

CAROLINA PUBLIC HEALTH

Gillings School of Global Public Health

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INNOVATION + DISCOVERY

Health behavior students Liz Chen and Cristina Leos designed an app to help middle-school kids learn about reproductive health.



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from THE DEAN

Greetings to our readers—

Presidential campaigns spark national conversations about important issues, the role of government and the future of our democracy. The campaign that ended Nov. 8, 2016, certainly ignited conversations — and not all of them were civil or grounded in fact.

Nevertheless, democracy proved stronger than the intense feelings created by the campaign. In many conversations about the election, I was relieved that most people understood how important it is to exercise one's right and responsibility to participate in the process, culminating in the act of voting.

After all these years, I still treasure the right to vote and always get to early voting the first or second day. In the last election, a lot of statements were made about important issues such as immigration, inequality and the cost of health care. Not enough of substance was said about these and other topics, such as responsible gun control. They all are public health issues, with critical policy implications. Now, it is time to move on, regardless of how we feel about the outcome, and work to achieve improvements in the public's health.

Data from well-designed research are an essential foundation for good policy. This issue of *Carolina Public Health* features faculty and student researchers whose work yields data upon which policy makers rely when making decisions to improve health, save lives and protect the environment at local, state, national and global levels.

Providing data, evidence and proven programs that contribute to policy development is a way that schools



Photo by Brian Strickland

Dean Barbara K. Rimer

of public health provide great return on investment. I am proud that faculty members in every Gillings School department have contributed to policy over the years—from the environment to insurance coverage, from the use of taxes to reduce consumption of sugary beverages to tobacco regulation, to neonatal screening and more.

There are no guarantees, but *without* research that meets the highest scientific standards, chances for good policy making are diminished. Developing policy is a long process requiring a lot of evidence—and persistence.

Research on neonatal screening for cystic fibrosis, begun nearly 20 years ago by Dr. Michael Kosorok, W.R. Kenan Jr. Distinguished Professor of biostatistics, and colleagues resulted in a 2004 Centers for Disease Control and Prevention recommendation that states

begin screenings. North Carolina and Texas – the last states to implement screening – did not begin until 2009. Still, Kosorok considers himself fortunate to have seen policy change where many who do excellent research do not.

“Since you don’t have control over these things as a scientist, it’s important to keep doing the good research that is essential to making informed decisions,” he emphasized.

This “good research” is a common denominator in the successes of faculty members including Drs. Ralph Baric, Noel Brewer, Jacqueline MacDonald Gibson, Barry Popkin and Ilene Speizer. Students featured in this issue have learned their lessons well and are on the way to being formidable contributors to good health policy. All have compelling and inspiring stories in this issue, marked by their curiosity, collaborations, perseverance and dedication to conducting rigorous high-quality research as free from bias as can be designed.

When it comes to having an impact upon policy, the stakes are high. In just these few examples, success ultimately means significant reductions of deaths due to smoking and obesity, fewer illnesses due to contaminated well-water and unprotected sex, fewer pregnancies affected adversely by the Zika virus, and safer hospitals for newborns and other patients.

The dedication of our faculty, students, alumni and staff in tackling complex problems and the inequities that often underlie them – and the commitment of those who support their research – should give us hope for the future of our nation and world, far beyond the next four years.

Warmest regards,

Barbara K. Rimer

THOUGHTS ON

INNOVATION LEADERSHIP

With this issue of *Carolina Public Health*, we introduce a recurring feature on innovation that will highlight projects by Gillings School faculty and staff members and students. By exploring the process through which a public health need is identified and met, we hope to illuminate the journey – from first creative spark, to earnest inquiry and collaboration, to the data-driven implementation of a program or system.



Photo courtesy of Innovation Next

Cristina Leos, Elizabeth Chen and Vichi Jagannathan

This issue features the student team of Liz Chen and Cristina Leos (both health behavior doctoral students at the Gillings School) and their colleague Vichi Jagannathan, Master of Business Administration candidate at Yale University's School of Management. (See page 7.) The three women, who recognized the need for more effective reproductive health education for young adolescents, won \$405,000 to develop an app for middle-school students, through which the students can obtain information and support about sexual and reproductive issues.

As a preamble to the first innovation article, we invited **Jamie Bartram, PhD**, to share some thoughts about the importance of leadership in innovation, using examples from The Water Institute at UNC, which is based in the Gillings School. Bartram is Don and Jennifer Holzworth Distinguished Professor of environmental sciences and engineering and director of The Water Institute.

A DISCUSSION WITH

Dr. Jamie Bartram



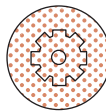
ATTENTION

Look up “innovation” in a dictionary, and you may be in for a surprise. It is “the act or process of introducing new ideas, devices or methods” — a far wider definition than the usual focus on new gizmos and services. The word also refers to “changing something,” as well as making something new.

Innovations matter in public health. They fill gaps in our arsenals, offer improved alternatives, and increase impact and efficiency of our interventions.

Seven years ago, as we conceived The Water Institute at UNC, we wanted its focus to be on *innovative, visionary approaches that transform the water and sanitation landscape*. Since then, we have led innovations across the spectrum of devices, ideas and methods, and have aimed both to adapt existing options and bring forward entirely new ones.

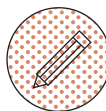
INNOVATION IN DEVICES



Chitosan is extracted easily from discarded crustacean shells. The substance combines characteristics attractive for water treatment; it is highly absorptive, nontoxic, biodegradable, abundant and cheap! Its potential is vast – for treatment of small volumes of water in underserved households, through dispensing units; for *in situ* treatment in wells; and potentially for industrial-scale treatment plants.

Postdoctoral fellow Lydia Abebe, PhD, is leading innovation to employ chitosan for water safety, work that is supported by a Gillings Innovation Lab [sph.unc.edu/research/gil]. Abebe has determined which doses of chitosan are effective, and she is beginning to develop prototypes. Along the way, she has benefited from a UNC CUBE social innovation venture [tinyurl.com/unc-social-innovation] to explore routes to commercialization and entrepreneurship.

INNOVATION IN METHODS



Continuous quality improvement (CQI) has had dramatic and well-documented impacts in the auto and health-care industries, delivering improvements in quality and efficiency. CQI had not been applied to drinking water supply, however, despite the

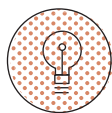
TO INNOVATE IS TO CHARACTERIZE, UNDERSTAND AND TACKLE PROBLEMS – AND IN SO DOING, TO *deliver impact and efficiency that improves lives and livelihoods.*

fact that high water-system failure rates have adverse consequences for health and the economy.

Across sub-Saharan Africa, at any given time, one-third of village handpumps are not functioning. Contamination of small water systems is frequent, in developed and developing countries alike. Our team, led by project manager Kaida Liang, MPH, works with large implementing agencies, including World Vision, to reform how projects are evaluated – aiming to move from conventional assessment (a pass or fail at the end of a project, after as much as three to five years) to faster learning and improvement cycles of one year or less.

In Ghana, one cycle of improvement alone doubled the proportion of households with safe water, and a second cycle with similar potential is already in hand. Delivering these changes increases impact and efficiency, but if we're to have innovation in "methods," there must be widespread adoption. Therefore, we are collaborating with other partners to apply CQI in water programs in 10 countries and intend to see the idea adopted as global policy.

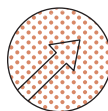
INNOVATION IN IDEAS



Despite advances in medicine, safe health care is compromised by poor environmental conditions in health-care facilities. The Water Institute's strategic plan identified health-care settings as a key opportunity for exerting influence. We set out to establish the idea of improving this situation as an opportunity for both the health-care and water and sanitation sectors. We published an "opinion piece" to initiate discussion, analyzed monitoring potential and prepared a first-of-its-kind review of surveys of health-care facilities.

That review documented that 40 percent of 66,000 health facilities in 54 low- and middle-income countries did not have safe water. One-third were without soap for handwashing, and 20 percent lacked a toilet. Our work contributed to the inclusion of these issues in international policy – as a global action plan for the World Health Organization and in monitoring of the U.N.'s Sustainable Development Goals. Our compelling evidence is driving additional partners to contribute, and our "innovation in ideas" is now focused on ensuring that this is seen as an opportunity for health-care providers to reduce costs and impacts of health-care-acquired infection and confront the challenge of antimicrobial resistance.

LEADING THE WAY



Leadership in innovation means embracing the breadth of that concept and applying it appropriately. New and adapted devices are needed for some challenges, such as water treatment. For other purposes, new perspectives and new thinking are required – sometimes including naming the proverbial elephant in the room. Often, tools and methods already proven in other applications can be transferred, adapted and applied to great benefit. To innovate is to characterize, understand and tackle problems – and in so doing, to deliver impact and efficiency that improves lives and livelihoods.

— Dr. Jamie Bartram

At right: Elizabeth Chen (left) and Cristina Leos, health behavior doctoral students, won a total of \$405,000 to develop 'Real Talk,' an app that helps young adolescents learn about sexual and reproductive health. Their award was the only one given to a student group and is the largest ever made to a student group at UNC-Chapel Hill.



AND THE WINNER IS...

*An Innovative
Sex-Ed App!*

During spring and summer 2016, two Gillings School doctoral students, Elizabeth Chen and Cristina Leos, along with a Yale colleague, Vichi Jagannathan, set themselves an ambitious goal – to talk to more than 150 middle-school students about sexuality, self-image, changing bodies and relationships with peers. You know – *the easy stuff*.

“We had no idea if the students would talk to us,” says Chen. “We were strangers, after all. But they were completely willing to be open with us about everything.”

The team obtained permissions from the students and their parents, and then conducted several months of interviews with students. What they learned laid the groundwork for “Real Talk,” a sex-ed app that teaches kids about sexuality through storytelling.

The idea originated four years earlier, when Liz Chen began teaching science at a rural eastern North Carolina high school, through the Teach For America program. Vichi Jagannathan, a fellow Princeton alumna, coincidentally was teaching in the adjacent classroom. During their time at the high school, they saw many of their students struggling to cope with unplanned pregnancies.

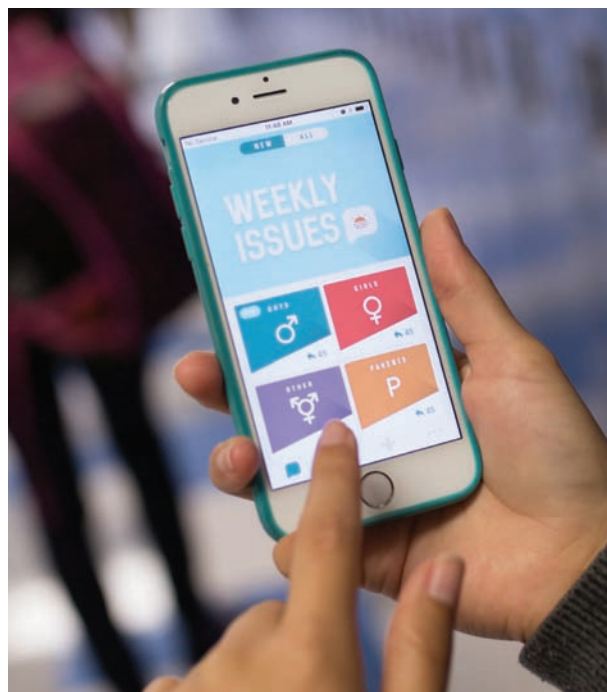
After teaching, Jagannathan entered the Yale University School of Management, and Chen came to study health behavior at the UNC Gillings School – but they stayed in touch. After Chen met Cristina Leos, also in health behavior, the three women decided to join forces to transform health education for underserved middle-school students.

The idea for the “Real Talk” app began in 2016 when Chen, Leos and Jagannathan entered the Innovation Next competition, which challenges innovators across the country to find technology solutions that will redefine sex education for the 21st century.

“The three of us already had been communicating regularly about developing online sex-ed content,” says Jagannathan. “It seemed this program could take our idea to a different level.”



Photos by Brian Strickland



(Top) Abigail Roberts and Demonte Edwards compare their impressions of the Real Talk app (shown below).

*Everything
in this app
is grounded
in something
a student
told us.*

— VICHİ JAGANNATHAN





Photo by Brian Strickland

Innovation Next awardees Cristina Leos (standing) and Liz Chen (in red) meet with middle-school students to review a prototype of their app, Real Talk. Left to right are Abigail Roberts, Shamion Nelson, Leos, Desinea Watson, Chen and Demonte Edwards.

As one of the ten finalists in the competition, the team received \$80,000 in development funds and the opportunity to collaborate with IDEO, one of the world's premier innovation and design firms. IDEO's "design thinking" methodology, which puts people's needs at the heart of every design decision, was perfectly in line with the team's vision for their app.

They set to work interviewing middle-school students and quickly made a discovery. Students are engaged by sex education when it is told in the form of stories from their peers, but much less interested when faced with a didactic curriculum involving diagrams of body parts and multiple-choice quizzes.

They also learned that middle school students, whether in rural eastern North Carolina or urban west Texas, all seemed to share a secret language of emojis (in which eggplants and peaches represent body parts) and neologisms ("cringey" was a favorite word to describe all manner of awkwardness). The students were eager to offer opinions on everything from font sizes to text colors to their preferences for buttons versus swiping.

"Every single design decision we made was informed by conversations with the students," says Jagannathan. "Everything in this app is grounded in something a student told us."

Chen and Leos also relied on their public health research to inform certain aspects of the app's development.

"We know that teen brains have a hard time retrieving factual information in the heat of the moment," Leos says. "But when they're at that moment of making a decision, especially with their peers, they can retrieve stories."

In August 2016, "Real Talk" received an additional \$325,000 award from Innovation Next to make the app a reality. Chen, Leos and Jagannathan were the only student group that won. Their award is the largest award ever made to a student or student group at The University of North Carolina at Chapel Hill.

