMAN, a Mumbai-based research firm, the team implemented a randomized control trial to test the effectiveness of an information campaign.

The evaluation is ongoing, but knowledge may indeed give this population the power to improve their own health. As Pattanayak puts it, "this kind of field testing and evaluation is rare but absolutely vital if we are to make a dent in the enormous global health burdens related to easily preventable diseases." 🇮🇳

Left: Mohanan and his research team work with community members to measure the effectiveness of health policies; Center: GSA students explore health in Udaipur; Right: Survey team conducts interviews about water safety in rural India.

north carolina



AREA UNIVERSITIES ESTABLISH COLLABORATIVE ONE HEALTH NETWORK

An innovative new course created and taught by faculty at Duke, North Carolina State University and the University of North Carolina at Chapel Hill is among the first in the nation to bring together diverse disciplines to explore the interconnectedness of human, animal and environmental health.

The graduate-level course, led at Duke by Christopher Woods, associate professor of medicine and global health, is based on the increasingly popular and holistic approach to health called One Health. Twenty-two students from Duke, UNC and NC State, with diverse backgrounds in global health, public health, public policy, medicine, veterinary medicine, nursing, environmental science and anthropology, participated in the first course this spring.

Students explored the bi-directional impact of animal health on human health, the impact of earth's changing ecology on health, the benefits of comparative medicine, and issues of food and water security and preparedness. They compiled and analyzed case studies on these issues to develop a One Health educational resource for other universities, which they expect to publish electronically this year. The course is an extension of the ongoing lecture series, the One Health Intellectual Exchange, which brings prominent professionals to the Research Triangle Park each week to discuss how their work relates to One Health. The weekly lectures attract an additional 40 health and environmental professionals from the Triangle area, making for vibrant discussions and networking opportunities.

"The course has surpassed our expectations due to the high level of inter-institutional involvement," said Woods. "Students and professionals with a wide range of interests and expertise at each of the major universities in the Triangle are actively engaged. This kind of interdisciplinarity is possible because of the collaborative nature of the Triangle Global Health Consortium."

The course was first proposed in a paper by Duke and NC State students that outlined the need for a collaborative One Health educational network and highlighted the Triangle as a potential hotspot due to its strong academic presence in global health and veterinary and environmental sciences.

"The local One Health initiative is groundbreaking because it bridges disciplines and universities to learn and apply a new approach for addressing today's health challenges," said teaching assistant Meredith Barrett, an author of the One Health publication and PhD student at Duke's Nicholas School of the Environment. "Global health and sustainability problems are so complex that we cannot continue to address them with individual disciplines. This course innovatively lays the framework for collaboration on these health and environment issues by incorporating One Health training into graduate education."

An exhibit on the One Health perspective will be on display at the North Carolina Museum of Natural Sciences in Raleigh.

DUKE SCHOOL OF MEDICINE CURRICULUM INTEGRATES GLOBAL HEALTH

With the growing threat of pandemics and the widening disparities in mortality and morbidity among low-income populations, it is increasingly vital for medical students to understand the significance of their own work within a broader global health context. The Duke Global Health Institute and the Duke School of Medicine partnered this spring to provide this context through a unique short course on global health and health disparities.

The clinical core in Global Health, under the direction of faculty coordinator and DGHI Senior Advisor Dennis Clements, is now one of the clinical core courses required of second-year medical students in the Duke School of Medicine. Ten DGHI faculty members were involved in the first year, and taught courses on the global burden of disease, the determinants of health, global cooperation in health and the impact of the environment on health.

"Success and progress in the field of global health requires the skills and knowledge of different disciplinary perspectives, including medicine, to both understand the social and economic determinants of health and to develop strategies and interventions that will address them and thereby improve the health of populations," said Clements, professor of pediatrics, medicine, community and family medicine, nursing and global health. "This short course allows medical students the opportunity to think about the impact of their work from an entirely different perspective."

Medical students also learned the importance of teamwork to solve problems outside of the confines of a single discipline or patient. Using an innovative team-based learning approach, students worked in groups to apply course material to real-world situations by debating global health issues and developing recommendations.



INITIATIVE REVEALS CHRONIC HEALTH PROBLEMS AMONG CLERGY IN NC

Not long ago, pastors were thought to be among the healthiest groups of people. It was therefore surprising when The Duke Endowment, a foundation independent from Duke University with a deeply United Methodist mission, began receiving requests to improve the health of this group. The Duke Endowment granted one of its largest awards ever—\$12 million—to Duke Divinity School to investigate and improve the health of clergy throughout North Carolina.

