



昆山杜克大学
DUKE KUNSHAN
UNIVERSITY

Duke | GLOBAL HEALTH
INSTITUTE

GLOBAL HEALTH
RESEARCH CENTER

Progress Report
2013-2015

DRIVING CUTTING-EDGE RESEARCH THAT IMPROVES
HEALTH EQUITY IN CHINA AND AROUND THE WORLD

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Overview

Dear Colleagues,

China's health challenges are significant and multiplying. Virulent infectious diseases—particularly hepatitis, tuberculosis and sexually transmitted diseases—continue to vex our government officials and health professionals. Our health system at all levels is straining under inappropriate policies, complicated financing models, and serious maldistribution of the health workforce. Further demands brought by a growing burden of non-communicable diseases (NCDs) such as cancer, heart disease and diabetes have taxed the health system to its breaking point.

Fortunately, the Chinese government and global funding agencies understand that research is critical to unlocking solutions to these problems and to informing evidence-based policies.

The Global Health Research Center at Duke Kunshan University is ideally positioned to undertake global health research to better understand the health challenges China and other countries are facing. Our researchers have embarked on a number of projects with academic and private sector partners in China and around the world to generate new knowledge that will bolster our ability to prevent and treat diseases and strengthen health systems.

The Global Health Research Center is built upon the principles of scientific excellence and policy relevance. Using interdisciplinary approaches, we collaborate with partners on projects that address policy and systems, environmental health, NCDs, and One Health, a research area at the intersection of human, animal and environmental health.

The Center has experienced significant growth since its launch in the fall of 2013, now with nine faculty members, nine researchers and one administrative staff member. From September 2013 through December 2015, Center faculty have undertaken 12 research projects funded at a total of \$650,000 USD. We have recently been awarded six new research grants from the World Health Organization, United Kingdom funding agencies and the Chinese National Science Foundation for more than \$1.3 million USD for projects to be implemented from 2016-2018.

In addition, over the past two years, Center faculty and research staff have published 36 articles in peer-reviewed journals, including *The Lancet*, *Journal of the American Medical Association (JAMA)*, *American Journal of Public Health*, *Social Science and Medicine*, and *Environmental Health Perspectives*.

We are pleased to present this report of our progress. We look forward to expanding our collaborations and playing a meaningful role in improving health and health systems, in China and beyond.

Yours in health,

Shenglan Tang, MD, PhD, MPH, MSc
Director, Global Health Research Center
Duke Kunshan University