"I was gobsmacked," says Julie MacMillan, MPH, managing director of Research and Innovation Solutions at the Gillings School. "I was surprised at the generosity of the cash, but not at all surprised that our students were doing that caliber of good thinking about problems. They are really exceptional inventors and creative thinkers."

The app isn't intended to replace traditional sex education in schools, but it will provide a much-needed supplement to the standard curriculum.

"Teens love their phones," says Chen, "but they don't necessarily want to feel like they're being taught something."

With "Real Talk," middle-school students can engage with sex-ed content in a way that feels much more like a conversation with a friend than would a facts-only pamphlet from the doctor's office. At the same time, the content is 100 percent curated and aligned with national sexual education standards.

"We're stealthy that way," says Chen.

The "Real Talk" app is scheduled to be released in early 2018.

– Amy Strong

WELL SERVED?

Jacqueline MacDonald Gibson investigates inequities in drinking water quality in Wake County

In 2014, when residents of Flint, Mich., began to worry about brown water pouring from their taps, Jacqueline MacDonald Gibson, PhD, already was investigating inequities in water quality in North Carolina.

Unlike Flint, N.C.'s Wake County has well-managed municipal water systems, but some African-American neighborhoods completely lack access to the grid.

Due to a historic exclusion from municipal water lines, which dates back to the Jim Crow era, these communities have depended upon private wells for drinking water. Because the neighborhoods are within urban areas, surrounded by mostly-white neighborhoods that do have municipal water access, MacDonald Gibson refers to them as “doughnut holes.”

MacDonald Gibson, associate professor of environmental sciences and engineering in UNC's Gillings School of Global Public Health, was alerted in 2012 by the North Carolina State Health Director that some urban N.C. neighborhoods were without municipal water access. Because Wake County's data collection systems are advanced, MacDonald Gibson selected that county for a pilot study and began combing through tax records to identify locations of doughnut-hole neighborhoods.

“Many underserved communities are afraid to make themselves known,” she explains.

“Often, they also lack access to municipal sewer lines and fear their properties could be condemned if public health officials discover failing or inadequate septic systems in their yards.”

With the neighborhoods identified, MacDonald Gibson determined whether exclusion from municipal water service increased residents' exposure to water contaminants. (As well users, they are not protected by the federal Safe Drinking Water Act.)



Dr. Jackie MacDonald Gibson

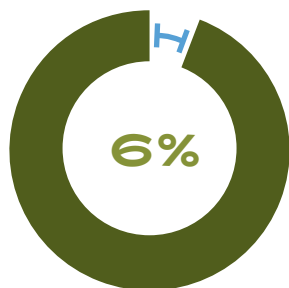
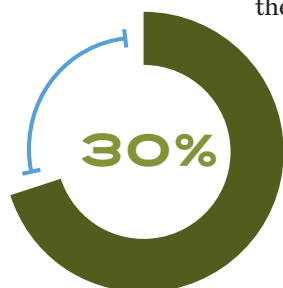
She began to answer that question by analyzing emergency department visits across the state. Her findings showed that individuals relying upon private wells are more likely to visit an emergency room for acute gastrointestinal illness than are individuals from households with public water system connections.

For her latest research, published in November in the *American Journal of Public Health*, she returned to the underserved communities she had identified in Wake County and surveyed their water quality directly. Laboratory testing revealed that residents in these doughnut-hole neighborhoods are exposed to notably higher quantities of microbial contaminants, including bacteria associated with human fecal waste.

Nearly 30 percent of 171 private well water samples tested positive for coliform bacteria, and more than 6 percent tested positive for *E. coli*. In samples from the municipal system, results for both contaminants were only a fraction of 1 percent.

Based on these findings, MacDonald Gibson estimates that more than one-fifth of the underserved communities' 114 annual emergency department visits for acute gastrointestinal illness could be prevented if municipal water service were extended.

“From an infectious disease risk standpoint, these communities would be much better off if they had a connection to municipal water service,” she says. “Ultimately, the important policy question is who should bear the financial cost.”





Clockwise from top: Frank Stillo, environmental sciences and engineering doctoral student (left) and Dr. Jackie MacDonald Gibson (right) visit the home of Crystal Middleton to discuss procedures for testing Middleton's well water; Samples of water are taken from faucets in the home; Until results are back, Middleton uses filtered water.



Wake County resident Alicia Jones collects water samples from her kitchen faucet.

As MacDonald Gibson continues her quest to reduce inequities in drinking water quality, she plans to follow up in the same neighborhoods to determine whether residents also are being exposed to elevated levels of lead and other metals in their well water.

Meanwhile, she aims to raise public awareness about why some households are offered city water while others are not.

“Racial inequity is certainly at play here,” she says. “Members of these predominantly African-American communities live with a higher risk of drinking contaminated water. In neighborhoods that also have lower incomes, residents are less able to take actions to reduce their risk, such as installing home water treatment systems.”

In 2008, the N.C. General Assembly passed a law requiring testing of all new wells constructed after July of that year. However, the law does not cover wells built before July 1, 2008, nor does it require or provide resources for the continuous monitoring of any well.

Too often, vulnerable communities avoid announcing themselves, for fear their properties will be condemned if health officials discover inadequate water or septic systems.

MacDonald Gibson’s study results suggest that the lack of support for private well owners to test and maintain their wells will continue to leave underserved communities at increased health risk, compared to adjacent neighborhoods.

As her research has progressed from a theoretical question to the identification of a very real problem, MacDonald Gibson moves toward closing the loop between research and policy change. Ultimately, she hopes that her findings will help achieve one of the charges in the Gillings School’s mission – to eliminate health inequities across North Carolina and around the world.

– Jennie Saia

MacDonald Gibson’s analysis of emergency department visits linked to well-water contaminants was published online in May 2016 by Environmental Health Perspectives. See tinyurl.com/EHP-June2016. Partial funding for the work on that study was provided by the Robert Wood Johnson Foundation (RWJF).

Her findings on inequities in municipal water access in Wake County, (published) online Nov. 17 in the American Journal of Health, were supported by a grant from RWJF and a UNC IBM Junior Faculty Development Award.

Collaborative lab
environment leads

**TO MAJOR
WEAPON
IN ZIKA
FIGHT**



It was nearly impossible to look at any news source in the first eight months of 2016 without coming across one single word, over and over again.

ZIKA.

Mosquito-borne, rapidly spreading, with horrible potential impact upon pregnant women and their unborn children, Zika had no preventive vaccine, no treatment, no cure.

Hope arrived earlier this year, thanks to a team led by Ralph Baric, PhD, professor of epidemiology at the University of North Carolina's Gillings School of Global Public Health. The Baric team conducted research that showed how antibodies from patients who survived Dengue fever can be used to fight the Zika virus now. That could open the door to develop a Zika therapeutic treatment in the not-too-distant future.

The research was published July 19 in *mBio*, the journal of the American Society for Microbiology.

This rapid breakthrough came together as a direct result of the way Baric manages his lab,



Dr. Ralph Baric (above) and his team showed how antibodies from Dengue fever survivors can be used to fight Zika.

including the cultivation of innovation and inquiry by students and staff members in his group.

"Dr. Baric encourages us to stretch ourselves mentally and get outside our intellectual comfort zones," says Jessica Plante, PhD, a postdoctoral fellow in the Baric lab and co-first author of the study.

Zika virus has been known since 1947 but was rarely studied, as human disease cases and outbreaks were rare. Then, something changed. First seen in an outbreak in Micronesia in 2007, Zika made its presence known throughout the world after surfacing in Brazil in late 2015, causing widespread concern, especially for the 2016 Olympics.

Outbreaks have been reported since in 46 countries. The virus is associated with severe neurological birth defects and fetal loss in pregnant women and the onset of Guillain-Barre syndrome in some adults.

As news spread about the virus, Plante and her fellow researchers became intrigued. Zika is a flavivirus, similar to viruses that cause Dengue fever, West Nile fever and yellow fever, all of which have been studied extensively by the Baric lab and its collaborators.

“Several of us knew that our lab and the virology research community at UNC were in a uniquely strong position to address it,” she says.

Plante discussed the outbreak with her colleague, Jessica Swanstrom, BS, who then approached Baric with an idea.

“I asked him whether I could do a preliminary experiment based on a hypothesis constructed from the literature,” says Swanstrom, who works as a research specialist in the Baric lab. “That first assay yielded some interesting results, so Jessica Plante and I sat down together and designed some follow-up experiments that we wanted to perform.”

The work they would be undertaking was highly complex. In people who have contracted Dengue virus, antibodies generated by the body in response to serial infections may be protective or, under some

circumstances, actually may promote more severe disease symptoms.

“We wanted to know how these pre-existing Dengue antibodies in the human population were likely to interact with the Zika virus,” Swanstrom says. “Would it protect people from infection, do nothing or exacerbate the condition?”

Conducting such a large-scale analysis at the cellular level presented a unique challenge. Then again, the Baric lab had a unique advantage – they had developed a proprietary reverse genetics system for Dengue virus that permitted such novel investigations.

Plante and Swanstrom designed experiments testing various monoclonal Dengue antibodies. After several sample runs, one antibody kept appearing as effective – EDE 1. Not only could it protect multiple cell types from infection in the lab, it also could do so in mice.

“We double- and triple-checked everything very carefully,” Baric says. “Each time, the same outcome occurred. The antibody derived from Dengue survivors, EDE 1, neutralized the Zika virus in cell cultures, creating a protective effect. A therapeutic treatment using these



Dr. Ralph Baric (left) chats with research team members Dr. Jessica Plante (center) and Jessica Swanstrom.



Zika can be passed from a pregnant woman to her fetus.



Infection during pregnancy can cause certain serious birth defects.



Zika is spread mostly by the bite of an infected *Aedes* mosquito. It is also spread through sex and blood transfusions.



Mosquitoes that can carry Zika are found in some areas of the U.S.



Because the mosquitoes that spread Zika virus are found throughout the tropics, outbreaks likely will continue.



At present, there is no vaccine or treatment for Zika.

antibodies would protect pregnant women and others from contracting the Zika virus if they came in contact with it.”

It was well into 2016 before the team confirmed their findings – just as the media and public health warnings were becoming more pervasive. Olympics events were only a few months away, and mosquitoes carrying the disease had been found throughout South and Central America, the Caribbean and parts of the southern United States.

The finding is potentially a major advance for the prevention and treatment of Zika. Therapeutic antibodies generated from people infected with Dengue would be less likely to cause complications in patients infected with either virus. The treatment would not create a lifelong immunity but would be an effective short-term tool to prevent infections from the current strains of the Zika virus during an outbreak.

“[The potential value of our work] added a sense of urgency to what we were doing and caused us to be specific when writing the paper,” Plante says. “There were a lot of late nights and weekends, but I am proud that, at every step, we were appropriately cautious and precise.”

The resulting paper, “Dengue Virus Envelope Dimer Epitope Monoclonal Antibodies Isolated from Dengue Patients Are Protective against Zika Virus,” was published in the July/August issue of *mBio*, with Plante and Swanstrom as co-first authors. (See tinyurl.com/mbio-zika.)

The paper generated extensive media coverage and much discussion in the research community. Still, Baric took care that the results were not misinterpreted.

“Our findings did not mean that all Dengue survivors have protection against Zika,” Baric says. “In fact, we found only a small percentage of those people will have



Dr. Baric has created an environment in which each team member is encouraged to try to incorporate genetics, immunology, virology and bioinformatics into our projects to develop more complete explanations for our observations.

—JESICA SWANSTROM



DR. RALPH BARIC



DR. JESSICA PLANTE



JESICA SWANSTROM

developed antibodies that have potential to protect against both viruses. However, this particular class of human monoclonal antibodies from a few DENV-infected individuals are potentially therapeutic and can prevent Zika virus infection.”

Baric adds that additional testing will be required to further refine any treatment, such that it can combat the inevitable mutations of the Zika virus that will develop as more outbreaks occur.

“Follow-up studies with EDE1 and Zika in mouse models are a priority,” Plante says. “It still needs to be determined exactly how much EDE1 antibody is necessary for protection and whether the antibody still protects if it is administered after infection.”

Plante adds that other topics to explore include whether EDE1 is safe to administer during pregnancy

and whether EDE1 can prevent Zika-associated birth defects.

Swanstrom adds that the discoveries would not have been possible if not for Baric’s leadership and the culture he curated in his lab.

“Dr. Baric is incredibly receptive to ideas for experiments and projects,” she says. “He has created an environment in which each team member is encouraged to try to incorporate genetics, immunology, virology and bioinformatics into our projects to develop more complete explanations for our observations.”

Thanks to Baric, Swanstrom says, the team is working on a variety of projects, all of which make for interesting science.

—David Pesci



Women in a self-help group in Agra, India, discuss health issues.

The MEASUREMENT, LEARNING & EVALUATION PROJECT

Detailed and accurate data allow researchers to avoid 'one-size-fits-all' solutions

Half of the world's population lives in cities, and the number of impoverished people living in cities is growing exponentially. Of the many critical health services needed by the urban poor, one is often overlooked – family planning services.

Early in this decade, the Bill & Melinda Gates Foundation recognized these disparities in reproductive health services and decided to act.

“We realized that a lot of focus was on rural communities and women in villages and that the urban poor were being neglected,” says Lester Coutinho, deputy director of the Family Planning Program at the Gates Foundation. “We decided to try to solve this problem and made a large investment in four countries, focusing on urban areas.”

The Gates Foundation funded the Urban Reproductive Health (RH) Initiative, aimed at improving the health of the urban poor in India, Kenya, Nigeria and Senegal. The foundation also invested more than \$22 million in The Measurement, Learning & Evaluation (MLE) Project, the evaluation component of the Urban RH Initiative, run by UNC's Carolina Population Center. The goal of the MLE project is to promote evidence-based decision making in the design of integrated family planning and reproductive health interventions for the Urban RH Initiative.