The Divinity School recruited Rae Jean Proeschold-Bell, assistant research professor at DGHI's Center for Health Policy and Inequalities Research, to lead the research of the Duke Clergy Health Initiative, which is under the direction of David Toole, associate dean for academic administration and strategic initiatives at the Divinity School.



Center for Health Policy & Inequalities Research
AT DUKE UNIVERSITY

In partnership with the North Carolina Conference of the United Methodist Church and the Western North Carolina Conference of the United Methodist Church, the initiative includes the first-ever longitudinal survey of clergy health in the United States.

“Even though the Duke Clergy Health Initiative was intended to focus on health interventions, we began by conducting research,” said Proeschold-Bell. “No recent data on clergy health existed at the time, and anecdotal stories about clergy health difficulties were not sufficient for designing an intervention.”

The baseline survey was well-received among United Methodist clergy across North Carolina in 2008, garnering a 95 percent response rate from more than 1,700 pastors. The survey incorporated questions related to chronic disease that are asked annually of a representative sample of North Carolinians through the Behavioral Risk Factor Surveillance Survey. This approach allowed the health of clergy to be compared to that of the general population for the first time.

Even after accounting for race, gender, age and employment status, Proeschold-Bell found that clergy had

significantly higher rates of diabetes, hypertension, asthma and arthritis. Perhaps the most alarming finding was that 41 percent of clergy were obese, compared to 29 percent of similar North Carolinians. This obesity rate portends future health problems, which could already be seen in the data. For example, 6 percent of male clergy ages 35-44 reported having had a heart attack, compared to only 0.5 percent of similar North Carolinians.

To understand these findings, the Clergy Health Initiative used the voices of 88 pastors who universally named stress and overwork as barriers to exercise and healthy eating. While most saw their role as preachers on Sundays, clergy are often administrators of staff and budgets, and serve as community liaisons and first responders during times of family crisis.

“Ultimately, clergy are steeped in stress that is relational in nature,” said Proeschold-Bell, noting that the clergy work an average of 55 hours per week. “It’s not just the number of hours a week clergy work; it’s negotiating difficult relationships all day and every day that’s stressful. The number of hours you put in is a lot, but the real stress comes from balancing everyone’s wants and needs.”

In response to these findings, in October 2010 the Clergy Health Initiative designed and launched a multi-year program called Spirited Life. Over the span of four years, more than 1,100 United Methodist clergy across North Carolina will participate in a 23-month holistic health intervention. The program is cast within a framework of Wesleyan theology and spirituality, providing clergy with the tools they need to learn to care for their bodies in a healthy, mindful way, and find spiritual renewal. It also incorporates weight loss and stress management components, a recommendation of obesity expert Gary Bennett, associate professor of psychology and neuroscience and global health.

“Studies have shown that we can help most people lose weight in the first six months,” said Bennett. “The trouble is maintaining those weight losses beyond the first year.”

Leaders of the Clergy Health Initiative anticipate that combining weight loss with stress management interventions for a prolonged period of time will help pastors improve and sustain health. If Spirited Life works, it may also inform weight loss interventions beyond the pulpit and into the pews. 🙏

Left: The One Health network involves dozens of students and professionals from the Research Triangle; Center: Duke medical students learn about global health disparities in a one-week module; Right: Rev. James Harry is senior pastor of St. Paul United Methodist Church in Goldsboro, NC.

tanzania



REVOLUTIONIZING MEDICAL EDUCATION IN MOSHI

Education is a powerful tool to improve health care delivery. With one doctor for every 20,000 people in Tanzania, it is vital to produce medical professionals who can effectively respond to these challenges. A \$10 million grant from the President's Emergency Plan For AIDS Relief, the National Institutes of Health and the US Health Resources and Services Administration, aims to boost the number of trained physicians practicing in Tanzania.

The Kilimanjaro Christian Medical College and Medical Centre (KCMC), a leading medical school and teaching hospital in Tanzania, in partnership with DGHI, was awarded the five-year Medical Education Program Initiative grant last October to improve medical education, faculty development and access to information technology.