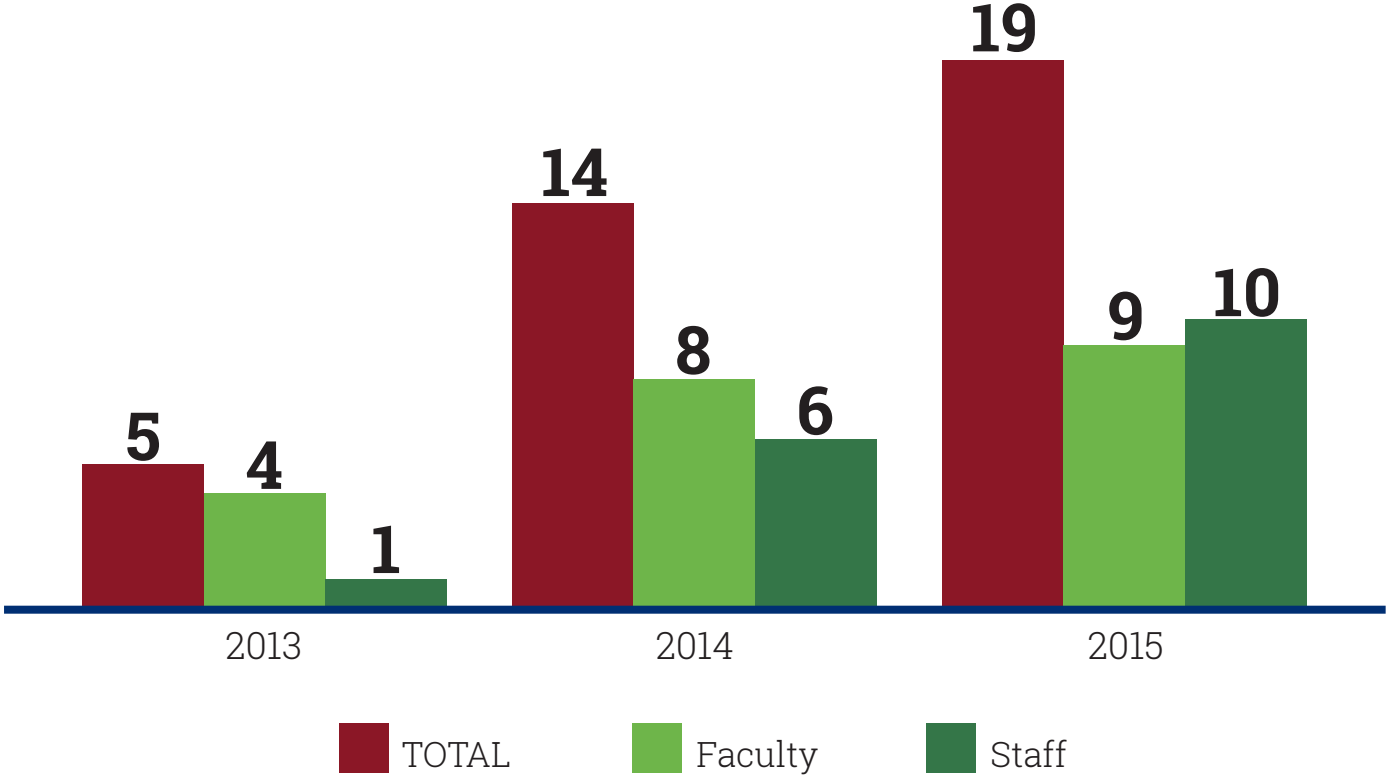


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The Center has experienced significant growth since its launch, with 9 faculty members, 9 researchers, 12 research projects and 36 published articles in peer-reviewed journals.

By the Numbers

FACULTY	RESEARCH	FINANCE
9 expert faculty	12 grants & awards from 10 sponsors	more than \$600K research budget

PERSONNEL GROWTH: 2013 - 2015



VISION STATEMENT

Eliminate health disparities in China and the world and achieve improved health for all.

MISSION STATEMENT

Improve health in China and the world by conducting high-quality research that leads to informed policy making and innovative approaches to health challenges.



Event Highlights

The Global Health Research Center holds regular events at Duke Kunshan University to convene global health experts on a broad range of issues. The following is a sampling of some of the events sponsored by the GHRC since its inception.

GLOBAL HEALTH PARTNERSHIP MEETING

Held bi-annually since 2012, sponsored by Duke Kunshan and Fudan Universities and the Duke Global Health Institute, the meeting brings together partners from 10 countries and nearly 20 institutes from China and other parts of Asia and Africa as well as Peru and The Netherlands.

GLOBAL HEALTH SEMINAR SERIES

These one-hour seminars are held multiple times each month and feature experts in global health research, policy and practice.

INAUGURAL KUNSHAN FORUM

May 2015
Non-Communicable Diseases and China's Health System Reform

The Kunshan Forum serves as a platform to disseminate research findings and encourage dialogue and collaboration among leading scientists, professionals, policymakers and other stakeholders engaged in education, the environment and healthcare.

Global Health Research Center faculty are invited to participate in meetings and present research findings all over the world. Here are some of the venues:

Lijing Yan presented at the World Health Organization's regional consultation on non-communicable diseases in the Southeast Asia Region, Bengaluru, India, August 2014.

Keith Dear participated in the Second Assessment Report on Climate Change and Cities, London, United Kingdom, September 2014.

Lijing Yan presented study results at the American Heart Association Scientific Sessions, November 2014.

Alba Amaya-Burns and Allan Burns presented at the 75th Annual Meeting of the Society for Applied Anthropology, Pittsburgh, Pennsylvania, USA, March 2015.

Shenglan Tang spoke at the inaugural meeting of the Chinese Consortium of Universities for Global Health at Peking University, March 2015.

Abu Abdullah, Chee-Ruey Hsieh and Lijing Yan presented lectures at a symposium titled, "Global Burden of Non-Communicable Diseases with a Focus on Vascular Disease," at Duke-National University of Singapore, March 2015.

Jake Chung attended an international symposium titled, "The Cancer Exposome: Innovation at the Intersection of Environmental Exposure and Disease Pathways," at Duke University, Durham, North Carolina, USA, April 2015.

Chaoyun Li and Lijing Yan gave presentations at the International Conference on Interdisciplinary Research on Long-Term Care and Healthy Aging at Zhejiang University in Hangzhou, China, May 2015.