“The main objective of the MLE Project is to obtain rigorous findings about the initiative,” says Ilene Speizer, PhD, co-principal investigator and technical deputy “director of MLE and research professor in the UNC Gillings School of Global Public Health’s Department of Maternal and Child Health.

Speizer has helped lead evaluations in the four targeted countries and demonstrated increases in the use of modern family planning in each country.

“Our second goal is to build the capacity of these programs to use data to inform policies and programs,” Speizer says. “We also want to share lessons on family planning across the partnership and throughout the world.”

Coutinho says the investment was worthwhile, as the data show dramatic results, particularly with the “poorest of the poor,” the people whom the project wanted to help.


“We knew that if we wanted to help shape the thinking of the broader community around integrated family planning

and reproductive health interventions,” Coutinho explains, “it wouldn't be enough to say, ‘We know this program works because our partners have told us so.’ If we wanted to convince the rest of the world that these programs worked, we would need data to prove it.”

The most fascinating aspect of the findings, aside from proving that the programs were successful, was that the data pinpointed the program elements having the most impact in sub-populations of the community.

“We couldn't explain which segments of the population were better suited to the different solutions being tested,” he says.

That was true in Senegal, where the program initiated 19 activities. After evaluating midterm data, the researchers

 **The lives of women can be improved if they have access to accurate information and their concerns are addressed through [tailored interventions].”**

– Dr. Mojisola Odeku

streamlined the program to six activities, including working with religious leaders to encourage family planning use.

“In our initial results, we found that working with religious leaders had no effect on women’s attitudes about and use of family planning,” says Speizer. “Program leaders were considering dropping the religious leader component of the program, but we said, ‘Let’s look at men.’ We found that religious leaders were clearly important influencers on men, and so that component of the program remained.”

Similarly, the Nigerian Urban Reproductive Health Initiative used the MLE four-year longitudinal study data to create and refine its multifocal activities.

Dr. Mojisola Odeku, project director, says that using two levels of data, which offer both population traits and individual observations, allowed her project to build programs



that resulted in a higher demand for family planning services. They also were able to strengthen supply-side activities to improve the quality of service.

“This project was created so that baseline data informed program design, midterm data could be used to modify the programs and scale up programs in new cities, and end-line data are being used in our country and other countries, as we expand,” says Odeku.

Based on MLE results, the Gates Foundation is expanding activities in other urban areas within the four program countries – and in additional countries – through a new effort called The Challenge Initiative.

Speizer says that she and her research team have made important contributions to the body of knowledge about reproductive health services for the urban poor. MLE’s data is having an impact on how family planning can be adopted postpartum, the role played by gender relations on family planning use, the barriers put in place by health care providers to prevent some women from obtaining family planning services, access to reproductive health services by adolescent men and women, and other areas of reproductive health and maternal and child health.

(L-R): A couple in Uttar Pradesh, India, followed family planning messages about healthy spacing of pregnancies (photo ©2010 by M. Hussain/FHI 360); A woman in Nairobi, Kenya, undergoes a procedure to insert an implant that provides birth control for up to five years (photo ©2012 by Tobin Jones, Tupange); A mother enjoys quiet time with her newborn after a successful delivery (contributed photo).

“An important message from these data is that the lives of women can be improved if they have access to accurate information and their concerns are addressed through different models of intervention,” says Odeku. “Every city in which we’ve worked has its own unique qualities, and the data revealed those nuances to us. The data helped us to avoid ‘one-size-fits-all’ solutions and allowed us, based on the findings, to adapt to each specific environment.”

– Michele Lynn



Ilene Speizer, PhD

In September 2016, Speizer was selected as one of six scholars who will spend up to one full academic year at RTI International, developing strategic research projects. Speizer works with Wendee Wechsberg, PhD, director

of the RTI Global Gender Center, to pursue a National Institutes of Health grant for health interventions for young women who engage in transactional sex in Pretoria, South Africa. RTI began hosting its University Scholars program in the 2014-2015 academic year.



THE GREAT

UNSWEETENING



**MEXICO'S BEVERAGE
TAX MOVES THE
COUNTRY TOWARD HEALTH**



FIVE YEARS AGO, MEXICO LED THE WORLD IN PER-CAPITA CONSUMPTION OF COCA-COLA AND OTHER SUGAR-SWEETENED BEVERAGES. NOW, ITS CONSUMPTION RATE IS STAGNANT — EVEN AS RATES IN MOST OTHER DEVELOPING COUNTRIES KEEP SOARING.

What explains this sudden shift toward health? Many say it is the result of a tax – a 10 percent excise tax on sugar-sweetened beverages (SSBs) – which became law in Mexico in January 2014. That the tax became policy owes much to the work of Barry M. Popkin, PhD, W.R. Kenan Jr. Distinguished Professor of nutrition and director of UNC's Global Food Research Program, and to his collaboration with the Mexican National Institute of Public Health (INSP) and key nongovernmental organizations.

In 2006, Mexican minister of health José Ángel Córdova, undersecretary of health Mauricio Hernández and INSP nutrition expert Juan Rivera, PhD, invited Popkin to Mexico City to discuss ways to combat the country's epidemic of obesity and related Type 2 diabetes. The statistics were astounding. Since 2000, the prevalence of diabetes in the country had doubled, and about one third of 5- to 11-year-olds were overweight or obese.

Epidemiologists already had linked obesity to sugary sodas and other empty-calorie drinks, the consumption



Photo by Linda Kastleman

Dr. Barry Popkin



Photo by Jennie Sala

Dr. Shu Wen Ng

of which was skyrocketing in Mexico. Rivera and Hernández wanted to do something to curb the country's addiction to these drinks.

Popkin helped set up a Mexican beverage guidance panel – a team of eminent academics to advise on the public health aspects of common beverages – such as the one he had established in the United States in 2005. (See tinyurl.com/US-beverage-panel.) That panel then published a report summarizing the state of the science regarding the impact of SSBs upon health.

“We used that document to create awareness and public debate and attempted to create a consensus among Mexican academics,” Popkin says. “That was a major step before the government pushed to establish an SSB tax.”

The push met with resistance. Coca-Cola and other soda companies held long-standing influence in Mexican policy-making circles; the previous Mexican president, Vicente Fox, once had been chief of Coca-Cola Mexico. However, in late 2013, a 10 percent SSB tax – negotiated from the 20 percent originally proposed – was at last signed into law, becoming effective in January 2014.

What was the result? During the first year of the tax, the rate at which Mexicans purchased taxed SSBs began to decline sharply, reaching a 12 percent reduction (22 mL fewer per person, per day) by December, and averaging a 6 percent drop in purchases over the entire year. Low-income Mexicans, who would be expected to be more sensitive to price increases, reduced their

purchases the most, by 9 percent over the year, and in that sense, received the greatest benefit. Meanwhile, purchases of untaxed beverages, such as water, rose by comparison.

The study, published in *BMJ* in January 2016 as the first of many planned evaluations of the tax's impact, was co-authored by M. Arantxa Colchero, PhD, researcher at Mexico's National Institute of Public Health; Rivera, her colleague at the INSP; Shu Wen Ng, PhD, research associate professor of nutrition at the Gillings School; and Popkin.

The apparent success in Mexico has helped inspire a global awakening among policy makers about the public health costs of sugary, low-nutrition drinks and foods. Chile began applying its own countrywide 8 percent SSB tax in 2015. Popkin expects South Africa to follow with a 20 percent tax in 2017, along with Colombia, whose government has been consulting him for two years.

Popkin says that his team is now working at the ministerial level with about a half-dozen other governments to help them implement sugary drink taxes and related policies, and he himself is directly aiding several more.

“We're very much in the center of this issue,” he says. Oddly enough, one of the countries in which the SSB-tax movement has been slow to gain traction is the U.S., where “Big Soda” interests typically condemn such efforts as “grocery taxes.” Prior to fall 2016, only two U.S. cities, Berkeley and Philadelphia, had managed to pass local SSB taxes. A study by Popkin, Ng and colleagues,

MEXICO'S SUCCESSFUL SODA TAX HAS INSPIRED A GLOBAL AWAKENING AMONG POLICY MAKERS ABOUT THE PUBLIC HEALTH COSTS OF LOW-NUTRITION FOODS.

Read more in this *Philadelphia Inquirer* article: tinyurl.com/inquirer-sugartax.



Contributed photo

Dr. Barry Popkin (at right, holding child) visits with a family in their home in Chiapas, Mexico.

PEOPLE LIVING WITH DIABETES WORLDWIDE

2016 **387 MILLION**

2035 **MORE THAN HALF BILLION**

The estimated annual medical cost of obesity in the U.S. was \$147 billion in 2008; the medical costs for people who were obese in 2008 were \$1,429 higher than those of normal weight.

evaluating Berkeley's tax, likely will be published next year and could help encourage other cities to follow suit.

Certainly, the movement is still alive in America. "Five local governments passed sugary drink taxes during November elections – Boulder, Oakland, San Francisco, Albany, Calif., and Cook County, Ill.," says Ng.

Of course, sugary drinks are not the only dietary contributors to obesity. One of the next frontiers for Ng, Popkin and their colleagues are taxes aimed at junk food; such a tax was imposed in Mexico at the same time as the SSB tax. The UNC and INSP teams jointly are studying its impact on spending and health.

"These types of policies have been talked about for a long time, but there's growing momentum for them now, and I think they're really going to make a difference," Ng says.

– James Schnabel



PICTURES SPEAK LOUDER THAN WORDS— AT LEAST ON

CIGARETTE PACKS

Cigarette packaging has been a policy battleground ever since Congress enacted its first warning-label law in 1965. In recent years, researchers at the UNC Gillings School of Global Public Health have been in the thick of that battle.

In 2012, when a federal judge rejected the U.S. Food and Drug Administration’s proposed new pictorial warnings on cigarette packs – which graphically depict blackened lungs and other frightening health consequences of smoking (see page 28) – he noted the lack of scientific evidence that such pictorial warnings reduce smoking.

Noel Brewer, PhD, professor of health behavior, and colleagues at the Gillings School responded

with a four-week clinical trial involving more than 2,000 smokers. They found statistically significant reductions in smoking behaviors among smokers whose cigarette packs had graphic images, compared to smokers whose packs did not. Exposure to pictorial warnings resulted in smokers’ being more likely to attempt to quit (40 percent vs. 34 percent) – and more likely to succeed in quitting (5.7 percent vs. 3.8 percent), compared to those seeing text-only warning labels. The study was published in June 2016 in *JAMA Internal Medicine*.

“Our trial directly answers the court’s concerns by providing strong evidence that pictorial health warnings reduce smoking,” says Brewer.

Although the First Amendment and other issues make it harder for the government to require graphic warnings on cigarette packs in the U.S., at least 77 other countries already require such warnings. In Thailand, for example, pictorial warning labels have appeared on cigarette packs since 2005, and now cover 85 percent of the front of every cigarette pack and 90 percent of the back (see the Canadian Cancer Society's 2014 international status report at tinyurl.com/2014-global-smoking-report).

Brewer and his colleagues have concluded from systematic reviews and meta-analyses of studies in those countries that pictorial warning labels are indeed working – and are working better than text warnings.

“By some estimates, pictorial warnings immediately reduce smoking by five percent, which is a big deal.”

— Dr. Noel Brewer

“The findings from our reviews of scientific studies are broadly consistent with what we found in the clinical trial,” Brewer says. “By some estimates, pictorial warnings immediately reduce smoking by five percent, which is a big deal.”

“We think the case is closed – pictorial is superior to text,” says Kurt M. Ribisl, PhD, a professor of health behavior who is a former member of the FDA's Tobacco Products Scientific Advisory

Committee and co-author of several of the pictorial warning studies.

The FDA is expected to issue a new set of proposed pictorial warning labels within the next year or two. If the tobacco companies sue again, the recent clinical trial findings by Brewer, Ribisl and colleagues could be an important factor in withstanding the challenge.

“The UNC team has provided key evidence that will inform the policy debate,” says Ribisl.

Gillings School researchers have been active in shaping another new – and perhaps harder-to-challenge – anti-tobacco strategy, enabled by the same 2009 legislation that mandated cigarette pack pictorial warnings. In that law, Congress also gave the FDA leeway to require disclosure on cigarette packs – most likely on the sides – of some of the more harmful chemicals in tobacco smoke.

“People, including smokers, are largely unaware of the chemicals in cigarette smoke, but they're interested in learning about them,” says Marcella H. Boynton, PhD, research assistant professor of health behavior, summing up a national survey that she and her colleagues, including Ribisl and Brewer, published in *BMC Public Health* in June 2016.

That finding will help maintain pressure on the FDA to issue a new rule in this area, but it is not yet clear how best to present such information on the side of a cigarette pack. Cigarette smoke contains thousands of distinct chemicals, of which more than 100 – including arsenic, benzene, cadmium, and polonium 210 – are established toxins and/or carcinogens. Which ones should be



Graphic pictorial labels such as these resulted in smokers' being more likely to quit smoking.



Dr. Marcy Boynton

highlighted and how their health impacts should be explained are issues yet to be resolved.

“Which constituent message best discourages smoking?” asks Boynton. “Saying that a toxin in cigarette smoke causes bladder cancer, or that it’s found in rat poison? These are the kinds of questions we’re wrestling with.”

One concern is that cigarette companies could use constituent messages to imply that some cigarettes are relatively harmless – as they formerly did with the now-banned “low tar” designation.

“We don’t want consumers to look at the label and decide, ‘Oh, this has *less* arsenic; it must be safer,’” Boynton says.

What is needed, she adds, is a systematic approach to understanding which types of constituent-related messages are most efficient at conveying health risks.

“That’s what our work is now mostly focused on,” she says.

Given clear health risks associated with smoking, it might seem odd that governments do not ban cigarettes. As Ribisl points out, however, making cigarettes illegal would criminalize the behavior of more than 40 million tobacco users in the U.S. and encourage a vast black market. Thus, the fight against tobacco remains largely a fight to coax smokers away from their health hazard of choice – and doing that with product packaging remains a favored strategy.