Leaders from DGHI, KCMC, the Duke School of Medicine and Medical Library and Office of Information Technology have developed a plan for improving the medical school curriculum to begin implementation in the 2011-2012 academic year. The need for a strong curriculum is more important than ever, as enrollment at KCMC is expected to grow from 122 to 150 students within five years.

"In many schools of medicine in Africa, there's a tremendous faculty shortage. Many of the faculty are overburdened with responsibilities, lack the tools and resources they need, and lack formal instruction in teaching. As a result, there is an implementation gap in teaching," said John Bartlett, associate director for research at DGHI and professor of medicine and global health. "We are excited by the possibilities this grant provides to the future of Tanzania and medical education and to extend our partnership with KCMC."

Among the curricular recommendations, Duke and DGHI leaders will implement team-based and problem-based learning approaches, which have proven effective at Duke-National University of Singapore Graduate Medical School. Through this learning technique, students increase their own capacity to carry out multidisciplinary, locally-driven research that responds to existing health needs in the community. Bartlett said Duke can also learn a great deal from KCMC in how to pair education with health care delivery in the community. This spirit of bi-directional learning is the foundation for the KCMC-Duke collaboration and is a model for DGHI's partnerships around the globe.

One of the immediate results of the grant is the outfitting of new technology infrastructure at KCMC. Construction took place earlier this year, and KCMC faculty and students now have reliable high-speed internet access that has infinite benefit for learning and research. KCMC is also outfitting the building with AV-equipped classrooms, a computer lab, medical education laboratory space and videoconferencing capabilities.

"Access to these enabling technologies will be revolutionizing," said Bartlett. "It will bring KCMC faculty and students firmly into the 21st century and give them access to resources that previously were completely unavailable. This is truly transformative for KCMC."

IPADS TRANSFORM GLOBAL HEALTH RESEARCH

DGHI is taking a major step toward more efficient data collection, organization and sharing of global health research in the field with the use of the Apple iPad. This January, the Institute sent a global health fellow to Tanzania with the iPad for use as a field research tool, which is a first for Duke.

In the course Research Methods in Global Health Sciences II taught by Jen'nan Read, associate professor of sociology and global health, Master of Science in Global Health (MSc-GH) students were trained to use iPads as a field research tool. The trainees included Ayaba Worjolah, an OB/GYN Fellow in the Global Health Residency and Fellowship Pathway Program, who is now using the iPad for her research in Moshi.

Worjolah is assessing patient attitudes about the quality of prenatal care at KCMC and whether women would consider receiving some services in a group setting. While 9 out of 10 Tanzanian women receive prenatal care, maternal mortality and morbidity rates are among the highest in sub-Saharan Africa. It is thought that important prenatal information can be conveyed more effectively in group settings. To help her collect and manage the qualitative data, Worjolah and her research team are using the iPad during patient interviews and focus groups.

"Many aspects of the interview can get lost in a digital recording, such as particularly emotional conversations. Using the iPad, interviewers are able to quickly jot down salient thoughts that come to them throughout the interview," said Worjolah, who also found the device to be an effective organizational tool. "The ability to have information computerized and accessible electronically in real-time really helps us keep the research organized. This is a great use of the iPad and I'm excited to be among the first from DGHI to use it in the field."

The lightweight, touch-screen mobile computing device is equipped with 3G and Wi-Fi internet access, as well as research and survey applications that can collect, chart, evaluate and present data. In unpredictable field settings, researchers may encounter limited internet connectivity and costly international data plans, but the iPad is



especially helpful due to its small size, long battery life and easy handling.

“The iPad opens up many new possibilities for field researchers,” said Read, who worked with Marc Sperber, DGHI educational technologies consultant, to format the iPads for field research, develop practice exercises and train students. “When used in conjunction with other technology, such as flip cameras and laptops, the iPad has the potential to revolutionize how we work in the field.”

Later this year, additional MSc-GH students will conduct their research in locations around the world using the iPad. Read and Sperber anticipate expanding the pilot project as technology continues to improve.

MOBILE VOLUNTARY HIV TESTING ATTRACTS NEW, HIGH-RISK POPULATIONS

New findings by DGHI and KCMC researchers, in partnership with the Tanzanian HIV/AIDS service organization KIWAKKUKI, suggest that mobile voluntary counseling and testing (MVCT) for HIV is effective in reaching and recruiting individuals at high risk of HIV who have not previously been tested. MVCT can also facilitate their access to earlier HIV care and treatment. The research is one of the first studies to shed light on the characteristics that prevent others from being tested.

