

Yale Public Health



GLOBAL CHILDREN'S HEALTH

Fall 2017

Brazil's babies

Breastfed

Asthma's genetic origins

A problem in paradise

New dean making a mark



A boy at HELO (Home, Education, Love and Opportunity) in Les Cayes, Haiti, smiles widely as he greets visitors. To learn more about HELO, go to www.helohaiti.org.

Yale Public Health

GLOBAL CHILDREN'S HEALTH

Fall 2017

BRAZIL'S BABIES

Albert Ko and colleagues in Brazil respond to the horrors of the Zika epidemic.



2 DEAN'S MESSAGE

3 ADVANCES

ASTHMA'S GENETIC ORIGINS

Researchers comb through mountains of data to understand a disease that afflicts growing numbers of children and adults.



BREASTFED

Working around the world, a YSPH researcher seeks to increase breastfeeding one baby at a time.

A PROBLEM IN PARADISE

The Samoan islands are beset with public health problems; children may provide some solutions.



FRACKING'S FALLOUT

An interview with Nicole Deziel

NEW DEAN MAKING A MARK

Sten Vermund is implementing ambitious plans for YSPH.



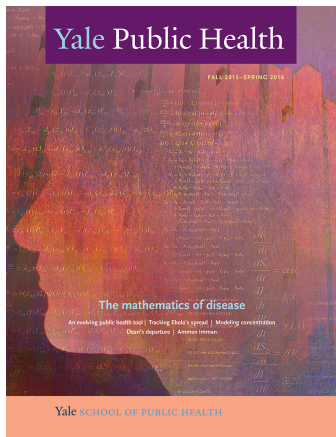
31 STUDENTS

34 ALUMNI

38 YSPH NOTES

49 ON THE ISSUES WITH
KAVEH KHOSHNOOD

DEAN'S MESSAGE



It is my pleasure to greet you through our *Yale Public Health* magazine for the first time as your new dean. I began work on a wintery February 1, greeted by the dean's office staff and others with warmth. In the past six months, it has been a steep learning curve, facilitated by Paul Cleary and the many staff, faculty and students who have shared their perspectives and advice. Being dean is a lifelong learning experience, given the challenges and the opportunities facing us in today's complex environment.

As all of us know, public health is as indispensable as ever, building on its many successes, but recognizing where so much more must be accomplished. While some diseases are being vanquished and others are on the decline, new threats are emerging around the globe, posing particular dangers to those who are most vulnerable economically.

This issue of *Yale Public Health* magazine is dedicated to a topic near and dear to my heart—childhood health. The health of our children is paramount, and as a pediatrician, I have worked in the United States and around the world for four decades to help promote and protect children's health. And while pediatricians are essential, our work is typically focused patient-by-patient. Public

health, meanwhile, seeks to identify the root causes of disease and devise the necessary tools to prevent illness from occurring in the first place.

This commitment to health disparities and justice for children is evident throughout this issue of *Yale Public Health*. You will read about the school's front-line work against the Zika epidemic in Brazil, addressing childhood obesity in Samoa, promotion of breastfeeding, and our ongoing efforts to unravel the genetic origins of asthma, among other topics. The work at YSPH inspires me every single day and can give us all hope for our shared future.

You will also notice a complete redesign of *Yale Public Health*. This issue has a new look and feel. The magazine is our premier publication and this redesign, along with enhanced content, makes the magazine more relevant and accessible to our growing and diverse readership.

If I haven't yet met you, I hope to have that opportunity in the near future. Enjoy reading about your YSPH and its efforts toward evidence-based public health!