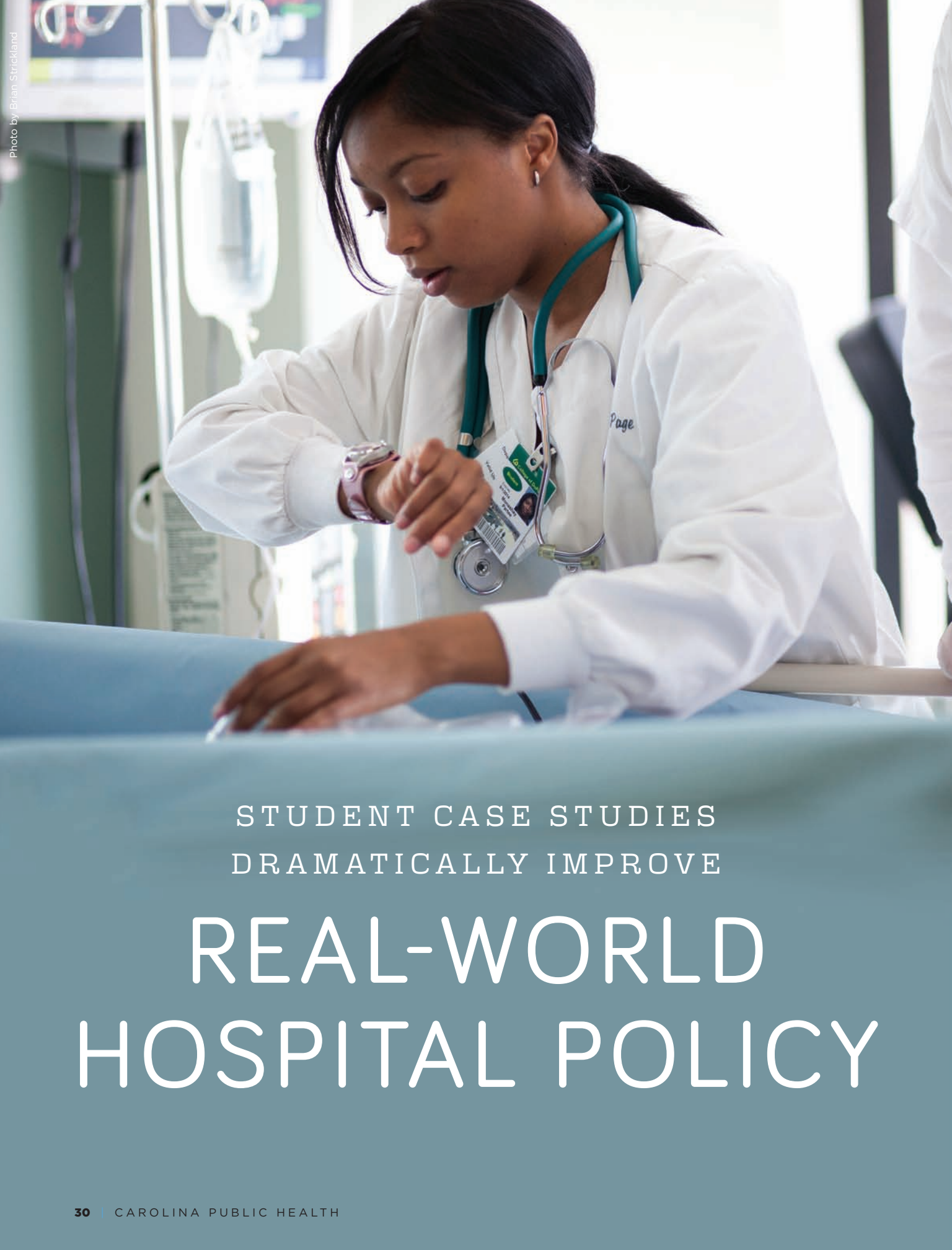
“A pack-a-day smoker gets 20 impressions of label messages per day, which is 7,300 impressions a year,” says Ribisl. “The cigarette package is an extremely low-cost and effective venue for discouraging tobacco use.”

Good news came on Oct. 4, 2016, in the form of eight anti-tobacco groups’ suing to force the FDA to require graphic cigarette package warnings, as mandated by law. (For more information, see tinyurl.com/FDA-tobacco-suit).

“Our findings will help change national policy,” Brewer says. “Now the FDA can require graphic warnings and successfully defend that action in court. Implementing graphic warnings will save hundreds of thousands of lives.”

—James Schnabel

“The cigarette package is an extremely **low-cost** and **effective venue** for discouraging tobacco use.” — Dr. Kurt Ribisl



STUDENT CASE STUDIES
DRAMATICALLY IMPROVE

REAL-WORLD HOSPITAL POLICY

Students in the Gillings School's executive Master of Healthcare Administration degree program not only gain knowledge and experience from their studies - they also have an impact on policy.

In "Healthcare Quality and Information Management," a second-year course in the joint MPH/MHA program, student teams engage in performance improvement projects in which they analyze real-life problems faced by UNC Health Care and provide recommendations to the project sponsors.

"Well-written case studies provide opportunities for insight into real-life problems and are a great way to

teach a group of students," says Larry Mandelkehr, MBA, one of the class instructors. "With a case study, there is a solution guide and discussion points. These projects go one step beyond because there is no known right answer. There isn't anything better for students than working with a real-life situation and realizing that the recommendation they make perhaps will have direct impact on the care we provide or the safety of the environment."

Mandelkehr, adjunct instructor of health policy and management at the UNC Gillings School of Global Public Health and Professor of the Practice at UNC's Kenan-Flagler Business School, is also director of performance improvement at UNC Hospitals.

In spring 2014, Mandelkehr's students made a significant contribution to the safety of newborns at UNC Hospitals when they examined the hospital's "code pink" plan. The plan outlines the steps to take if a newborn is removed from the nursery without authorization.

After presentation of the students' projects and outcomes, the hospital's board of trustees changed

Franklin Farmer, Larry Mandelkehr and Bill Gentry (l-r) pose outside the UNC Children's Hospital. Mandelkehr and Farmer teach executive master's students how to evaluate health challenges and institute policy changes. Gentry directs the executive master's programs.



Photo by Brian Strickland



Students in the Healthcare Quality and Information Management course improved policies that will keep patients and staff members safe at UNC Health Care. Left to right are Franklin Farmer and Larry Mandelkehr, course instructors; Bill Gentry, director of the HPM executive master's programs; and former students Kara Lingley-Brown and Paul Marini.

the “code pink” policy to reflect the student’s recommendations, resulting in a decrease in the alert time from 10 minutes to 100 seconds.

“This is such an absolutely dramatic result that you don’t need a statistical analysis to know that this team of students had an impact,” says Franklin Farmer, MBA, associate chair for administration in UNC’s Department of Emergency Medicine, who began co-teaching the class with Mandelkehr last year. “The ‘before’ and ‘after’ numbers speak for themselves.”

Alyssa Mansfield Damon, PhD, MHA, MPH, assistant professor of health policy and management at the Gillings School, was a student in the cohort that evaluated the code pink project.

“Class members had incredible diversity in our backgrounds and experiences, and we were able to pull together different strengths to accomplish work that I’m really proud of,” she says. “Our experience shows that you don’t need to have years of experience or be an executive to make impactful changes or improve policy.”

In spring 2016, the class examined UNC Hospitals’ “active shooter” plan. Eric Horowitz, MD, MHA,

RD, a neonatologist at Boston’s North Shore Medical Center, was among the students who recommended improvements for communications and suggested a safer model for transferring patients from the emergency department to the operating rooms.

“Every small group within our class believed they had looked at things from every possible angle, yet every group saw something in the other presentations that they hadn’t thought about

– things that would have made their own proposals and the overall presentation stronger,” says Horowitz. “We learned the value of different perspectives and experiences and benefited from being in an academic environment that was connected to reality.”

Farmer says that the hospital benefits as well.

“Having fresh sets of eyes that don’t use the same paradigms as those of us who have worked in the field for a long time means that the students come up with solutions and approaches that we wouldn’t,” he says.

“What we like to do in the program is support Dean [Barbara K.] Rimer’s mission of having faculty members ensure that teaching and research lead to practice,” says Bill Gentry, MPA, director of health policy and management’s executive master’s programs and the Community Preparedness and Disaster Management Certificate Program. “Our executive program students already have work experience, so we want to leverage that experience by offering them academic projects that actually can benefit public health.”

—Michele Lynn

Cystic fibrosis screening for newborns **TRANSFORMS YOUNG LIVES**



As a young professor at the University of Wisconsin at Madison, **Michael R. Kosorok, PhD**, completed research that has had an impact upon the life of every baby born in the United States over the past decade.

Now the W.R. Kenan Jr. Distinguished Professor of biostatistics at the UNC Gillings School of Global Public Health, Kosorok was the second lead author on “Nutritional Benefits of Neonatal Screening for Cystic Fibrosis,” published Oct. 2, 1997, in *The New England Journal of Medicine*. The paper played a key role in the Centers for Disease Control and Prevention’s 2004 recommendation that states institute newborn screening for cystic fibrosis (CF), a progressive, genetic disease which is the second most common life-shortening, childhood-onset, inherited disorder in the United States.

In November 2003, the CDC and the Cystic Fibrosis Foundation co-sponsored a workshop to review benefits and risks associated with newborn screening for CF.

“The written minutes from the workshop make it clear that our paper was the key piece of evidence that pushed people over the edge to decide that screening would be beneficial,” says Kosorok. “Other evidence was important, but our paper was particularly influential because we were the only research group

that used a controlled randomized trial which met the highest scientific standard.”

Kosorok and his colleagues demonstrated that newborn screening for CF led to long-term benefits – such as improved growth and, in one study, cognitive development – as a result of early nutritional treatment.

George Retsch-Bogart, MD, professor in the UNC School of Medicine and co-director of the UNC Cystic Fibrosis Therapeutics Development Center, says that

Dr. Michael Kosorok (this page) meets with the Stone family, whose children benefited from his research. At far right is Dr. George Retsch-Bogart, a pediatric pulmonologist who treats children with cystic fibrosis.



identifying children with CF before they become symptomatic has had a profound impact on the lives of these patients and their families.

“Although parents are anxious when we give them a post-screening diagnosis,” Retsch-Bogart says, “the screening prevents them from visiting doctor after doctor, wondering what’s wrong with their baby.”

Newborn screening in the United States leads to a diagnosis of CF a median of one year earlier than does symptomatic detection.

“We are able to get the identified children into state-of-the-art care centers where we see them a minimum of every two months for the first year of life and then every three months thereafter,” says Retsch-Bogart. “This allows us to make sure





Drs. Michael Kosorok (left) and George Retsch-Bogart review data on cystic fibrosis screening.

these children have the best nutrition possible while monitoring and treating respiratory problems.”

Retsch-Bogart was a key player in influencing the North Carolina Department of Health and Human Services (DHHS) to add CF screening to its newborn testing panel. In 2005, a multidisciplinary group of health professionals approached the North Carolina Newborn Screening Advisory Committee, which makes recommendations to DHHS, to request the addition of the CF test.

“In 2008, budget approval was received for a little more than \$1 million for the state to purchase testing equipment, hire personnel and make sure there was space in the state laboratory,” says Retsch-Bogart.

Newborn screening for CF began in North Carolina on April 13, 2009, nearly 12 years after the publication of Kosorok’s paper.

“Even if you have all the resources at your fingertips, there has to be a will among policy makers to make a change,” says Kosorok.

Since its implementation, the screening test in North Carolina has identified between 30 and 34 newborns with CF each year. Retsch-Bogart says that the few diagnoses missed by the test are identified through clinical symptoms.

“In the past, people dragged their feet on newborn screening for CF because there was no cure,” he says.



Although parents are anxious when we give them a post-screening diagnosis, the screening prevents them from visiting doctor after doctor, wondering what's wrong with their baby.”

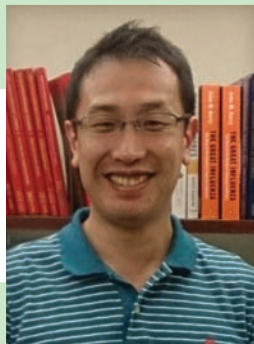
– DR. GEORGE RETSCH-BOGART

“But in the last five to seven years, we have new therapies being scaled down from adults to children. We have breakthrough therapies for the fundamental defect, and there are now studies underway in children from early infancy to age two with a drug that targets the underlying cause of CF produced by mutations of the CF gene. As we get more of these therapies, we can start children, immediately after the diagnosis, on a therapy that is as close to a cure as we can imagine at this time.”

Kosorok is gratified that his work has led to policy change throughout the country but says his primary goal is to produce quality research.

“I was very fortunate because many people do excellent research but don’t see policy change,” he says. “Since you don’t have control over these things as a scientist, it’s important to keep doing the good research that is essential to making informed decisions.”

—Michele Lynn



trajectories

Young alumni from all eight academic units at the UNC Gillings School of Global Public Health prove themselves as local and global public health leaders

Profiles by Jennie Saia and Linda Kastleman



Abram Graham

USING BIostatISTICS TO HELP CURE DISEASES

He might have been a psychologist or a mathematician – but a chance encounter on a golf course brought Abram Graham to the Gillings School’s Department of Biostatistics.

In 2010, Professor Emeritus Lawrence Kupper, PhD, was enjoying his first day of retirement with a round of golf at a local course. Graham, a club employee and rising junior, was deciding on a major.

“Why not biostatistics?” Kupper asked.

“Dr. Kupper described a blend of mathematics and problem solving (both of which I love), applied in a discipline that would allow me to make a difference in people’s lives,” Graham says.

Kupper emailed Jane Monaco, PhD, clinical associate professor and director of the biostatistics undergraduate program.