Led by DGHI faculty Jan Ostermann and Nathan Thielman, the study tested 900 clients in four MVCT campaigns offered in dispensaries, ward offices and schools in rural villages in the Kilimanjaro Region of Tanzania. MVCT clients reported greater numbers of recent and lifetime sex partners and higher rates of known or suspected HIV-infected partners. The study in PLoS ONE also showed that half of the participants ages 18-50 had never been tested for HIV.

Researchers also found the most common reasons individuals did not participate in the free MVCT campaign were associated with local accessibility. In follow-up assessments of more than 300 individuals not tested, 33 percent cited distance from available testing sites, 22 percent could not leave work, and 13 percent were unaware of available

testing locations. Other reasons for never being tested included HIV-related stigma and testing-related fears.

“Whether expanded HIV testing strategies reduce such barriers and successfully attract new and high-risk testers or attract primarily lower risk, repeat testers has substantial implications for their cost effectiveness and for the possible success of universal testing and treatment policies,” said Ostermann, the lead author. “We find no evidence of adverse risk selection, but stigma and fears of testing or test disclosure remain significant barriers, and we are currently exploring ways to evaluate how testing options could be adapted to reduce these barriers.”

Researchers are exploring whether educational campaigns to reduce stigma and fears of testing may improve the effectiveness of MVCT in attracting new and high-risk populations.

Researchers used aerial photography to identify and survey a random community sample. This novel sampling approach allowed researchers to better assess how those who tested differed from those who did not present for testing.

Other researchers on the study include Elizabeth Reddy, Meghan Shorter, Charles Muiruri, Antipas Mtalo, Dafrosa Itemba, Bernard Njau, John Bartlett and John Crump. The study is funded by the Duke University Center for AIDS Research (CFAR), supported by the National Institutes of Health. 🇺🇸

Left: iPads are being used in Tanzania to facilitate research on prenatal and maternal health; Center: KCMC Medical Education Building is home to the new MEPI office; Right: Voluntary mobile counseling provides free HIV testing in rural villages.



MEPI is bringing new technologies and library resources, including a reliable, high-speed Internet connection, to KCMC to facilitate access to research, information and learning tools.

uganda



LEGACY OF GLOBAL HEALTH STUDENT ADVOCATE LIVES ON

Aalok S. Modi was the embodiment of service to humanity and was committed to solving the world's health problems through his leadership in the student-led Global Health Forum. Sadly, Modi's life was cut short three years ago, but his dedication to a cause greater than himself continues to inspire Duke students.

To honor his memory, Modi's family and friends created the Aalok S. Modi Global Health Fieldwork Fund for deserving Duke undergraduate students. Last summer, the first recipient, junior Sneha Shah, worked with community members and business owners in Naama, Uganda, to develop and implement a pilot emergency medical insurance system. The system she developed provided fast and efficient transportation to the local hospital and promoted planning for emergencies such as childbirth. In Uganda, 1 in 25 women dies each year from treatable pregnancy-related conditions.

"I emerged from this experience with more clarity, understanding, receptiveness and passion for all the elements surrounding the kind of life I want to lead - a life dedicated to service," said Shah.

Shah drew from the wisdom and desire of community members to improve their own health and focused on piloting an effort that could become a sustainable solution. "The Ugandan people have so many ideas, they know the community, they have the resources, and they're in a much better position to sustain these efforts. We were simply facilitators of change," said Shah, who successfully enrolled her first participant in the emergency medical insurance program before returning to Duke, a woman who used the insurance to travel to the hospital to deliver her newborn baby.

"Making the community take ownership of the problem and solution is what the Naama community will remember Sneha for. She worked with the community to identify the problem and showed them a structured way to go about addressing it, and in the process, I am sure she has grown and matured," said Modi's father, Shishir Modi, who helped select Shah as the first recipient of the fieldwork fund. "While our life will always be incomplete without Aalok, I am glad and happy to see the meaningful way Aalok's passion is continuing through students at Duke University."

Since her field experience, Shah has continued to help her Ugandan partners raise funds for medical supplies at area health centers. She has formed a partnership with Men's Fight Against Mortality in Labour, a Ugandan national organization that can further facilitate change in the community. With hopes of one day influencing policy regarding access to health care, Shah is working with the next group of Duke fieldwork students to continue developing the insurance program. Shah's dedication to the people of Uganda and drive to improve their health is a fitting and lasting legacy of Aalok's life.