The Global Health Research Center has been honored to host several distinguished visitors, including:

- Yangfeng Ge**, Director-General, Department of Social Development Research Center of the State Council
- Ming Gu**, Associate Director, Health Department of China's Democratic League at Kunshan
- Dale Huntington**, Director, Asia-Pacific Observatory for Health Policy and Systems, World Health Organization's West Pacific Regional Office
- Liqun Xu**, Chief Scientist, China Mobile Research Institute

Expert Faculty & Staff

Environmental Health



Jim Zhang, PhD, MS, (Program Head) is a Professor of Global Environmental Health at the Nicholas School of the Environment and the Duke Global Health Institute at Duke University and Duke Kunshan University. His research interests include developing novel biomarkers of human exposure and health effects, assessing health and climate co-benefits of air pollution interventions, and examining biological mechanisms by which environmental exposures exert adverse health effects. He has authored more than 140 peer-reviewed publications. His work has been featured in major international media outlets including Time, The New York Times, BBC, ABC, CBS and Yahoo News.

Alba Amaya-Burns, MD, MSc, is an Associate Professor of Global Health at Duke Kunshan University and Associate Professor of the Practice of Global Health at Duke University. Her primary research interests include global health disparities, tuberculosis, HIV/AIDS, neglected tropical diseases and maternal health. Amaya-Burns' most recent work focuses on multidisciplinary interventions to reduce the burden of infectious diseases and maternal health in the poorest populations in Central America. She has worked for the U.S. Agency for International Development, where she led infectious diseases programs in El Salvador. She has provided consultancy services to PAHO/WHO on tuberculosis and served as a member of the organization's Technical Advisory Group for the control of Antimicrobial Resistance in the Americas.



Ming Kei (Jake) Chung, PhD, MPhil, is a research scientist at the Global Health Research Center. He received his doctoral training at the Center for Exposure Biology at the University of California - Berkeley and has expertise in exposure biomarker assessment and discovery by immunoassays and mass spectrometry. He has research interests in adductomics, metabolomics and exposomics, with a recent focus on developing methods to study the blood exposome. His long-term research goals are to discover environmental risk factors for chronic diseases through exposome-wide association study and study the molecular effects caused by environmental exposures using systems biology approach.



Keith Dear, PhD, MA, MSc, is a Research Professor of Global Health at Duke University and Duke Kunshan University, and Director of the Master of Science in Global Health at Duke Kunshan University. Dear's disciplinary background is in biostatistics as applied to clinical trials, psychiatric epidemiology, environmental epidemiology, and health impact assessment and projection. His current research focuses on global environmental health, particularly air quality and vector-borne disease in relation to climate change. He is an associate editor of Environmental Health Perspectives and a contributing author in Working Group II of the Intergovernmental Panel on Climate Change.

Zhan Wang, MEM, is a Research Assistant at the GHRC. He received a B.S. in Environmental Science and a B.S. in Psychology from Peking University, and a Master of Environmental Management in Environmental Economics from Duke University. His research interests include valuation of ecosystem services and environmental assets, statistical analysis of air pollution and environmental policy evaluation.



With improvements in economic status and lessons learned from the environmental policies of other nations, China has an opportunity to address its environmental health challenges and become a recognized leader in global environmental health. The Environmental Health research program at the GHRC undertakes studies on environmental health hazards, their relationships with crosscutting issues affecting human health, and approaches for reducing or eliminating these hazards.

Non-Communicable Diseases



Lijing L. Yan, PhD, MPH, (Program Head) is an Associate Research Professor at the Duke Global Health Institute at Duke University and Duke Kunshan University. Her main areas of research are chronic disease prevention and control (cardiovascular disease and diabetes in particular), economic evaluations in healthcare, and integrated health management. In recent years, she has focused on cardiovascular prevention and control in rural China through primary care and community-based approaches.

Abu Abdullah, PhD, MD, MPH, is an epidemiologist and behavioral scientist and a Professor of Global Health at Duke Kunshan University and a Research Professor of Global Health at Duke University. Abdullah's teaching and research focus on the prevention and control of chronic non-communicable diseases in low- and middle-income countries through programs that address major risk factors such as tobacco use, poor diet and physical inactivity. He also conducts epidemiological, behavioral and policy research on other emerging aspects of global health.



Chaoyun Li, PhD, is a Postdoctoral Research Fellow at the Global Health Research Center. He received his bachelor's degree and master's degree at Southeast University, China and PhD degree at the University of Tuebingen, Germany. His research interests include non-communicable diseases, neurodegenerative diseases, and data management and analysis.