“Talking to Dr. Monaco gave me the final nudge to apply for the program,” Graham says. “She was an excellent teacher and continues to be an important mentor.”

Those two years were only the beginning.

A native Chapel Hillian, Graham hadn’t considered living or working abroad until his girlfriend (now fiancée) suggested that they both study abroad as graduate students. While earning a master’s degree in biostatistics at the University of Reading, England, he was surprised to learn that Quintiles – founded by the same Dennis Gillings, PhD, CBE, whose generous gift, with Joan Gillings, had resulted in the renaming of UNC’s public health school – also had an office in Reading. After an internship at Quintiles in Research Triangle Park, N.C., Graham worked in the Reading office.

There, one of his projects was to provide statistics for a cancer drug that proved successful. The opportunity allowed him an important perspective.



Abram Graham poses outside the Quintiles building in Reading, England.

“I realized I was working with more than numbers on a computer screen,” he says. “These are real people who need a life-saving drug.”

Graham said a Gillings School bachelor’s degree gave him the tools to build a rewarding career.

“My degree taught me that I can help cure diseases by using statistics,” he says. “I attended a top-rated public health school and a biostatistics program where I was able to develop real-world experience. This has helped me land a job with a company that cares, as I do, about improving people’s health.”

Brooke Hoots

COMBATting HIV AS AN EPIDEMIOLOGIST WITH THE CDC

Brooke Hoots, PhD, has wanted to be a disease detective since she was in high school. That was when she first learned about the Epidemic Intelligence Service (EIS) program, managed by the Centers for Disease Control and Prevention (CDC). With Rene Russo's character in the movie "Outbreak" in mind, Hoots came to the UNC Gillings School to gain a strong methodological foundation in epidemiology.

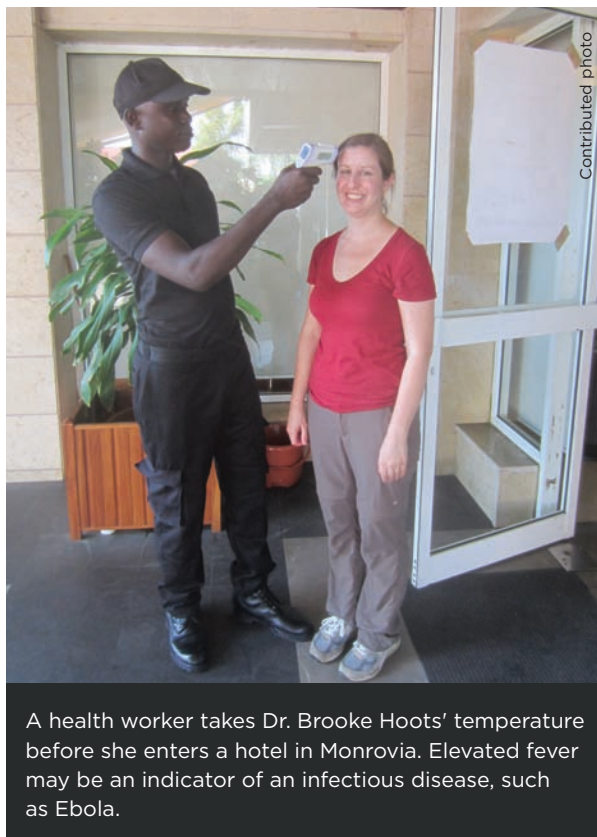
"I should mention that I'm very grateful to the Gillings School students who did EIS work before me," she says. "They impressed the program office so much that EIS stayed excited to see applicants from UNC's Department of Epidemiology."

Hoots graduated in 2011 and served as an EIS officer until 2013. After her fellowship ended, she accepted a position working on National HIV Behavioral Surveillance (NHBS) in the CDC's Division of HIV/AIDS Prevention. In that role, she has access to large national datasets and regularly interacts with leading experts in the fields of surveillance and outbreak response.

"Our group operates the only ongoing surveillance system that provides data on three populations at high risk for HIV — men who have sex with men, people who inject drugs and high-risk heterosexuals," Hoots explains.

"Our group operates the only ongoing surveillance system that provides data on three populations at high risk of HIV."

DR. BROOKE HOOTS



A health worker takes Dr. Brooke Hoots' temperature before she enters a hotel in Monrovia. Elevated fever may be an indicator of an infectious disease, such as Ebola.

"As a senior epidemiologist, I analyze and publish a lot of our data and assist others with their analyses."

Because of her EIS training, she often deploys to assist with outbreaks. In the past few years, she flew to Liberia twice to help with the Ebola response and also traveled to southern Indiana to serve as the data management leader during an outbreak of HIV.

When she is at home in Atlanta, Hoots joins her long-standing trivia team, which meets weekly at a local bar.

"We were EIS classmates together," she says. "The players rotate often because we all travel for work, but the team has met almost every Thursday for the past five years."

Hajime Kanamori

KEEPING US SAFE FROM INFECTIOUS DISEASES

A native of Japan, Dr. Hajime Kanamori earned a certificate in field epidemiology at the Gillings School in 2011 and graduated with a master's degree in public health leadership in 2012. While a student, he found himself unexpectedly treating survivors of a 9.0-magnitude earthquake and subsequent tsunami in Japan's Miyagi Prefecture. He shared that experience in the fall 2012 issue of *Carolina Public Health* (see tinyurl.com/cph-kanamori).

These days, Kanamori lives in Chapel Hill with his family (he's proud to share that his son was born at UNC Hospitals) and works as a postdoctoral fellow in the Division of Infectious Diseases at UNC's School of Medicine. There, he collaborates with mentors David Weber, MD, MPH, professor of epidemiology, and Bill Rutala, PhD, MPH, a Gillings School alumnus, to learn about advanced molecular techniques for studying and combating drug-resistant organisms.

"Antibiotic-resistant bacteria are a key cause of infections and outbreaks in health-care settings around the world," Kanamori says. "We urgently need to establish prevention strategies against these pathogens."

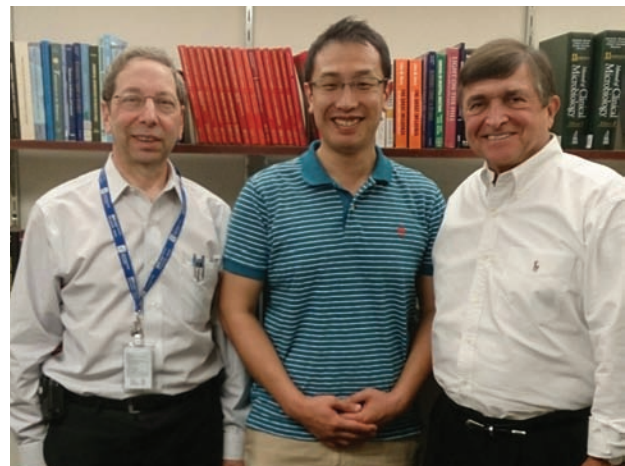
As Kanamori expands his research in the field of hospital epidemiology and infection control, he has implemented the relatively new technology of whole-genome sequencing to investigate new methods for combatting infections in health-care facilities.

He recently conducted epidemiological studies on infections linked to occupational blood and body fluid exposures among health-care personnel. He also has reviewed outbreaks of waterborne infections in health-care settings and identified prevention strategies and control measures for each affected water source. This research revealed surprising locations for bacteria incubation, such as no-touch electronic water faucets in bathrooms and decorative wall-mounted fountains in hallways.



Dr. Hajime Kanamori takes part in International Infection Prevention Week at UNC Hospitals.

Contributed photos



Dr. Kanamori (center) poses with his mentors at the UNC School of Medicine - Dr. David Weber (left) and Dr. Bill Rutala.

When asked what comes next, Kanamori responds with one simple, powerful goal.

"I want to advance the field of infection control based on solid scientific evidence," he says.

Derrick Matthews

IMPROVING THE LIVES OF BLACK MSM

Since earning a doctorate in health behavior at the Gillings School in 2013, Derrick Matthews has led the life of an academic. That often involves, he says with a wry smile, “being hunched over a computer.”

Staying focused on his research has been beneficial, though.

After taking a position as a postdoctoral scholar at the University of Pittsburgh, he was invited in 2015 to join the faculty as a tenure-track assistant professor in the Department of Infectious Diseases and Microbiology.

As a postdoc – in the Department of Behavioral and Community Health Sciences – he worked on a training grant focused on HIV disparities among men who have sex with men (MSM). Specifically, his research involves black MSM, a group in which health disparity is the result of a host of social factors, including reduced access to health care and chronic exposure to racial and sexual-orientation discrimination.

The primary study in which he has been involved is Promoting Our Worth, Equality and Resilience (POWER). To collect data for that study, he attends black pride events, where he administers a health questionnaire to attendees. He also works with local agencies to obtain HIV testing for black MSM.

“This feet-on-the-ground effort has allowed us to generate the largest serial cross-sectional sample of black MSM in the U.S.,” Matthews says. “There are a number of important questions we didn’t previously have data



Derrick Matthews (far left) takes a break with members of his POWER team while conducting surveys and providing HIV testing at a July 2016 event in Detroit.

for because our sample sizes were so small. For instance, although many HIV-positive black MSM are not receiving health care, some are – and they’re doing well and adhering to their medication regimens. We want to learn more about these two groups and determine what we can do within the community and the health-care system to get care for everyone.”

In summer 2016, during the third year of POWER’s data collection, Matthews was able to collect blood from study participants. Only a few drops can help the research team examine HIV-relevant biomarkers, such as viral suppression.

“Improving the lives of black MSM is both a personal and professional passion,” Matthews says. “The great research training I received at the Gillings School fueled that passion. Having a strong foundation allowed me to get to work right away addressing one of the most extreme health disparities we have in the U.S.”

Katie McMillan

SOLVING PUBLIC HEALTH PROBLEMS THROUGH TECHNOLOGY

Even when Katie Donohue McMillan was in middle school, she was excited by deconstructing problems and finding solutions.

That passion made her an amazing participant in Odyssey of the Mind (*odysseyofthemind.com*), an international educational program that provides creative problem-solving opportunities for students from kindergarten through college.

As a grown-up, she still is challenged by puzzles. Now, as the innovation portfolio manager at Duke Health, she works on solving health-care and public health problems through the creative use of technology.

McMillan became involved in the mHealth movement in 2009 when innovators first considered using text messages or apps as a way to improve health. After earning a master's degree at the Gillings School in 2013, she began working at Smashing Boxes, a software development start-up in Durham, N.C.

"I had learned about how to plan mHealth programs and develop content," she says, "but I wanted a better understanding of what happened under the hood—how much it costs to create apps, what to consider for an optimal user experience, and how to market and launch the product. If no one is using your app or service, you haven't made any change."

After three years at Smashing Boxes, where she worked to develop more than 20 health-related apps, McMillan came to Duke to help accelerate their health technology strategy.



Katie McMillan experiments with the Microsoft HoloLens while brainstorming ways to use augmented reality in health care.

"In less than 10 years, apps have moved from being experimental to being standard business practice," she says. "Now, we are studying how to gather better data from wearables, Bluetooth-connected devices and apps directly pulling from electronic health records – all of which will inform and improve patient care. It's amazing how far we've come."

After earning her master's, McMillan married fellow alumnus Daniel McMillan, MD, MPH.

"In less than 10 years, apps have moved from being experimental to being standard business practice. It's amazing how far we've come."

KATIE MCMILLAN

NUTRITION

Sara Benjamin Neelon

HELPING PREVENT CHILDHOOD OBESITY WORLDWIDE

Sara Benjamin Neelon, PhD, MPH, RD, is a lover of all things British. Naturally, she was thrilled when – met with her husband’s reluctance to relocate overseas in 2011 – the University of Cambridge created an Honorary Senior Visiting Fellowship that allows her to spend 20 percent of her time in England. Every May and October, she visits to examine population-level influences on dietary behaviors.

During the rest of the year, she works as an associate professor at Johns Hopkins University’s Bloomberg School of Public Health. Stateside, she studies policy and environmental approaches to obesity prevention in children and helps doctoral students in her scientific writing class prepare their first manuscripts for publication.

“Although much of my work is based in the United States, I also run studies in Mexico, Kenya and – of course – England,” Benjamin Neelon says. “The best part about my research is the opportunity to travel to so many interesting places around the world.”

Benjamin Neelon earned master’s and doctoral degrees from the Department of Nutrition at the Gillings School. After completing her studies in 2006, she accepted a two-year postdoctoral fellowship at Harvard Medical School. From 2009 to 2015, she conducted research and taught global nutrition classes at Duke University, and most recently moved to Baltimore to join the faculty at the Bloomberg School. In October 2016, she was named director of the Lerner Center for Public Health Promotion at Johns Hopkins.

In addition to her current roles as researcher, educator and administrator, Benjamin Neelon also is completing a Juris Doctor degree. She hopes studying law will make her even more competitive when it comes to obtaining funding for her research on obesity policy.

Throughout her travels and career achievements, Benjamin Neelon has an exceptional reminder of her



Sara Benjamin Neelon takes a break in the garden outside her University of Cambridge office.

time at the Gillings School. She met her husband, Brian Neelon (PhD, 2005), when she was a nutrition student and he was pursuing a degree in biostatistics.

“My adviser Dianne Ward hired him as a study statistician while he was a UNC Gillings student,” she says. “We extended our gratitude to Dianne with a gift at our wedding!”

Dianne Stanton Ward, EdD, is professor of nutrition at the Gillings School.

“The best part about my research is the opportunity to travel to so many interesting places around the world.”

DR. SARA BENJAMIN NEELON

Vann R. Newkirk II

A VOICE FOR THE UNDERSERVED

“I already have my dream job,” says Vann Newkirk, a health policy writer at *The Atlantic*. “Everything else is just gravy.”

His pleasure at having had good fortune, however, reveals little about Newkirk’s serious and grounded approach to work and life.