INVESTIGATING SOLUTIONS TO CHILD MALNUTRITION

A clinical research project under the leadership of DGHI affiliate Michael Freemark is assessing whether Ready-to-Use Therapeutic Food (RUTF) can reverse the effects of malnutrition, which is the underlying cause of death for 3.5 million children worldwide. The study under way in Kampala, Uganda, is shedding light on the development of childhood malnutrition with the potential to improve child health in low- and middle-income countries.

The research team, which includes pediatric endocrinology fellow Sarah Bartz and third-year medical student Aaloke Mody, is working with partners at the Mwanamugimu Pediatric Nutrition Unit at Mulago Hospital to conduct a metabolomic analysis of the effectiveness of nutrition supplements to restore body health and function among 100 undernourished children. This high-energy, readily-produced nutritional supplement is safe to use in diverse settings, although there is little information on the optimal timing for administering the supplement among malnourished children and the mechanisms by which nutrients can reduce childhood morbidity and mortality.

"Our study can provide critical guidance for clinicians and other health care providers who seek to reverse the high rates of childhood morbidity and mortality in the developing world," said Bartz. "The identification of factors that predict the response to RUTF will help us tailor effective interventions in high-risk subjects."

Mody, who received funding from DGHI to conduct this research, is part of a growing cadre of Duke medical students who are engaging with faculty on global health research through the Third Year Global Health Study Program.



MANAGEMENT AS A TOOL FOR IMPROVING HEALTH

A project under way in the Kabarole District of Uganda is working to meet population health needs by providing management training and creating health care leaders. The partnership between DGHI, Duke Divinity School and The Fuqua School of Business has helped local partners develop and deliver a curriculum for health care providers that is poised to improve both the health and education sectors of Uganda.

Although sub-Saharan Africa hosts 24 percent of the world's burden of disease, the area has only three percent of the global health workforce. This shortage is exacerbated by the lack of training health care workers receive in how to manage people, finances and health facilities. In a survey assessing national health care needs, researchers found that Ugandan health care workers desired management training and mentorship, in addition to more effective collaboration across the public and private health sectors. Current estimates indicate that 30-70 percent of health care services in Africa are delivered by faith-based organizations. This is true in Uganda as well, so the Catholic and Protestant Medical Bureaus became natural partners on the project.

In an effort to bridge the workforce gaps, the multi-school team from Duke cultivated a partnership among Ugandan public and faith-based health systems and academic institutions, which include Makerere University, Uganda Christian University and Uganda Martyrs University.

With support from Duke and funding from the Robertson Foundation, the Ugandan partners combined their experience to design and deliver an innovative leadership and management training course for mid-level health and hospital managers. More than 60 people from 10 organizations participated in the workshop last fall, which paired Ugandan educational content experts who understand the principles of management and Ugandan health care context

experts who have extensive experience working in the local health care setting.

"The training had to be driven and organized by local partners. None of us at Duke can make a lasting difference in Uganda without local champions who have a deep understanding of the local context," said Will Mitchell, professor at Fuqua and DGHI affiliate. "The course participants were actively engaged in the learning process, and I'm confident we came away from the workshop having helped our partners build a sustainable training model that is rooted in both the education and health sectors of the Kabarole District."

"None of us at Duke can make a lasting difference in Uganda without local champions who have a deep understanding of the local context."

Based on pre- and post-workshop assessments, the research team found significant gains in knowledge and skills in the areas of management and mobilization of resources, information management, staff motivation and health system governance.

A course participant said, "I was enlightened on how best to motivate my fellow staff under limited resources. I also learned how to manage my data for planning and ways to mobilize resources. Overall, the course was quite informative and the facilitators are well-informed and have experience of what actually happens in practice both in private and public health care facilities."

"We've seen measurable progress at the district level," said Aaron Stoertz, a Master of Science in Global Health student whose research thesis was based on the project. "The next question is how to translate this kind of model to other districts in Uganda or to the national level."