Shu Chen, MSc, is a Research Assistant with the Global Health Research Center. She holds a bachelor's degree from Peking University and a master's degree in Global Health from Duke University. She completed internships with the World Health Organization (WHO), the International Partnership for Innovative Healthcare Delivery, and the George Institute for Global Health prior to joining Duke Kunshan University. She works on health policy and systems projects.



Xiaolin Xu, M.M, is a Research Assistant with a bachelor's degree in medicine and a master's degree in medicine of epidemiology and health statistics. Formerly with the China CDC, WHO, a healthcare consulting company and hospital, Xiaolin brings research perspectives on and interest in disease control and prevention, health systems and health policy, and health metrics and evaluation.

Enying Gong, MSc, is a Research Assistant at the Duke Kunshan University Global Health Research Center. She received her bachelor's degree at Peking University and MSc in Global Health from the Duke Global Health Institute. She interned at the World Health Organization, Duke Hospital and the George Institute for Global Health prior to joining DKU. Her research interests include non-communicable diseases, injuries and mHealth.



The Non-Communicable Diseases (NCDs) research program at the Global Health Research Center currently focuses on heart disease, stroke, hypertension, and diabetes and common risk factors for these conditions including tobacco use, unhealthy diet, inadequate physical activity, overweight/obesity, and mental illnesses. Our emphases are on wellness and prevention and how to translate scientific evidence to practices and policies.

Health Policy and Systems



Chee-Ruey Hsieh, PhD, MA, (Program Head) is a Research Professor of Global Health at Duke University and Duke Kunshan University. An expert in health economics and applied microeconomics, his research focuses on healthcare financing, pharmaceutical policy and access to medicines, the effectiveness of disease prevention strategies and policies, and healthcare and health outcome evaluation. Hsieh's research takes place in China, India, Singapore and other countries in Southeast Asia.

Di Dong, PhD, is a Postdoctoral Research Fellow with the Health Policy and Systems Group. Di Dong received her Bachelor's degree in Biomedical Sciences from the National University of Singapore, and PhD in Health Services and Systems Research from the Duke-National University of Singapore Graduate Medical School. She has conducted research in health economic evaluations and health policies related to genetic testing and new medical technologies, understanding patients' preferences and medical decision making, applying behavioral economics in healthcare, and nutritional epidemiology.



Weixi Jiang, MSc, is a Research Assistant with a B.S. in chemistry and a B.A. in economics from Peking University, and a master's degree in Global Health from Duke University. Her research interests include health system financing, pharmaceutical policy assessment and health outcome evaluation.



Niying Li, MSc, is a Research Assistant who graduated from the MSc program in Health Systems and Public Policy from University of Edinburgh. She is interested in violence against health professionals and pharmaceutical policy.



Jeffrey Moe, PhD, is a Professor of the Practice of Global Health at Duke University. His research interests include new research and development incentives for neglected tropical and infectious diseases; and identification, scaling and replication of global healthcare delivery innovation and healthcare financing and payment reforms in the US. Prior to joining Duke University, Moe was an executive at GlaxoSmithKline.

As China transitions to a market economy, the government aims to establish a healthcare system that serves all Chinese citizens and ensures their access to essential healthcare through either social health insurance or government-supported prepayment schemes, and by overhauling health facilities, training of health personnel and the equitable distribution of resources. The Health Policy and Systems research program at the Global Health Research Center conducts research that monitors and evaluates the progress of the health reforms being enacted, with the goal of informing better policy decisions.

Affiliated Faculty



William Pan, PhD, MPH, MS, is an Assistant Professor of Global Environmental Health at the Nicholas School of the Environment and the Duke Global Health Institute at Duke University. His research focuses on population, health, and environmental interactions in developing countries, with particular interest in translational research directed toward sustainable development activities and global environmental health.



Rukmini Balu, PhD, MBA, is the Director of Strategy and Partnership Development at Duke Medicine Global and an Adjunct Assistant Professor at the Duke Global Health Institute. Her interests include healthcare strategy, healthcare reform and reimbursement, and the health and economic implications of non-communicable diseases, especially in emerging economies.