Just after completing his Master of Science in Public Health degree at the Gillings School in 2012, Newkirk landed a job at the Kaiser Family Foundation, where he worked as a policy analyst. In that role, he developed expertise in using quantitative data analysis programs. He also wrote and presented reports, often about underserved communities’ barriers to health care.

“The research skills I acquired at the Gillings School were vital to my success at that job,” he says. “Statistics programs I used in conducting research, learning how to write about health policy and making effective class presentations – all those skills helped me translate my own quantitative studies into widely-read deliverables at Kaiser.”

While at Kaiser, he began to write freelance articles that reflected his thinking about issues at the intersection of people and policy – criminal justice, for instance, and civil rights. Before long, he was offered a job at *Daily Kos*, a liberal blog, where he wrote about the Flint, Mich., water crisis and other environmental justice issues. Those articles caught the eye of folks at *The Atlantic*, who invited him on board to talk about health reform.

Newkirk credits Gillings School opportunities and mentors with keeping him grounded during his quick rise in the world of health-policy writing.

“The Gillings Merit Scholarship was vital,” he says. “Because I don’t have the burden of paying back student loans, I can take risks and follow stories that will advance our understanding of health policy issues. Good people, like my adviser Chris Shea, were always there for me. Tom Ricketts pushed me to be a responsible and ethical



Vann Newkirk is a health policy writer at *The Atlantic*.

researcher. Jeffrey Simms also has been a mentor in my life, and I always look forward to reunions with him.”

Newkirk says the stories that interest him most are from people we rarely hear from – the vulnerable and underserved. He writes about big-picture health reform, but he wants specifically to tell the story of kids in Alabama who are poisoned by lead paint, Puerto Ricans who suffer from environmental injustice, disabled patients who can pay for treatments, thanks to the Affordable Care Act, and a Latina home health aide trying to survive on minimum wage.

“The guiding principle in my life is to help people when, where and how I can,” Newkirk says. “Right now, that involves my telling stories that spotlight things we’d rather forget. Public health is central to that principle and is perhaps the purest policy expression of it. Our duty as humans should be to ensure the basic welfare and well-being of other humans, and I will continue writing about and being involved in that goal as long as there are people who could benefit from my speaking out. My interest in health disparities is the reason I get out of bed in the morning – because I believe my work can help make the world more equitable and fair.”

Alison P. Sanders

MAKING SCIENCE COMMUNICATION MORE EFFECTIVE

Alison P. Sanders, PhD, is on a mission to make sure public health researchers also are skilled communicators.

Sanders, who graduated from the Gillings School in 2013 with a doctoral degree in environmental sciences and engineering and a minor in epidemiology, has co-authored numerous research articles on maternal and fetal exposure to toxic metals. Her work has linked this type of exposure with birth defects and preterm birth, which are leading causes of infant mortality in the United States.

“My research investigates the molecular changes and subsequent health effects caused by developmental exposure in human populations,” she explains. “These findings have important implications for public health and potentially could impact our everyday decisions.”

Sanders’ dedication to excellence in research goes beyond her own areas of expertise. She is a passionate advocate for science education and believes academics should be able to communicate effectively in a wide range of settings. The ability to bridge research and communication, she says, is “a skill that is lacking in the professional development of many scientists.”

After graduation, Sanders became a postdoctoral fellow in environmental medicine and public health at the Icahn School of Medicine at Mount Sinai (ISMMS). Prior to moving to New York City, she also applied to volunteer as a science education fellow with the New York Academy of Sciences.

Now, she co-directs the graduate-level toxicology course in ISMMS’ Master of Public Health program and teaches an after-school environmental health and nutrition program to fourth- and fifth-grade students in East Harlem.

“This was a natural transition between outreach projects I had enjoyed at the UNC Superfund Research Program and my new life in New York,” Sanders says. “I saw an opportunity to promote public health,



Contributed photo

Dr. Alison Sanders directs a postdoctoral communications training program at Mount Sinai’s Icahn School of Medicine.

work with kids, gain professional experience and acclimate to the city. It was a win-win that’s been truly rewarding.”

Inspired by her eager-to-learn students and the dearth of teaching opportunities at private research hospitals like ISMMS, Sanders crafted the Future Leaders in Science Education and Communication Training Program. Her proposal, one of seven selected for funding by the Burroughs Wellcome Fund in 2015, was the only submission led by a postdoctoral fellow.

Sanders now directs the Icahn School’s first-ever formal teaching training program for postdoctoral fellows, which cultivates principles of teaching and science communication through in-class training and applied experiences. Her program has trained more than 25 fellows, all of whom gained hands-on experience in Sanders’ fifth-grade classroom before moving on to graduate-level teaching.

“In this first year, 20 percent of the program’s trainees have earned promotions or transitioned to new careers in teaching and communication-related fields,” says Sanders. “As we often say, ‘If you can explain science to a fifth-grader, you can explain it to anyone.’”

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SCHOOL NEWS

Read more at sph.unc.edu/news.

Selected Publications

Student-led publications are marked with ★.

CANCER

Stacie Dusetzina, PhD, assistant professor of pharmaceutical outcomes and policy in the UNC Eshelman School of Pharmacy and of HPM at the Gillings School, has written extensively about the price of and access to cancer drugs. In an April 28 article in *JAMA Oncology*, she found that oral cancer drugs introduced in 2014 were six times more expensive than those introduced in 2000. Dusetzina presented her research in June to the President's Cancer Panel (which is chaired by Dean Barbara K. Rimer). In a May 16 article in *The Oncologist*, Dusetzina found that a drug that offered people with liver cancer a longer life was less effective

in Medicare patients, who likely had more extensive cancer. In an Oct. 3 article in *Journal of Clinical Oncology*, she and lead author **Aaron Winn**, HPM doctoral student, reported that out-of-pocket costs for some cancer patients with Medicare delayed treatment with drugs that improved survivorship dramatically. Time interval to starting drug treatment was shorter for patients who had subsidies to help cover drug costs.

Research led by **Melissa Troester, PhD**, associate professor of EPI, published May 4 in *npj Breast Cancer*, a *Nature* partner journal, identified a particular gene expression pattern in normal-appearing breast tissue around

tumors that was linked to lower 10-year survival rates for women with estrogen receptor-positive breast cancer. About 70 percent of breast cancers are estrogen receptor-positive.

★ **Christine Rini, PhD**, research associate professor, and **Yael Symes, MSPH**, doctoral student, both in HB, found that cancer survivors with negative attitudes about social support may have lower quality of life. Patients in the study who preferred not to use their social resources tended to expect low levels of support and to experience support as negative. Their study was published in the June *Annals of Behavioral Medicine*.



Dr. Noel Brewer



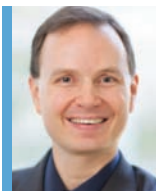
Dr. Stacie Dusetzina



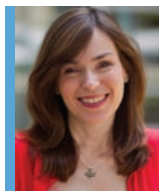
Dr. Anne Meyer



Dr. Andrew Olshan



Dr. Bryce Reeve



Dr. Christine Rini



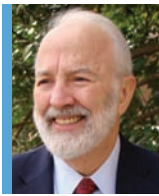
Dr. Melissa Troester



Aaron Winn

KEY TO DEPARTMENTS

BIOS	Biostatistics
EPI	Epidemiology
ESE	Environmental Sciences and Engineering
HB	Health Behavior
HPM	Health Policy and Management
MCH	Maternal and Child Health
NUTR	Nutrition
PHLP	Public Health Leadership Program



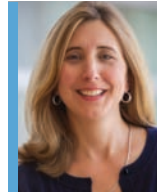
Dr. Barry Popkin



Dr. Leslie Lytle



Dr. Lindsey Taillie



Dr. Deborah Tate

Anne Marie Meyer, PhD, research assistant professor of EPI, and **Ethan Basch, MD, MSc**, professor of HPM, led a study, published June 28 in *Cancer*, reporting that adults with acute myeloid leukemia (AML) treated in-hospital with chemotherapy had a higher statistical risk of dying from the disease if they lived in northeastern N.C., in an area between Wilson and Roanoke Rapids. No clear reason for the inequities was determined, but researchers thought factors might include less robust medical infrastructure and fewer physicians, who were less experienced in this complex but urgent diagnosis.

★ An analysis of the quality of life of 2,100 breast cancer survivors in N.C. found differences in how black and white women functioned and felt, spiritually and physically, during treatment and two years later. Overall, black women reported better spiritual well-being, and white women better physical or functional well-being, both at diagnosis and throughout the study period. However, two years out, more black women reported feeling better physically, narrowing the

inequity and suggesting that their experiences with the health-care system may have had positive impact upon their overall health. Published in the September *Breast Cancer Research and Treatment*, the work was co-authored by **Laura Pinheiro**, HPM doctoral candidate, **Andrew Olshan, PhD**, Barbara Sorenson Hulka Distinguished Professor in Cancer Epidemiology and EPI chair, **Bryce Reeve, PhD**, HPM professor, and others.

A national survey found that parents were more likely to agree that laws requiring students to be vaccinated against HPV for school entry are a “good idea” when there is an opt-out clause. **Noel Brewer, PhD**, professor of HB, is senior author of the study, published Aug. 19 in *Cancer, Epidemiology, Biomarkers and Prevention (CEBP)*. Brewer also worked with lead author **Teri Malo, PhD**, postdoctoral fellow at UNC Lineberger, to find that 65 percent of parents surveyed would be motivated to obtain the HPV vaccination for their children if a physician said, ‘I strongly believe in the importance of this cancer-preventing vaccine for [your child’s name].’ Findings were published in *CEBP* on Sept. 30.

OBESEITY

Deborah Tate, PhD, professor of HB and NUTR, co-authored a *JAMA Internal Medicine* study, published online May 2, finding that two specific diet and exercise strategies prevented weight gain and obesity among young adults. These included a daily ‘small changes’ approach and a periodic ‘large changes’ approach. Her team found that making a big change in diet and exercise at the start of a weight loss program was slightly more effective at sustaining weight loss.

Lindsey Smith Taillie, PhD, research assistant professor of NUTR, and **Barry Popkin, PhD**, W.R. Kenan Distinguished Professor of NUTR, co-authored a study of Mexico’s ‘junk food tax,’ finding that purchases of taxed food items declined by more than 5 percent during the first year the tax was implemented. The study was published July 5 in *PLOS Medicine*.

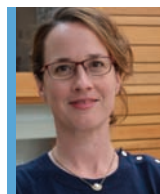
A technology-based intervention to prevent weight gain among young adults in community college effectively reduced consumption of fast food and improved overall weight-related behavioral patterns. **Leslie Lytle, PhD**, professor and chair of HB, published findings June 7 in *Preventive Medicine*.



Dr. Jianwen Cai



Dr. David Couper



Dr. Stephanie Engel



Dr. Edwin Fisher



Dr. Nora Franceschini



Dr. Dilshad Jaff



Dr. Lewis Margolis



Dr. Kavita Ongechi

ENVIRONMENT

★ **Hang Nguyen, MS**, ESE doctoral student, is first author of a study that tested a new methodology to examine the genomic response of lung cells to real-world mixtures of air pollutants. Many gases transform after being released into the atmosphere, and fully understanding health risks of exposure requires the study of complex mixtures of fresh and oxidized gases that cannot be replicated in the lab. Nguyen's work was published online Feb. 18 in *Environmental Health Insights*.

Stephanie Engel, PhD, associate professor of EPI, is a member of Project TENDR, a group of leading scientists, medical experts and children's health advocates who agree that there is a link between exposures to toxic chemicals and children's risks for neurodevelopmental disorders. The group's statement was published July 1 in *Environmental Health Perspectives*.

CHRONIC DISEASES

In a May 12 article in *The New England Journal of Medicine*, **David Couper, PhD**, BIOS clinical professor, found that about half of smokers have respiratory symptoms similar to those for chronic obstructive pulmonary disease (COPD) -- despite having had tests that show normal lung function. The results prompted researchers to question whether the definition of COPD should include people with these symptoms.

★ A systematic review published in the July *American Journal of Public Health* showed that peer support is an effective strategy for helping people not easily reached by conventional prevention and health-care initiatives. **Rebecca Sokol**, HB doctoral student, and **Edwin Fisher, PhD**, professor and global director of Peers for Progress, were co-authors.

GLOBAL HEALTH

Dilshad Jaff, MD, MPH, alumnus and research adviser in the Gillings Global Gateway®, **Kavita Singh Ongechi, PhD**, research associate professor of MCH, and **Lewis Margolis, MD, MPH**, associate professor of MCH, co-authored an article examining the complex and disturbing pattern of health-care professionals being targeted in war zones. The commentary was published online July 4 in *Medicine, Conflict and Survival*.

A large international collaboration, led by **Nora Franceschini, MD, MPH**, research associate professor of EPI, and **Jianwen Cai, PhD**, Cary C. Boshamer Distinguished Professor and interim chair of BIOS, marks the first study of kidney function involving individuals from four continents. Published Sept. 1 in *American Journal of Human Genetics*, the study reported 20 genetic regions that affect kidney function and are common across all ethnic ancestries. A second article, published Sept. 20 in the *Journal of the American Society of Nephrology*, found that genetic variations specific to African ancestry may increase kidney disease risk in Hispanic and Latino populations.

Selected Grants

NATIONAL INSTITUTES OF HEALTH (NIH)

The NIH and U.S. Department of Health and Human Services awarded a \$97,956 supplemental 'Big Data to Knowledge' (BD2K) grant to UNC to train 20 predoctoral students in datacentric, biomedical science issues. **Michael Kosorok, PhD**, W.R. Kenan Distinguished Professor of BIOS, is co-principal investigator. Program leaders aim to prepare trainees to have a career-long relationship with Big Data, such that they develop new or apply current methodologies in a number of settings.

The National Cancer Institute renewed grant funding for the Gillings School's genomics and cancer research training program. **Joseph Ibrahim, PhD**, Alumni Distinguished Professor of BIOS and principal investigator for the training program, leads 2016-2017 doctoral student trainees **Paloma Hauser, Ruth Huh, Sean McCabe, Douglas Wilson** and **Laura Zhou**.