As DGHI continues to work with Ugandan partners to disseminate the new health management training manual and expand the training beyond the Kabarole District, the first group of trainees continues to receive mentorship to effectively apply their new knowledge in their communities, help drive organizational change and improve health outcomes. 📌

Left: Stoertz and Toole with trainees from the health management and leadership program; Center: Ugandan mothers provide their babies with a nutritional supplement; Right: Shah forged partnerships with local business leaders.

noteworthy

WINTER FORUM: PANDEMIC 2011

On January 9-11, 2011, a pandemic struck Duke. More than 100 undergraduates and a dozen DGHI faculty participat-



ed in Duke's second annual Winter Forum, a three-day event focused on a multi-disciplinary, global theme. *PANDEMIC 2011: Are You Ready* explored how diseases spread, how and when vaccines are developed, the ethics of who receives treatment, how governments prepare and respond, and the role of the media in disseminating information during a crisis. The keynote speaker was US Assistant Surgeon General Anne Schuchat. See the blog, breaking news videos, student interviews and more on the DGHI website.

DUKE ALUMS IN GLOBAL HEALTH ALUMNI AFFINITY NETWORK

Duke alumni now have a way to connect with others alums who are working or interested in global health. The Duke Global Health Affinity Network established within the Duke Alumni Association aims to connect alums to the growing global health resources available through the Duke Global Health Institute. Join today on the DGHI website. Also read profiles of Duke alums who have dedicated their lives to improving the world's health.

MASTER OF SCIENCE IN GLOBAL HEALTH: FIRST GRADUATES, SECOND CLASS, RECORD APPLICANTS

In fall 2010, DGHI welcomed 24 individuals from Uganda, India, Kenya, Nigeria and the United States into the second cohort of the Master of Science in Global Health. Also in 2010, DGHI celebrated the first two students, Michael Catalino and Jackie Ndirangu, to successfully defend their thesis and complete the program. The future of the program is equally bright, as DGHI received a record number of applications for the third cohort who will be welcomed in fall 2011.

PARTNERSHIP WITH ABC NEWS: BE THE CHANGE: SAVE A LIFE

DGHI was selected by ABC News to be a contributing partner on its year-long series focused on global health. "Be the Change: Save a Life" premiered on December 17 with a day of reporting across all ABC News broadcasts and a special edition of "20/20" hosted by Diane Sawyer. DGHI is contributing expertise and background research for stories that will appear on all ABC News programming. Other activities include contributing content on a website dedicated to the series, saveone.net, and coordinating an ABC News-Duke Global Health Challenge video contest to engage university students around the world on the subject of maternal health.



DOCTORAL SCHOLARS PROGRAM LAUNCHED

DGHI has launched its first program targeting Duke doctoral students interested in pursuing global health research in tandem with their primary discipline. Beginning in fall 2011, the Global Health Doctoral Scholars Program aims to foster dynamic intellectual exchange between Duke doctoral students and DGHI faculty. The first two scholars selected are Christopher Paul (Environmental Policy) and Sarah Wilson (Psychology and Neuroscience). The program, which requires a minimum commitment of nine months, enables students to work on a global health project with a DGHI faculty mentor, develop a global health dissertation and become involved in the DGHI's growing community.

DGHI leadership

DGHI FACULTY

*(primary department or division)
as of January 1, 2011*

Sumedha Ariely (Duke Global Health Institute)
John Bartlett (Medicine - Infectious Diseases)
Sara Benjamin Neelon (Community and Family Medicine)
Gary Bennett (Psychology and Neuroscience)
David Boyd (Duke Global Health Institute)
Sherryl Broverman (Biology)
Dennis Clements (Pediatrics)
Ralph Corey (Medicine - Infectious Diseases)
John Crump (Medicine - Infectious Diseases)
Victor Dzau (Medicine)
Eric Finkelstein (Duke Global Health Institute/Duke-NUS)
Barton Haynes (Medicine - Human Vaccine Institute)
Marc Jeuland (Public Policy)
Randall Kramer (Environment)
Robert Malkin (Engineering)
Joanna (Asia) Maselko (Psychiatry)
Christina Meade (Psychiatry)
Giovanna Merli (Public Policy)
Michael Merson (Medicine/Public Policy)
Lynne Messer (Duke Global Health Institute)
Marie Lynn Miranda (Environment)
Manoj Mohanan (Duke Global Health Institute)
Wendy O'Meara (Medicine - Infectious Diseases)
Jan Ostermann (Duke Global Health Institute)
Subhrendu Pattanayak (Public Policy/Environment)
Brian Pence (Community and Family Medicine)
Rae Jean Proeschold-Bell (Duke Global Health Institute)
Jen'nan Read (Sociology)
Elizabeth Reddy (Medicine - Infectious Diseases)
Kevin Schulman (Medicine/Business)
Svati Shah (Medicine - Cardiology)
Kathleen Sikkema (Psychology and Neuroscience)
Anthony So (Public Policy)
Nathan Thielman (Medicine - Infectious Diseases)
Duncan Thomas (Economics)
Krishna Udayakumar (Medicine)
David Walmer (Obstetrics and Gynecology)
Daniel Westreich (Obstetrics and Gynecology)
Kathryn Whetten (Public Policy)
Jeffrey Wilkinson (Obstetrics and Gynecology)
Christopher Woods (Medicine - Infectious Diseases)
Bei Wu (Nursing)