Sten H. Vermund, M.D., Ph.D.
Dean, Yale School of Public Health

Yale Public Health

The Journal of the Yale School of Public Health
Fall 2017, Vol. 9

Dean

Sten H. Vermund, M.D., Ph.D.
The Anna M.R. Lauder Professor of Public Health

Managing Editor

Michael A. Greenwood

Copy Editor

Anne Sommer

Design

AH Design, Angie Hurlbut
NYM Design, Nilou Moochhala

Contributors

Jennifer Kaylin, Denise L. Meyer

Address correspondence to

Managing Editor, *Yale Public Health*
47 College Street, Suite 104
P.O. Box 208034
New Haven, CT 06520-8034
Phone: 203-737-5151
Fax: 203-785-7296
E-mail: michael.greenwood@yale.edu
Web: publichealth.yale.edu

Yale Public Health is published twice a year and is distributed to alumni, faculty, students and friends of the Yale School of Public Health.

Acronyms used in *Yale Public Health* include YSPH for Yale School of Public Health and LEPH for Laboratory of Epidemiology and Public Health (the school's main building).

Printer

AM Lithography



Printed on recycled paper
with soy-based inks

Follow the Yale School of Public Health on
Facebook, Twitter and LinkedIn.



A digital archive of *Yale Public Health* is available
at publichealth.yale.edu/news/magazine/index.aspx.

SMOKING HABITS LEAD TO DIFFERENT HEALTH OUTCOMES

MICHAEL GREENWOOD



FEDERICA BORDONI

Differences in smoking habits between African-Americans and Caucasians could lead to a disparity in screening for lung cancer.

Theodore R. Holford, Ph.D. '73, Susan Dwight Bliss Professor of Biostatistics, and colleagues used data from the National Health Interview Survey from 1965 to 2012 to identify differences in tobacco-smoking habits. They analyzed the changes in smoking behavior that occurred in 1964, after the publication of the U.S. Surgeon General's landmark report on smoking and health, the first federal report to link smoking with adverse health effects.

"Racial differences in smoking initiation, cessation and intensity led to substantial differences in risk for tobacco-related diseases," said Holford. Researchers found that while African-Americans are less likely than Caucasians to start smoking in their late teens, they are also less likely to quit when they get older. In addition, African-American smokers report smoking fewer cigarettes per day.

These habits result in important differences in lifetime exposure, the researchers concluded. While Caucasian smokers tend to begin when they are younger, African-Americans tend to continue smoking as they age, resulting in a longer exposure period.

Yet African-Americans have fewer average "pack-years" – the number of packs smoked per day multiplied by years of smoking, which is used to determine eligibility for lung cancer screening – which means that fewer at-risk African-Americans are eligible for screening. This is problematic, the researchers said, because their risk of death from tobacco-related diseases is as high as or higher than that of their Caucasian counterparts.

The results highlight the need to consider variations in smoking habits when developing health care policy, the researchers said. The study was published in the journal *Nicotine & Tobacco Research*.

BIG-CITY LIFE POSES HEALTH THREATS FOR GAY, BISEXUAL MEN

JENNIFER KAYLIN

Many young gay and bisexual men leave their hometowns and move to cities in search of social and sexual freedom, but the new environment often leads to health problems.

John Pachankis, Ph.D., associate professor at the Yale School of Public Health, and his research team conducted one of the most comprehensive studies to date on the migration of young gay and bisexual men and the toll it takes on their physical and emotional health.

They found that when men moved to New York City from places where homophobia and discrimination were present, they experienced mental health issues and substance abuse and engaged in high-risk behavior for HIV.

“We know young gay and bisexual men represent the highest-risk group for new HIV infections,” Pachankis said. Because these men might be moving from homophobic hometowns where they experienced stress related to

discrimination or not fitting in, they might seek connections or support in the easiest ways available in a big city. “Unfortunately, this might include things like excessive alcohol or drug use and sex without condoms with casual partners.”

Pachankis said there has been surprisingly little research on the health challenges of young gay and bisexual men who move to cities. His team’s findings were similar whether participants were international migrants or were moving within the United States. The long-term goal of the research is to identify ways to support young migrants both during and after their move to ensure that they maintain good health despite the temptations of big-city life.