The UNC-based Collaboratory of AIDS Researchers for Eradication (CARE) will receive nearly \$23 million from NIH over five years to continue research on their innovative 'kick and kill' strategy for eradicating HIV. **David Margolis, MD**, EPI professor at the Gillings School and professor in the UNC School of Medicine, is CARE's principal investigator.

Andrew Nobel, PhD, BIOS professor, and **Fred Wright, PhD**, adjunct BIOS professor, are principal investigators for a three-year, \$1.2 million National Human Genome Research Institute grant to address statistical challenges that arise in the analysis of next-generation expression quantitative trait loci (eQTL) studies. In such studies, the goal is to identify and quantify how known genetic variants regulate gene expression across multiple tissues.

In fiscal year 2015, **the Gillings School** was the top *public* school of public health in terms of NIH funding for the third consecutive year. NIH data listed the School

as receiving \$58,946,358 in NIH funding, with 79 total awards.

OTHER FEDERAL AGENCIES

Barbara Turpin, PhD, ESE professor and chair, will work with **Jason Surratt, PhD**, associate professor of ESE, as investigators on a three-year, \$592,448 grant from the National Oceanic and Atmospheric Association. The grant supports their study of the impact of biomass burning on air quality and climate change.

Dorothy Cilenti, DrPH, clinical assistant professor of MCH and director of the National Maternal and Child Health Workforce Development Center, was awarded a one-year, \$1.74 million cooperative agreement by the U.S. Division of Workforce Development to support workforce development for state maternal and child health program leaders and staff members.

The UNC Injury Prevention Research Center was awarded a four-year, \$1.79 million grant from the Centers



Dr. Dorothy Cilenti



Dr. Joseph Ibrahim



Dr. Michael Kosorok



Dr. David Margolis



Dr. Jason Surratt



Dr. Barbara Turpin

for Disease Control and Prevention to examine the impact of a rape-prevention education program called 'Wise Guys: The Next Level.' **Beth Moracco, PhD**, research associate professor of HB, will co-lead the evaluation.

The World Health Organization Collaborating Center for Research Evidence for Sexual and Reproductive Health, based in MCH, was awarded a multimillion-dollar, up-to-four-year grant from the U.S. Department of Health and Human Services for work in implementation science. The Collaborating Center and JSI Research and Training Institute Inc. jointly will serve as the new Family Planning National Training Center for Service Delivery Improvement. The Collaborating Center's subcontract award is for about \$1.5 million per year to fund the new family planning center's implementation and improvement activities and assure that its activities are based upon the best science. **Herbert Peterson, MD**, W.R. Kenan Jr. Distinguished Professor of MCH and director of the WHO Collaborating Center, will chair the new Family Planning Center's leadership council.

GATES FOUNDATION

Jennifer Smith, PhD, associate professor of EPI and director of the Cervical Cancer-Free Coalition at the Gillings School, is a principal investigator for a Grand Challenges Explorations Grant, an initiative funded by the Bill & Melinda Gates Foundation. Smith's \$100,000 grant will allow her to work with researchers at Duke University and in Brazil to determine the effectiveness of a urine-based, cervical cancer screening tool.

OTHER SOURCES

A six-year, \$2.9M grant from World Vision to The Water Institute at UNC creates a partnership to improve water, sanitation and hygiene interventions in several low- and middle-income countries, with the goal of solving the global water and sanitation crises by 2030. **Jamie Bartram, PhD**, Water Institute director, leads the work at the Institute. **Greg Allgood, PhD**, ESE alumnus, is World Vision's vice president.



Emma Allott, PhD, research assistant professor of NUTR, received the Professor John Fitzpatrick Research Fellowship, a three-year grant award valued at \$228,000 to investigate the role of cholesterol in prostate cancer.

The N.C. Institute for Public Health was awarded a \$192,265 grant from the *Kate B. Reynolds Charitable Trust*. The funding will enable N.C.'s Edgecombe and Nash counties to use data analysis and visualization to enhance public health programs, reduce duplicate efforts and more efficiently serve their populations. **Amy Belflower Thomas, MHA, MSPH**, will administer the two-year grant.



Dr. Greg Allgood



Dr. Jamie Bartram



Dr. Beth Moracco



Dr. Herbert Peterson



Dr. Jennifer Smith

May - November 2016

AWARDS & RECOGNITIONS

Read more at sph.unc.edu/news.

INTERNATIONAL

Barry Popkin, PhD, W.R. Kenan Jr. Distinguished Professor of NUTR, received the World Obesity Federation's 2016 Population Science and Public Health Award and presented a plenary talk at the Federation's 13th International Congress on Obesity, held in Vancouver, B.C., on May 4.

Wizdom Powell, PhD, associate professor of HB, was awarded a residency at the Rockefeller Foundation's Bellagio Center, in Bellagio, Italy, to further research about gendered health inequities among boys and men of color. She also was one of 21 health-care

professionals chosen for the two-year Aspen Institute Health Innovator Fellowship. In September, Powell was named research associate professor of social medicine and associate director of the UNC Department of Social Medicine's Center for Health Equity Research.

Andrew Olshan, PhD, Barbara Sorenson Hulka Distinguished Professor in Cancer Epidemiology and EPI chair, was elected president of the Society for Epidemiologic Research (SER). SER is the oldest and largest general epidemiology society in North America.

Xianming Tan, PhD, research associate professor of BIOS, received

the Statistical Society of Canada's *Canadian Journal of Statistics Award* for a paper published online in the journal Oct. 20, 2015.

NATIONAL

Mark Sobsey, PhD, Kenan Distinguished Professor of ESE, was awarded the National Water Research Institute's prestigious Athalie Richardson Irvine Clarke Prize for excellence in water research.

Penny Gordon-Larsen, PhD, NUTR professor, was selected to chair the National Institutes of Health's Kidney, Nutrition, Obesity and Diabetes study section.



Dr. Eugenia Eng



Dr. P. Gordon-Larsen



Dr. Carolyn Halpern



Dr. Mark Holmes



Dr. Brian Pence



Dr. Wizdom Powell



Dr. Mark Sobsey



Dr. Victor Schoenbach

KEY TO DEPARTMENTS

- BIOS** Biostatistics
- EPI** Epidemiology
- ESE** Environmental Sciences and Engineering
- HB** Health Behavior
- HPM** Health Policy and Management
- MCH** Maternal and Child Health
- NUTR** Nutrition
- PHLP** Public Health Leadership Program

Victor Schoenbach, PhD, associate professor of EPI, won the Abraham Lilienfeld Award, given by the American Public Health Association's epidemiology section, for excellence in teaching epidemiology over the course of a career.

May Chen, MSPH, doctoral student, is one of 22 U.S. students named as Point Foundation Scholars. The Foundation is the largest scholarship-granting organization for LGBTQ students. Chen's research examines the causes and consequences of interpersonal violence, with a focus on developing prevention programs for vulnerable youth.

UNC-CHAPEL HILL

Alexandra Lightfoot, EdD, research assistant professor of HB, is one of 10 UNC faculty members selected for the sixth class of Thorp Faculty Engaged Scholars. Lightfoot, who uses a community-based participatory research approach to address health inequities in N.C. communities, will use the two-year award to collaborate on research about adolescents and racial inequities.

Mark Holmes, PhD, associate professor and associate chair for research in HPM, was named director of UNC's Cecil G. Sheps Center for Health Services Research, one of the oldest and largest academic health services research centers in the U.S.

GILLINGS SCHOOL

Barbara Turpin, PhD, professor of ESE, was named ESE chair, effective Sept. 1.

Jianwen Cai, PhD, professor of BIOS, became interim chair of the department in May, as Michael Kosorok, PhD, W.R. Kenan Jr. Distinguished Professor and chair, began a one-year leave to accelerate his research.

Catherine Sullivan, MPH, RD, LDN, was named director of the Gillings School's Carolina Global Breastfeeding Institute in October, succeeding founding director, the late Dr. Miriam Labbok. Sullivan also was elected in July to the board of the U.S. Breastfeeding Committee.

Ding-Geng (Din) Chen, PhD, clinical professor of BIOS at the Gillings School and Wallace H. Kuralt Distinguished Professor in the UNC School of Social Work, was named a fellow of the American Statistical Association. No more than one-third of 1 percent of the ASA membership may be designated as fellows.

Courtney Luecking, NUTR doctoral student, won the North Carolina Dietetics Association's (NCDA) Emerging Dietetic Leader Award for 2015-2016.

Sixteen students were selected as 2016-2017 recipients of Gillings Merit

Scholarships or Gillings Dissertation Awards. They are **Herodes Guzman, Audra Reiter, Erin Frey, DVM**, and **Christina Palazzo (PHLP)**; **Marwa Elnagheeb** and **Alexandria Sanchez (MCH)**; **Christine Walsh** and **Blythe Rhodes (HB)**; **Cassandra Johnson, MSPH**, **Deanne 'Rose' Ewald** and **Yiqing Wang (NUTR)**; **Corinne Wiesner (ESE)**; **Jennifer Stutsman (HPM)**; **Sydney Jones** and **Rae Anne Martinez (EPI)**; and **Gilson Honvoh (BIOS)**.

Carolyn Halpern, PhD, professor and chair of MCH, and **Brian Pence, PhD**, associate professor of EPI, were honored for their teaching and mentorship at the Gillings School's May 7 commencement. Halpern was presented with the John E. Larsh Award for Mentorship, and Pence received the McGavran Award for Excellence in Teaching.

Eugenia Eng, DrPH, alumna and HB professor, accepted the Edward Kidder Graham Faculty Service Award, which recognizes a faculty member's outstanding service to the University, state and nation, during University Day ceremonies on Oct. 11. A trailblazer in community-engaged scholarship, Eng refined the innovative lay health adviser intervention model, an approach that builds on the social support function of social networks in communities.

in MEMORIAM



Dr. Miriam Labbok

Miriam Harriet Labbok, MD, MPH, IBCLC, staunch crusader for the health of women and infants and longtime advocate for the health benefits of breastfeeding, passed away on Aug. 13 after a courageous battle with cancer. From 2006 to 2016, she was Professor of the Practice of MCH and founding director of the Gillings School's Carolina Global Breastfeeding Institute.

"Miriam was a tireless advocate for women's, children's and families' health – here and the world over," said Herbert Peterson, MD, W.R. Kenan Distinguished Professor of MCH, and of obstetrics and gynecology in the UNC School of Medicine. "Her commitment to breastfeeding was unsurpassed, as was her devotion to those we serve."

Harrison C. Spencer, MD, MPH, president and chief executive officer of the Association of Schools and Programs of Public Health, died Aug. 10, a victim of violence. He was 71.

"Harrison was an ardent champion of public health — and all of us in the profession," said Barbara K. Rimer, DrPH, dean of the Gillings School. "A highly accomplished physician and epidemiologist who led two schools of public health before taking the leadership role at ASPPH, he navigated the challenges of bringing the schools and programs of public health together — a brilliant move."

Saye Baawo, MD, MSPH, alumnus and assistant minister for curative services in Liberia's Ministry of Health and Social Welfare, died June 17 at age 50, of cancer. Baawo generously offered his time and energy as a mentor in the Gillings Global Gateway®.



Dr. Steven Wing

Steven Bennett Wing, PhD, activist for environmental justice and advocate for human rights, mentor and friend to many, died Nov. 9, of cancer. He was 64. An associate professor of EPI, he joined the Gillings School faculty in 1985 after completing his doctorate at UNC. His long list of honors reflected the social causes for which he worked so diligently and his devotion to teaching and mentoring students.

"Steve was a hero to many in the Gillings School and the broader world of environmental scientists, advocates, activists, policy makers and community members in N.C. and beyond," said Andrew Olshan, PhD, Barbara S. Hulka Distinguished Professor and chair of the School's EPI department. "He will be remembered for his unyielding commitment to social justice and for his kindness and caring nature with everyone."

Our distinguished alumna —

Paula Brown Stafford

U.S. President James K. Polk. Thirteen Pulitzer Prize winners, numerous lawyers, statesmen, artists. Journalists David Brinkley, Charles Kuralt and Stuart Scott. Actors Andy Griffith and Billy Crudup. Michael Jordan.

Paula Brown Stafford, MPH, is in good company among the best of The University of North Carolina at Chapel Hill's successful alumni. UNC made it official on Oct. 11, the day before the university's 223rd birthday, by presenting Stafford with its University Distinguished Alumna award.

"It is a tremendous honor to be recognized by UNC in this way," Brown Stafford says. "I am a Tar Heel born, a Tar Heel bred, and a Tar Heel for life!"

Stafford, who earned Bachelor of Science in Public Health and Master of Public Health degrees in biostatistics from UNC's Gillings School of Global Public Health, is former president of clinical development at Quintiles, a Fortune 500 company that is the world's largest provider of biopharmaceutical development and commercial outsourcing services. She lends support to the Gillings School in several capacities, including serving as an adjunct professor, member and past president of the School's Public Health Foundation board, and loyal donor and friend.

When Stafford joined Quintiles in 1985, she was only the 23rd employee of the fledgling company, which now has more than 36,000 employees conducting business in 100 countries. During her 30-year career there, she was involved directly in the development and regulatory approval of hundreds of life-changing drug therapies for patients in North Carolina and throughout the world.

Personally, one of the most important was her first beginning-to-end clinical trial, in which she oversaw the development of a diabetes drug that allowed her grandmother to live well into her 90s by managing the chronic disease. More than 30 million adults in the U.S. are affected with diabetes.

As a recognized leader in biopharmaceutical development, she was invited in 2014 to provide expert testimony to a Congressional committee about



Paula Brown Stafford

modernizing clinical trials. She spoke of three key areas of drug development – patients, pathways and processes – and the need to accelerate the delivery of therapies to patients.