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DGHI STUDENT COUNCIL 2011

Meredith Barrett (Nicholas 2011)
Brian Clement (Trinity 2011)
Jeanne Cross (Divinity 2013)
Wenfeng (Winston) Gong (MSc-GH 2011)
Josh Greenberg (Trinity 2011)
Shaunda Helm (Law 2012)
Jessica Hudson (Medicine 2012)
Nimit Lad (Medicine 2014)
Christopher Lam (MSc-GH 2012)
Amanda Leahy (Divinity 2011)
Neha Limaye (Trinity 2011)
Kunal Mitra (Fuqua/Medicine 2011)
Alexa Monroy (Trinity 2011)
Cecilia Ong (Medicine 2013)
Christopher Paul (Nicholas 2015) —
Executive Committee Representative
Braveen Ragunathan (Trinity 2012) —
Executive Committee Representative
Nina Woolley (Trinity 2012)

DGHI at a glance [as of January 1, 2011]

FACULTY

Total number of faculty: **42**
 Total number of affiliates: **48**

EDUCATION AND TRAINING

DGHI-supported Education Programs

- Global Health Focus Cluster
- Global Health Certificate
- Global Semester Abroad
- Master of Science in Global Health
- Global Health module in School of Medicine curriculum
- Third-Year Study Program in Global Health
- Global Health Residency and Fellowship Pathway
- Global Health Doctoral Scholars
- Postdoctoral Fellowship
- Duke-Peking University Global Health Diploma

RESEARCH ACTIVITY

120 active global health research projects in **28** countries

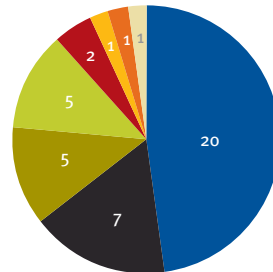
More than 200 peer-reviewed academic publications in 2010, including nearly **30** with a co-author from a low- or middle-income country

STUDENT PROJECTS

Total number of student project placements in 2010:
74 in 20 countries
 DGHI provided funds to support the projects of **41 students**

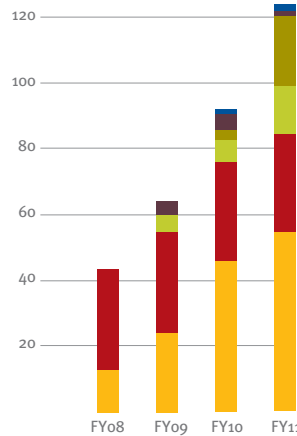
ADMINISTRATION

2010-11 DGHI Annual Budget



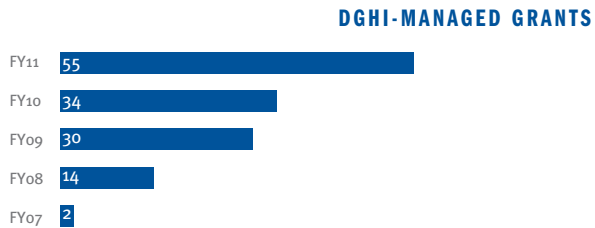
FACULTY BY SCHOOL

- School of Medicine
- Duke Global Health Institute
- Trinity College of Arts and Sciences
- Sanford School of Public Policy
- Nicholas School of the Environment
- Fuqua School of Business
- Pratt School of Engineering
- School of Nursing