Allan Burns, PhD, is a Visiting Professor at Duke Kunshan University. He is an applied anthropologist who has carried out research on indigenous health and healing in Mayan communities of Central America, among American Indian tribes, and Pacific Islanders. He has collaborated with medical researchers on health disparity research among glaucoma patients, stroke patients, and smoking initiation, and immigrant maternal and child health. He has served on technical committees of the Pan American Health Organization on indigenous people and infectious diseases and as a consultant to several Latin American universities on reform towards intercultural university medical education.



Kaikai Yang is administrative assistant at Global Health Research Center. She graduated from Yunnan Normal University in 2007 with a Bachelor's degree in English. Prior to joining DKU, she worked at the International Business School Suzhou (IBSS) in Xi'an Jiaotong-Liverpool University as Personal Assistant to the Dean/Deputy Dean.

Project Highlights

Health Policy and Systems Research

Shenglan Tang, director of the Global Health Research Center, leads projects related to health policy and systems, on topics such as healthcare access and financing, pharmaceutical policy, effectiveness of disease control and the evaluation of health outcomes.

TUBERCULOSIS CARE AND TREATMENT FALLS SHORT, BUT GOVERNMENT MOVES TO MAKE IMPROVEMENTS

More than half of tuberculosis (TB) patients in Chinese hospitals are treated incorrectly, and the over-use of second-line TB drugs poses a serious problem, according to researchers from a project involving the GHRC, the China Centers for Disease Control and Prevention (China CDC), the Chinese National Health and Family Planning Commission and the Bill & Melinda Gates Foundation.

The collaborative research project, which examined TB care and medication use in China from 2009-2015, found that TB care in Chinese hospitals is inconsistent, with both an over-use and under-use of treatments. This discrepancy results from a combination of inappropriate economic incentives, lack of knowledge about infectious disease control and misguided health insurance policies. Those findings and others were published in nine papers in January 2015 in *Infectious Diseases of Poverty*. Some of the researchers' recommendations are already being implemented at the project sites.

Basic TB care in China is free, but the researchers found that the more complex drug-resistant disease results in significant additional charges related to medications such as liver protection drugs, unnecessary diagnostic tests and patient transportation.





The Gates Foundation will support the scale-up of successful policy interventions for three years beginning in 2016. The GHRC was asked to lead monitoring and evaluation of that effort.

Phase One: 2009-2012

The first phase of the project focused on diagnosis, treatment and financing of care related to MDR-TB. TB care has been shifted from the China CDC to local general hospitals, and a number of county-level hospitals were designated as TB hospitals. TB clinical care in China is now funded mainly by health insurance, rather than earmarked government funding.

Phase Two: 2012-2015

Researchers and collaborators developed and implemented new financing models for TB and MDR-TB care and control in three cities across China: Zhengjiang City, Jiangsu Province, in the eastern region; Yichang City, Hubei Province, in the central region; and Hanzhong City, Shaanxi Province, in the western region.

Multiple parties representing health insurance management agencies, government agencies responsible for reducing poverty, municipal governments and international healthcare finance experts developed two major reforms for the financing of TB care:

- 1.** All of the health insurance providers agreed to increase reimbursements to hospitals for the more complex MDR-TB-related inpatient and outpatient care.
- 2.** Hospitals were reimbursed using case-based payment method, instead of fee-for-service, to contain costs.

These measures were implemented in 2014 at all three research sites.

The research team has submitted its final report. According to the GHRC's Shenglan Tang, the China CDC has already made policy changes in its TB diagnosis and treatment guidelines. In addition, the government has initiated financial interventions, including additional reimbursements to hospitals and subsidies to patients for TB care, as well as new incentives to hospitals to encourage appropriate use of drugs.



RESEARCHERS ADVISE CHINESE GOVERNMENT ON PHARMACEUTICALS

While China has made significant healthcare reforms over the past several years, it faces particular challenges in drug supply: how medicines are manufactured, distributed and priced. Universal healthcare coverage in China has led people to seek more care, which has resulted in more money being spent on medications. The government estimates that up to 40 percent of its total health expenditure is being spent on pharmaceuticals.

There is concern that drug spending is on non-essential medications and overall drug quality is low due to weak regulation. In addition, government health reforms require hospitals to operate by generating much of their own revenues, which leads to over-utilization: too many drugs being prescribed.

The State Council of the Chinese government asked researchers from the Global Health Research Center to analyze how four countries—Australia, Germany, India and Thailand—manage their national systems to provide high quality drugs that are affordable and accessible.

GHRC researcher Jeffrey Moe led the study that focused on manufacturers, procurement and pricing, distribution and utilization. He worked with experts in each of the four countries to learn the extent that their government is directly involved in the manufacture and provision of pharmaceuticals and where they outsource these tasks to the private sector.