The findings were published in the journal *Annals of Behavioral Medicine*.





FEDERICA BORDONI (2)

INTERNATIONAL AIDS PROGRAM EXPENSIVE BUT LIFESAVING

MICHAEL GREENWOOD

While costly, an initiative of the Joint United Nations Programme on HIV/AIDS known as 90-90-90 could increase survival, reduce the number of children orphaned by HIV and contain the global AIDS epidemic.

Launched in 2014, the 90-90-90 program's goal is to achieve viral suppression among 73 percent of HIV-infected persons worldwide by 2020. The program has three objectives: diagnosing 90 percent of HIV-infected persons worldwide; linking 90 percent of identified cases to antiretroviral therapy (ART); and achieving virologic suppression among 90 percent of ART recipients.

Researchers led by a team at the Yale School of Public Health used South African epidemiologic data and results from HIV screening and treatment programs to gauge the likely impact of 90-90-90 in South Africa. Using a computer simulation model, the team found that over the next decade, 90-90-90 would avert more than 2 million new HIV infections, more than 2.4 million deaths and over 1.6 million orphans, thus saving an additional 13 million patient-years of life compared with the current pace of screening and treatment.

"We're convinced that successful implementation of the 90-90-90 targets would have a transformative impact on the AIDS epidemic worldwide," said A. David Paltiel, M.B.A. '85, Ph.D. '92, professor at the Yale schools of public health and management and the study's senior author.

The initiative would cost \$54 billion over the next 10 years, a 42 percent jump over the cost of current programs, but the study found that investing in 90-90-90 would yield a cost-effectiveness ratio of \$1,260 per year of life saved, a ratio similar to that of HIV treatment itself, the authors said.

The study was published in the journal *Annals of Internal Medicine*.



ZIKA IS SPREAD PRIMARILY THROUGH THE BITE OF AN INFECTED MOSQUITO. IT CAN ALSO BE SPREAD THROUGH SEX.



BRAZIL'S BABIES

MICHAEL GREENWOOD

A YSPH scientist is on the front lines against an epidemic in the Western Hemisphere.

Josely taps on the wooden door and is welcomed into the simple concrete house perched on the rim of a ravine of one of the sprawling *favelas* in Salvador, Brazil.

She is a nurse and has come to see the baby.

Wearing a diaper and sucking a blue pacifier, the two-month-old boy with a shock of black hair is carried in by his *avó*, or grandmother, and laid upon the white sheet of his parents' bed. His crib, covered in a fine mesh to repel mosquitoes and adorned with a colorful mobile, stands at the foot of the bed. A small lizard, no larger than a paper clip, noiselessly traverses the ceiling directly overhead.

Josely bends over the baby and coos soothing words in Portuguese as she caresses his little bare feet and legs and begins her examination. He looks like any other baby—except for the size of his head.

Like thousands of other newborns in Brazil over the past few years, this baby was born with microcephaly, a condition marked by a smaller-than-average head circumference.

Josely places the infant on her portable digital scale and then measures his height. She makes some loud noises to gauge his responses. The baby screeches with each encroachment until his pacifier is reinserted. His subdued family studies each step. Next, Josely tenderly measures the circumference of his head.

Twenty-nine centimeters. She enters the number into her report. The average circumference is about 34 centimeters for a baby this age. A smaller head frequently means a smaller, less-developed brain and, potentially, severe brain damage.

Like so many others recently born with microcephaly in Brazil and beyond, this baby's prospects for the future are described as "uncertain."

ZIKA

News of the microcephaly threat is everywhere here—chimed over airport public address systems—a confident

“This epidemic has devastated Brazil’s poor communities. The impact was disproportionately felt by the disadvantaged communities that we have worked in for the past 20 years.”

~Albert Ko

voice intoning that Brazilians will not be beat. The message is picked up on domestic air flights and then, again, by a talkative cab driver whose route is studded with billboards warning of the health crisis.