"Modernizing clinical trials is critical," she said in the testimony, "if we are to meet the goals we share of delivering medicines faster and at less cost to patients who need them."

Since her retirement from Quintiles in 2015, Stafford provides leadership consulting services to various organizations, serves on the board of Health Decisions, a Durham, N.C.-based contract research organization, and enjoys the company of husband Greg and their two grown children.

"My degrees from the Gillings School provided me with the education and experience to be a partner in bringing new medicines to markets around the world, improving and saving lives," she says. "I have been blessed with wonderful professors, colleagues and family who have supported me along the way."

Alumni, share your success stories! Email us at sphalumniandfriends@unc.edu.

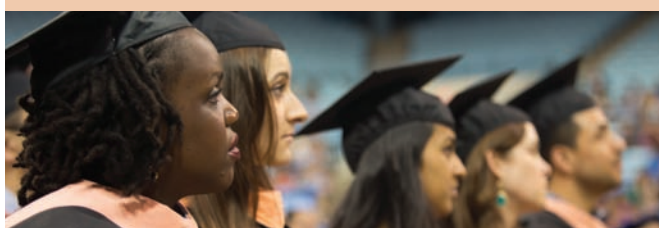


Thank you,
Dr. Gillings, for
an inspiring
commencement
address!



Your challenge [as public health graduates] will be to make public health the management leader by using evidence to establish health policy and decision making for consequential problems, nationally and globally, and also at state and local levels. Let us change the public discourse on health care from a political blame-game to an evidence-based discussion about what works.

— Dennis Gillings, PhD, CBE
May 7, 2016



A Conversation with Dr. Amanda Adler

Keep your standards high – and then go for it!

Gillings School alumna Amanda Adler, MD, PhD, is chair of a multidisciplinary technology appraisal committee at the National Institute for Health Excellence (NICE) in London and consultant physician at Addenbrooke's Hospital in Cambridge (U.K.). Adler spoke recently with Crystal Hinson Miller, MA, CFRE, associate dean for advancement at the Gillings School.

Crystal Miller (CM):

Tell us about your journey from California to Chapel Hill to the United Kingdom. You keep traveling eastward!

Amanda Adler (AA):

I was born and raised in Santa Monica, a product of the public schools there, which are excellent. When I was seven, my father, who was working in the movie industry, announced the family was moving to Tokyo for a year – so I've been even farther east! That year was formative in my life. It was then I decided I wanted an international career.

As I grew older, I focused on international health as a career path. I studied economics as an undergraduate because of an internship at the World Health Organization's water sanitation and supply department. I came to appreciate that health resources were limited and had to be used wisely. After the internship, I came back to the University of California and earned a degree in economics, already knowing I wanted to go both to medical school and public health school.

People in Santa Monica were skeptical that I would be admitted to UNC, but I persisted. I learned about



Dr. Amanda Adler

the MD/PhD program, and that's what I knew I wanted. Since I'd always loved learning about epidemics, I knew epidemiology would be the thing for me.

Getting to the U.K. was a serendipitous journey. After my internship and residency at the University of Washington at Seattle and a fellowship at the Fred Hutchinson Cancer Research Institute, I went to Britain, single and eager, and physically carried my CV to Oxford. It worked. They asked me to interview the next day, and the following week, I was a faculty member.

I was attracted to the British style of research. In the U.K., as you know, people pay for health care through their taxes, and they're very keen on paying only for things that work. The chronic disease clinical trials were pragmatic, addressing both simple and very important questions. For instance, in Type 2 diabetes, does lowering blood sugar lower risk for problems related to diabetes?

I was hired as the epidemiologist for that trial (the U.K. Prospective Diabetes Study), and essentially, I think I've decided to stay, particularly since I met my husband here.



Don't hold yourself back. If you aspire for things, the worst that can happen is that you won't get them – that's still much better than not having tried.

— Dr. Amanda Adler

CM:

What do you remember about your time at UNC's School of Public Health? How did your epidemiology training help you solve real-world problems?

AA:

I remember that it was rigorous. Very high standards. Knowing now what the British educational system is like, I appreciate that I was able to take classes at UNC. A British doctorate doesn't require any coursework; one just takes off and does a project on one's own. Now, I appreciate having studied subjects that I wouldn't have necessarily chosen for myself – such as biostatistics. It's unbelievably important in all my work.

My current role at the National Institute for Health Excellence (NICE) certainly contributes to public health by bringing together medicine and epidemiology. Britain has generous, if limited, funding for health, and health care is free. The government has the motivation and moral responsibility to spend its health-care tax money wisely. We look at new drugs, new technologies and new educational systems, and we evaluate how likely they are to help the population and what the costs are. We look not just at the price of drugs, but the costs over a lifetime that might result as a consequence of adopting a new drug into the health-care system.

That is one example of applying what I learned at UNC. Another is the notion that conducting very practical clinical trials can translate to patient benefit.

CM:

While you were at UNC, did you take advantage of any opportunities unique to the public health school?

AA:

I was awarded a scholarship for the MD/PhD program. That certainly inspired me to train longer than I might have. It also meant I was essentially debt-free when I graduated, which allowed me to take advantage of opportunities I couldn't have otherwise. I was aware that it was a gift to have the Research Triangle Park nearby, with agencies such as the National Institute of Environmental Health Sciences (NIEHS) and companies such as Quintiles and GSK. Being trained in medicine, I was able to connect with other physicians who were interested in clinical epidemiology, which led to some wonderful discussions. The proximity of UNC's medical school to the public health school shouldn't be underestimated, either. That physical closeness facilitates great collaborations.

CM:

What advice would you give current students at the Gillings School?

AA:

- Change can occur in public health; always be open-minded to the change you can bring about.
- Don't hold yourself back. If you aspire for things, the worst that can happen is that you won't get them – that's still much better than not having tried.
- Always ask the 'so what?' questions for projects you take on. Will the answers contribute to bettering society and bettering yourself, in terms of return on investment of time and energy? Keep your standards high – and then go for it!
- Share the spotlight! Always give your colleagues credit on joint projects.

Adler earned a medical degree at UNC in 1988 and a doctorate in epidemiology in 1992. She enjoys tennis and swimming, opera and travel, and is inspired by her 94-year-old parents.

Marcia Angle, MD, MPH –

A mother-daughter gift helps improve the lives of children everywhere



(Left): Dr. Amy Herring is the second recipient of the Carol Remmer Angle Distinguished Professorship. (Right): Dr. Carol Angle (left) and Dr. Marcia Angle (right) established the professorship.

Her mother's career – as a pediatrician, toxicologist, nephrologist and national expert on heavy metals and other toxins – was an inspiration to Marcia Angle. Not only was her mom, Dr. Carol Remmer Angle, a successful scientist in an era when women rarely were – but she chose to focus her knowledge and experience upon solving problems that particularly affected children and their families.

Marcia Angle became a physician, too. As a young practitioner wanting to refine her work with children and families, she enrolled at UNC-Chapel Hill for a Master of Public Health degree in maternal and child health. That training made a remarkable difference in her life.

“It opened the doors to my 20-year career in global health [at IntraHealth] and to my responsibilities as medical director at the Orange County (N.C.) Health Department,” she says.

Years later, in 2003, Marcia and her mother decided to establish a lasting tribute to her mother's career, which had inspired Marcia's own life. The tribute took the form of a professorship at her alma mater – the Carol Remmer Angle Distinguished Professorship of Children's Environmental Health at the UNC Gillings School of Global Public Health.

“Children, especially young ones, are particularly vulnerable to environmental toxins because their neurologic and metabolic systems are still developing,” Marcia Angle says. “That's why we wanted to support research in this area. Recent studies suggest that antenatal environmental exposures can trigger potentially harmful changes in fetal cells, which even can be passed on generationally. Because we are all ingesting, breathing and even bathing our infants in ‘chemical soup,’ we are obligated to examine which



Drs. Jonathan Kotch (left) and Marcia Angle

toxins cause particular diseases – an inquiry that will benefit children and public health, in general.”

Two Gillings School faculty members have held the Angle professorship – Jonathan Kotch, MD, MPH, professor emeritus and former chair of maternal and child health (see tinyurl.com/kotch-named-angle-prof) and, beginning in 2015, Amy Herring, ScD, professor and associate chair of biostatistics at the School.

Kotch, who joined the UNC public health faculty in 1978, has a long history of policy and program experience in child care health and safety and a reputation for creating successful collaborations between the public health school and communities across North Carolina and around the world.

Herring, who joined the faculty in 2000, has conducted research on a wide range of topics, including birth defects, environmental and occupational exposures, and child and adolescent development. She has collaborated on projects examining the role of behavioral and environmental exposures in healthy pregnancies and developed new statistical methods to study relationships between complex exposures and pregnancy outcome.

“UNC-Chapel Hill has been known for its stellar school of public health for many decades,” Angle says. “I knew that’s where I wanted to put my support. The

”

UNC-Chapel Hill has been known for its stellar school of public health for many decades. I knew that’s where I wanted to put my support.

— Marcia Angle, MD, MPH

university, and particularly the Gillings School, has worked to break down traditional silos. Children’s environmental health encompasses both the built environment (such as child-care centers, an area in which Dr. Kotch was a national leader) as well as contaminants in our air, food and water, which require ingenious statistical analysis to untangle. That is why Dr. Herring, as a top biostatistician, is also an excellent match for tackling the challenges of children’s environmental health.”

Herring says she was particularly honored to have been awarded the professorship.

“I am proud to be connected to Dr. Carol Remmer Angle, whose career in pediatrics and toxicology includes important work in lead poisoning and poison control as well as extensive leadership and service to the profession,” Herring says. “When I visited in fall 2015 with both Drs. Angle, I came away even more inspired and energized about the incredible opportunities in this area of research – and so pleased to have their generous support.”

Learn more about supporting the Gillings School at sph.unc.edu/gift/make-a-gift or by calling (919) 966-0198.

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— Barbara K. Rimer, DrPH
Dean and Alumni Distinguished Professor



Special thanks to the following donors who are members of all three giving societies. Their gifts help us grow in specific ways, provide unrestricted funding so that School administrators can say *Yes!* when great ideas and opportunities arise, and help us plan in ways that will allow the School to succeed well into the future.

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The following individuals have demonstrated loyalty and support for the Gillings School by giving more than one type of gift and thus appear in more than one recognition society list.

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*Gillings School
Alumni Day!*

➤ April 28, 2017

More information to come!



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Read more about Naomi and other Annual Fund Scholars at sph.unc.edu/gift/100andcounting.

MARK RAMPOLLA DELIVERS 2016 FOARD LECTURE

Build Something Great by Going Where No One Else Will

The 48th annual Fred T. Foard Jr., MD, Memorial Lecture, held on April 14, 2016, featured keynote speaker Mark Rampolla, MBA. Rampolla, co-founder and managing partner at Powerplant Ventures LP, an investment organization interested in delivering better nutrition to people around the world, also was co-founder and chief executive officer of ZICO (zico.com).



He and his wife Maura Rampolla, MPH, a 1996 alumna and member of the Gillings School’s advisory council, established the award-winning company to promote coconut water as a healthful alternative to more caloric sugar-sweetened beverages.

Rampolla is author of *High-Hanging Fruit: Build Something Great by Going Where No One Else Will*.

Save the Date!

Plan now to join us for the
49th annual

**Fred T. Foard Jr., MD
Memorial Lecture**

April 27, 2017
at the Gillings School

More information coming
soon at sph.unc.edu/foard.

Q&A

with

Tim Mukoda



In 1993, thanks to federal financial support, Tim Mukoda, MSPH, was able to earn a master's degree in environmental sciences and engineering (ESE) at UNC's Gillings School of Global Public Health. Now a U.S. Air Force and Air National Guard veteran and health and safety manager with Kinder Morgan, an energy infrastructure company based in Houston, Mukoda is a huge proponent of "paying it forward" – helping provide to others the educational opportunities that benefited him.

Mukoda, who lives in Colorado Springs with his wife and two young sons, spoke recently with Crystal Hinson Miller, MA, CFRE, associate dean for advancement at the Gillings School.

CRYSTAL MILLER:
Describe your experience at UNC.

TIM MUKODA:
Amazing! I met students and faculty who challenged me to think about issues in ways I hadn't previously considered. I am especially grateful to Drs. Dave Leith and Mike Flynn [ESE professors], who were the epitome of supportive teachers/mentors, and to the late Dr. Jim Watson, who taught me about risk assessment, risk communication, and the importance of credibility and technical competence. I met wonderful people, many of whom I keep up with personally and professionally.

MILLER: *You have been a generous supporter for more than 20 years. What motivated you to start giving, and why do you continue?*

MUKODA: When I finished school and returned to the Air Force, I wanted to get in the habit of giving back what I could. Initially, the gifts were modest, but over time, I've been able to be more generous. The average person can't give to every worthy cause, but people should make a deliberate choice to contribute to something meaningful. There's a quote that resonates with me – *Be kind, for everyone you meet is fighting a battle you know nothing about.* One way to be kind is to help someone in need, whether you know

I GIVE BECAUSE THE EXPERIENCES I HAD AT UNC ENRICHED MY LIFE.

that person or not. I give to Carolina because the education and experiences I had there have enriched my life, and I want that for others.

MILLER: *What impact do you want your gifts to have?*

MUKODA: Ideally, I'd like a person who receives anonymous financial help to remember what it feels like to get something you didn't ask for. I'd like the recipient to take the gift – and the experience he or she has at Carolina – and use it to make another person's life a little better.

MILLER: *Why is philanthropy important?*

MUKODA: Good intentions are only that – intentions. What matters is establishing the habit of giving. If every UNC public health alumnus gave up one visit to Starbucks per month and donated that \$5 (\$60 per year), that would be more than \$1 million! The Gillings School could provide intentional, flexible resources to support the greatest student and faculty priorities. I hope even recent alumni will do some self-reflection and get into the habit of giving to Carolina!



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