Moe and colleagues presented their report to government officials in December 2015 from which the Development Research Center of the State Council will make policy recommendations in early 2016.

Pharmaceutical manufacturing, procurement and pricing are major issues in health systems all over the world. This study provides insights from four exemplary countries on these issues and will have application to China's drug challenges, and perhaps beyond.

- Jeffrey Moe



Environmental Health Research

Jim Zhang leads environmental health research projects, on topics such as air pollution exposure and health impact assessment. He and his team have discovered novel biomarkers that show human exposure to toxins in the air and have examined the biological mechanisms by which environmental exposures cause adverse health effects. They also assess health benefits as a result of air pollution interventions at the public policy and household levels.

BUILDING FOR HEALTH – HEALTH EXPERTS PARTNER WITH ARCHITECTS ON INDOOR AIR QUALITY PROJECT

The 2012 warning by Zhong Nanshan, former president of the Chinese Medical Association, that air pollution could become China's greatest health threat was certainly prescient. Today, China's largest cities are so smog filled that residents often can't see the sky. And incidence of diseases, resulting from high levels of air pollution—such as asthma attacks and emergency room visits for cardiopulmonary ailments—is on the rise. Air pollution can even cause death due to exacerbated lung and heart failure.

These factors have led GHRC researcher Jim Zhang and colleagues to expand their environmental health research portfolio to include projects examining the effects of air pollution. Zhang is partnering with Beijing's Tsinghua University's program in building technology and science on a five-year project to study whether building design elements can prevent air pollution particles from entering the indoor space. The study is funded by the National Natural Science Foundation of China.

We're privileged to be partnering with one of China's top universities on this project.

- Jim Zhang



Zhang contends that it is relatively easy to test the efficiency of technology in removing particles, by measuring, for example, particle concentrations in the air before and after a filtration system is installed within a building's heating and cooling system. What's difficult to measure, he says, is the efficacy of the technology in improving occupants' health. It is unclear if the well-intentioned filtration technology helps or harms human health.

“We have developed a cutting-edge biomedical approach for studying this,” says Zhang. By testing urine, blood and breath, the research team can look at the potential for health effects at the molecular and physiologic levels. For example, he says, some biomarkers in the blood and in the breath show lung or systemic inflammation, which is a risk factor for numerous diseases. An elevated level of oxidative stress in the body—a risk factor for many diseases that can accelerate the aging process—can also be measured in Zhang’s lab.

The current project looks at whether the presence or absence of air pollution-abating technology in residential and commercial buildings affects peoples’ health.

In the midst of the project, Zhang’s team made an interesting finding. They had evaluated a so-called electrostatic precipitator—a metal plate on whose surface electrical charges could be placed. When the outside air enters the air duct and passes over the plate, the air will possess the opposite electrical charge so that the plate

can effectively “zap” any charged particles onto the plate, removing them from the air stream and preventing them from entering the indoor space. But the engineers hadn’t accounted for the fact that this technology also generates ozone as a byproduct of the charging process.

“So, while the charged metal plate was effective in removing harmful particles, it had a potential secondary, quite adverse, effect on human health,” says Zhang. Indeed, preliminary results have already shown that occupants’ exposure to ozone is associated with worsened biomarkers.

The project has demonstrated the advantage of having multiple disciplines examining a problem from several angles. In addition to the building technology’s effects on human health, the team is considering cost, efficiency and practicality of various indoor air quality technologies. In addition to faculty from Tsinghua University and Duke Kunshan University, the project involves post-doctoral fellows and PhD students from Duke, Duke Kunshan and Tsinghua Universities.

Non-Communicable Diseases Research

Lijing Yan leads projects related to non-communicable diseases, including heart disease, stroke, hypertension and diabetes, as well as economic evaluations of healthcare and innovative translational health system and services research.


STROKE RESEARCH FEATURES SIMPLIFIED MANAGEMENT AND MHEALTH

Non-communicable diseases—including stroke—are a major health concern in China

Stroke is the leading cause of death in China, accounting for nearly one quarter of deaths in 2005. And stroke mortality in China is projected to double in the next 20 years, from 2 million to 4 million deaths. The socioeconomic burden of stroke survivors in China is substantial. Stroke is the leading cause of disability in rural China. High rates of hypertension and high salt intake correlate with a high incidence of stroke in the provinces situated along China’s C-shaped “stroke belt.” Yan and her colleagues are focusing their work on villages in rural China.