During the height of the epidemic in 2015 and into 2016 – and to this day – microcephaly commands the attention of some 200 million Brazilians. And their obvious question – *What’s happening?* – drives a researcher from the Yale School of Public Health and his Brazilian colleagues at Salvador’s Oswaldo Cruz Foundation (also known as Fiocruz, a branch of the federal health ministry), who share a commitment to address an emerging public health crisis before the human devastation worsens.

Albert I. Ko, M.D., professor and chair of YSPH’s Department of Epidemiology of Microbial Diseases, is a slender and seemingly tireless man who has devoted his professional life to tropical infectious diseases and the burden these diseases place on the urban poor; to educating the next generations of scientists; and to the future well-being of Brazil.

Ko’s suspicions soon after the outbreak, shared by others, fell on an exotic and largely unheard-of virus that quickly became a household word: Zika. The disease was reported in this vast South American nation for the first time shortly after the country hosted the 2014 World Cup. While notable, it did not cause much alarm. That would happen in about nine months.

As viruses go, Zika had been regarded as a minor threat. Since its existence was first documented in Uganda in the late 1940s, Zika never caused widespread illness, and when it did strike, the human symptoms were generally minor – rashes, low-grade fever, fatigue – and these were usually short-lived. It rarely made headlines. In a world contending with a swarm of other ruthless pathogens – Ebola, HIV/AIDS and malaria, among them – Zika seemed almost benign.

That changed sharply upon its arrival in Brazil and throughout most of South America. In the preceding years, the virus is believed to have spread from its African origins, traveling eastward across Asia and then the South Pacific, island hopping until, finally, it reached the landmass of South America. Once there, it went viral. In short order

Zika spread throughout Brazil and made quick inroads into much of South and Central America, the Caribbean islands and southern regions of the United States.

It was here that the virus, perhaps mutated and more virulent than its ancestors, found a huge population with no viral immunity; an almost complete lack of awareness of the emerging danger; and multitudes of an established and aggressive vector – the *Aedes aegypti* mosquito. It was a recipe for mayhem.

Ko and his colleagues, however, wanted scientific proof that a virus virtually unknown even a few years before suddenly threatened to upend public health in much of the Western Hemisphere. If this virus caused microcephaly as suspected, they wanted to know how and why and to understand its transmission dynamics and risk factors. Also, could it cause other illnesses or deformities? Could it kill?

These scientific inquiries at Fiocruz and in Ko’s New Haven laboratory at the Yale School of Public Health were simultaneously being accompanied by an aggressive public health outreach in the poor neighborhoods that ring Salvador’s affluent enclaves. It was a concerted effort to help the parents of children born with microcephaly, as well as the babies themselves.

Ko’s involvement spanned both efforts.

“This epidemic has devastated Brazil’s poor communities,” Ko said. “Salvador and northeastern Brazil were the epicenter of the outbreak. The impact was disproportionately felt by the disadvantaged communities that we have worked in for the past 20 years.”

RESPONDING TO AN EPIDEMIC

Ko and colleagues quickly pivoted from their focus when they observed an unusual number of cases of microcephaly in the Pau da Lima neighborhood where their research on another infectious disease, leptospirosis, has been ongoing for years.

The number of babies born with the condition continued to increase, and the public’s fear and anxiety mounted. People wanted answers and protection, but scientists in 2015 and early 2016 remained divided on the precise causes and risks.



MICHAEL GREENWOOD

A nurse evaluates a newborn in Brazil with microcephaly during a home visit.

“We still don’t have good diagnostics, we still don’t have a good way to treat pregnant women affected by the virus and we don’t have an effective way to prevent [Zika],” Ko said in early 2016 in one of dozens of media interviews on the topic as the Zika virus came to dominate international news.