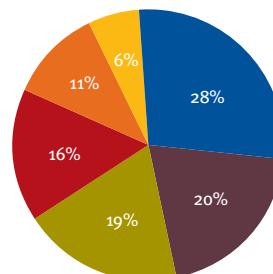


STUDENTS COMPLETING DUKE GLOBAL HEALTH EDUCATION PROGRAMS

- Postdoctoral Fellowship
- Global Health Residency and Fellowship Pathway
- Master of Science in Global Health
- Third Year Study Program
- Global Health Focus
- Global Health Certificate

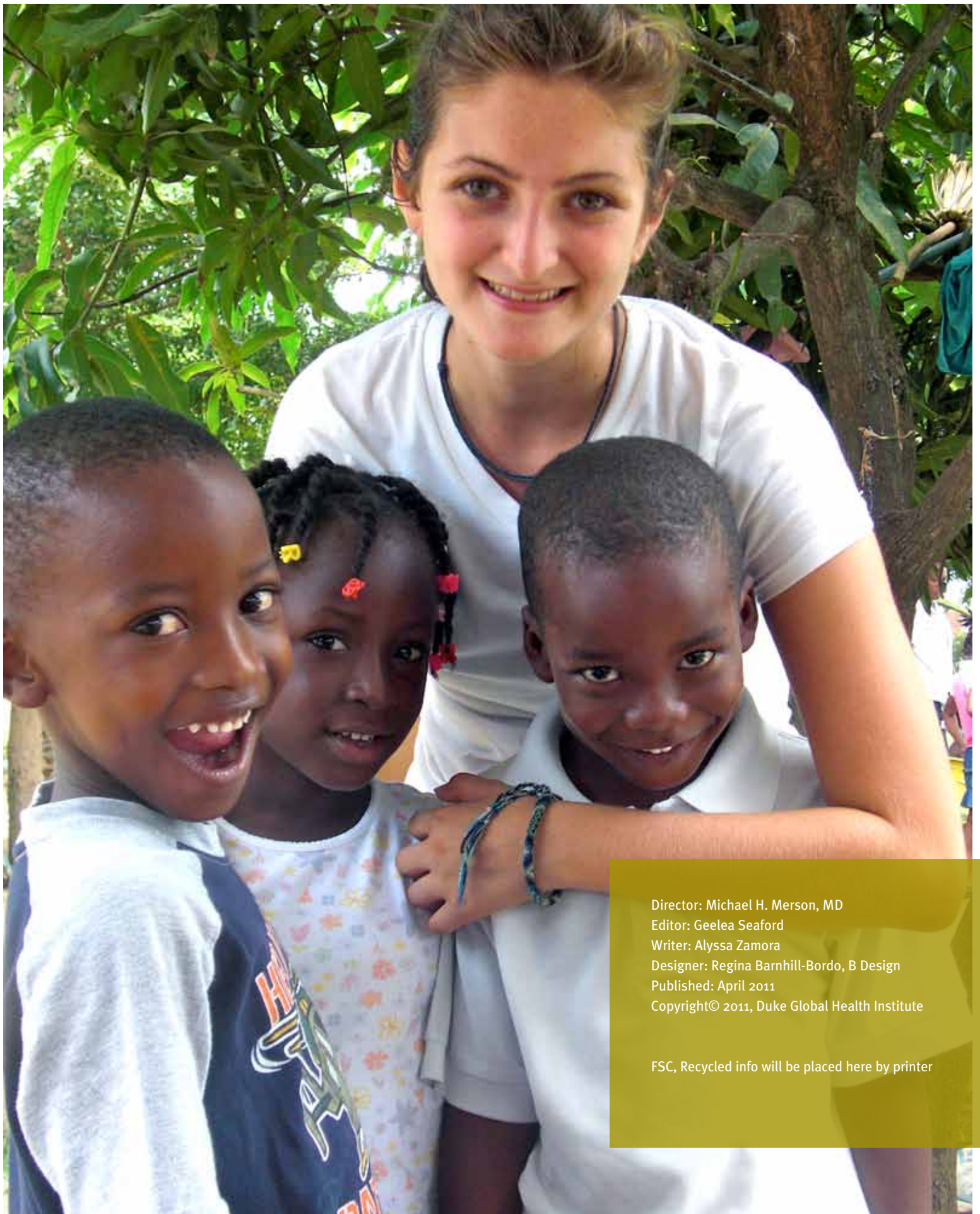


DGHI-MANAGED GRANTS



ANNUAL BUDGET

- Education
- Finance and Administration
- Research
- Office of the Director
- International Operations
- Communications



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