Mobile phone technologies aimed at patients and community health workers

Mobile phones are ubiquitous in China: an estimated 1.2 billion cell phones are owned by the country’s 1.3 billion people and their use is nearly universal by people under age 50. That’s why it made sense to incorporate the use of a mobile phone app in a study Yan and her colleagues conducted in rural areas of China and India.



The randomized control trial called SimCard (for Simplified Cardiovascular Management) involved 2,086 individuals from 27 villages in Tibet, China and 20 villages in Haryana, India who were at high risk of cardiovascular disease, including heart disease and stroke. Healthcare in rural Chinese villages is typically provided by community health workers who are not trained physicians. For the study, the community health workers were trained by physicians to manage this project by offering medication and lifestyle reminders to study participants in the intervention group. The health workers received prompts and assistance to do so via an app on their phones.

The study found that this simple cardiovascular management program improved quality of primary care and clinical outcomes in resource-poor settings in India and China. Researchers found that participants in the intervention group had a 25 percent increase in their use of blood pressure medication, significantly greater use of aspirin and lower blood pressure as compared to the control group. The lifestyle factors of smoking cessation and salt reduction remained unchanged in both groups.

The results were published in the September 2015 edition of *Circulation*.

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Through this project, we hope to inform agencies and policy-makers on advantages and disadvantages of bundling NCD care and control within the existing healthcare system to help mitigate the growing burden of NCDs.

- Abu Abdullah

Team brings stroke rehabilitation to rural China

For the vulnerable population of stroke patients living in resource-limited areas, prevention and rehabilitation care are largely unavailable. Most rural stroke patients rely on their family members for care after being discharged from the hospital. With this in mind, Yan and her colleagues established a randomized controlled trial known as “RECOVER” in three provincial settings—Liaoning in the northeast, Ningxia in the northwest and Chongqing in the southwest.

In the two-year study, which began in 2014, rehabilitation specialists train nurses in county hospitals who in turn train family caregivers. The nurses also provide advice over the phone to caregivers after the stroke patients return home from the hospital. All aspects of the study—from recruitment and baseline measurement to intervention, follow-up care and evaluation—are guided by an Android mobile phone app directed at the nurses. The study involves 300 stroke patients in three rural hospitals.

The success of the intervention will be measured after six months by the Barthel Index, which looks at activities of daily living and physical functioning, such as mobility, self-care and toileting. “Our hope is that the results will lead to improved stroke rehabilitation in resource-limited settings,” said Yan. “If proven effective, this model has the potential to be scaled up in other settings.”



To the best of our knowledge, this is the first study of its kind that combines nurses and family caregivers in the rehabilitation of stroke patients in rural China

- Lijing Yan

Building on past successes

Over the past decade, Yan and her colleagues have conducted several research projects on stroke, and they will look to apply successful elements in a new project funded by the UK’s Medical Research Council, the Department for International Development (DFID), Wellcome Trust and Economic and Social Research Council (ESRC).

The project, called SINEMA (for System-Integrated Technology-Enabled Model of Care), will test whether village doctors and family caregivers equipped with digital health technology—a mobile phone app and text messages—could provide essential care to stroke survivors in rural China.

“We hope to build the capacity of healthcare workers in rural villages and improve the health of stroke survivors in a model that can be replicated and scaled in similar resource-challenged areas of the world,” said Lijing Yan.

The study will be conducted with 1,250 stroke survivors in 50 villages in the northern province of Hebei, just outside Beijing.

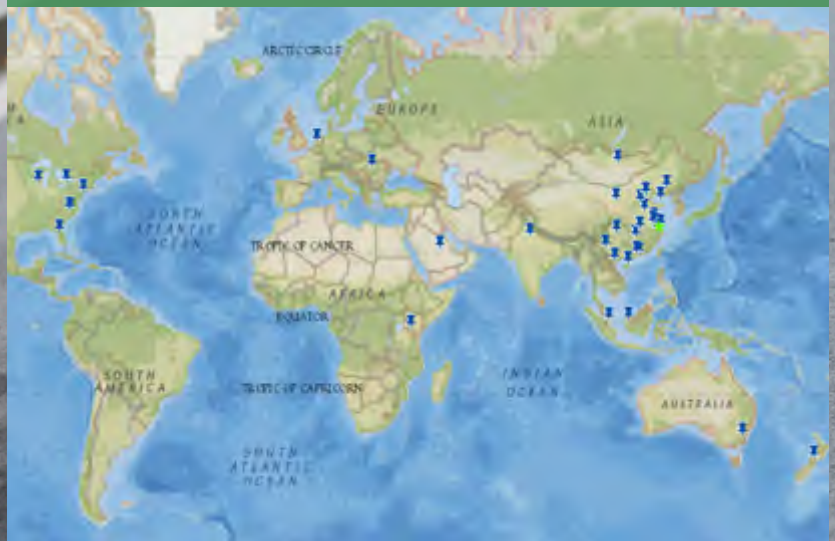


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We continually seek to translate the results of our studies to the community setting. Implementation science seeks effective ways to prevent and treat disease so that patients can reap the benefits of our work.

- Lijing Yan

GHRC Global Collaborators



Research Awards

awards in 2014 **5**
7 awards in 2015

PI	SPONSOR	PROJECT TITLE	COST
Keith Dear	Australia Medical Research Council	Climate Change Impacts on Workplace Extremes: Health Risk Estimates and Adaptive Options	¥ 107,940 \$ 20,000
Chee-Ruey Hsieh	WHO	Improving Accessibility and Rational Use of Medicines by Developing Equitable and Sustainable Health Insurance Schemes in China	¥ 160,000 \$ 25,397
Chee-Ruey Hsieh	Gates Foundation	TB/MDR-TB Control Phase 2: Innovative Approaches & Tools to Establish Comprehensive TB Control Models in China	¥ 613,660 \$ 100,175
Qian Long	Gates Foundation	Developing and Evaluating Finance Approaches for TB/MDR-TB Care and Control in China	¥ 125,073 \$ 20,398
Lijing Yan	NHFPC	Study on Utilization and Expenditure of Health Services among Residents of Jiangsu Province, China	¥ 435,000 \$ 66,923
Lijing Yan	Hamilton Health Sciences Corporation	TAKEmeds Program: The adherence and knowledge exchange heart and stroke medicines study (Phase 0-Intervention Development)	¥ 166,223 \$ 31,641
Jim Zhang	NSFC	The Influence of Air Filtration Strategies on Occupant Health Indicators	¥ 1,150,000 \$ 182,540
Shenglan Tang	Amsterdam Health and Technology Inst.	Supporting the Operation of Living Lab in Chongqing, China	¥ 405,192 \$ 60,000
Shenglan Tang	AstraZeneca	Developing National Strategies for Key Infectious Disease Care and Control in China	¥ 422,000 \$ 66,984
Jim Zhang	Duke University	The Combined Influence of Outdoor and Indoor Pollutants on Acute Respiratory Response of Children in China	¥ 1,209,226 \$ 190,130
Shenglan Tang	Johnson & Johnson	The Research of International Pharmacy Policies	¥ 300,000 \$ 47,619

Selected Publications

The Global Health Research Center's productivity is evidenced by the number of articles published by faculty in top peer-reviewed scientific journals – 36 publications from 2013-2015. The following is a representative list of GHRC faculty publications. In addition, GHRC Director Shenglan Tang, serving as guest editor, organized two special issues on health systems in Asia and tuberculosis/multiple drug-resistant tuberculosis control in China in *Social Science and Medicine* and *BMC Infectious Diseases of Poverty*, respectively.

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Tang S. Developing more equitable and efficient health insurance in China. Paulson Policy Memoranda. October 6, 2014, Paulson Institute, Chicago.

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Long, Q., et al., Caesarean section rates in Mozambique. *BMC Pregnancy and Childbirth*. 2015; 15(1): p. 253.

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Dear K, Wang Z. Climate and health: mortality attributable to heat and cold. *The Lancet*. 2015; 386(9991):320-322. doi: 10.1016/S0140-6736(15)60897-2.

Abdullah AS, Hua F, Khan H, Xia X, Bing Q, Tarang K, Winickoff JP. Secondhand Smoke Exposure Reduction Intervention in Chinese Households of Young Children: A Randomized Controlled Trial. *Academic Pediatrics*. 2015 Aug 20. pii: S1876-2859(15)00216-8. doi: 10.1016/j.acap.2015.06.008. [Epub ahead of print]

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Over the past two years, Center faculty and research staff have published 36 articles in peer-reviewed journals including *The Lancet*, *Journal of the American Medical Association (JAMA)*, *American Journal of Public Health*, *Social Science and Medicine*, and *Environmental Health Perspectives*.

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