To determine a link between the virus and the birth defects, Ko and colleagues began recruiting female volunteers seeking prenatal care (and their babies when they were born) to determine conclusively if Zika was the culprit rather than exposure to something else, such as

rubella or syphilis. They were also testing samples of the virus collected in different countries to determine if it had mutated and was more lethal in some places than others and also more easily transmitted.

Ko and his colleagues also had other research under way, and the findings further heightened concern. The team published the first report demonstrating that the Zika virus can cause glaucoma in infants who were exposed during gestation.

This finding was followed by a separate study of a pregnant Brazilian woman who was infected with the Zika

virus and who had a stillborn baby with signs of severe tissue swelling as well as central nervous system defects that caused near-complete loss of brain tissue. It was the first report indicating a possible association of congenital Zika virus and damage to tissues outside the central nervous system.

Ko said the case provided evidence that, in addition to microcephaly, congenital Zika infection might also be linked to hydrops fetalis (abnormal accumulation of fluid in fetal compartments), hydranencephaly (almost complete loss of brain tissue) and fetal demise (stillbirth).

While this research was ongoing, the need to directly respond to the crisis in and around Salvador was growing. In partnership with the Geral Roberto Santos Hospital, where many babies with microcephaly were born and waiting rooms were crowded with young parents and their newborns, a series of support programs was created to help those affected.

Many families did not have the means to come back to the hospital repeatedly, so the hospital started sending nurses like Josely to the homes in Pau da Lima and beyond to meet with the parents and monitor the babies' growth and development.

These nurses help families learn how to care for a baby with special needs and provide them, oftentimes, with much-needed emotional support. This was bolstered with a support group for new parents, with activities that encourage bonding and address specific issues, such as

convulsions. Other personnel, including social workers, physical therapists and speech pathologists, were also made available.

“Many of these families are really struggling,” said Ridalva Felzemburgh Martins Dias, a director of the outreach effort along with Federico Costa, Ph.D., a researcher at Fiocruz and an adjunct associate professor at YSPH. “We do care and we do want to help.”

A TRAGEDY

Due to a variety of factors, many of the babies afflicted with microcephaly are born to poorer families, who can least afford the services and therapy that will certainly be necessary as their sons and daughters mature. The condition further strains families who are living in Brazil's marginal enclaves, where day-to-day living conditions, by anyone's standards, are challenging.

For many residents of places such as Pau da Lima, there is no running water, trash removal or sewers. Homes here are simple concrete blocks with ample openings for disease-carrying mosquitoes – and the pervasive rats – to gain easy access. Meanwhile, those living in Salvador's high-rise apartments – in some cases only a 15-minute cab ride away – face nowhere near the same risk of infection for Zika and a number of other diseases.

So the poorest of Brazil's poor bear a double burden – subsistence in barely livable conditions and a greatly increased risk of infection from a variety of infectious



Microcephaly is a birth defect marked by a smaller-than-average head. Depending on the severity, babies born with microcephaly may experience the following:

SEIZURES

DEVELOPMENTAL DELAYS

INTELLECTUAL DISABILITIES

PROBLEMS WITH MOVEMENT AND BALANCE

DIFFICULTY SWALLOWING AND OTHER ISSUES WITH FEEDING

HEARING LOSS

VISION PROBLEMS

Source: CDC



“[Mothers to be] are really scared. They want to know if their baby is okay.”

~ Mitermayer Galvão dos Reis

diseases – maladies such as leptospirosis, dengue fever and schistosomiasis, among others – and now Zika as well.

“This is really a tragedy,” said Mitermayer Galvão dos Reis, M.D., Ph.D., senior researcher at Fiocruz. “It’s really very challenging for us. [Mothers- to-be] are really scared. They want to know if their babies are okay.”

Reis grew up in Pau da Lima, the very *favela* where Ko has done much of his research and an area hit hard by Zika. “I love that place,” he said. When he was a student in Boston in the 1980s he met Ko, and the two have been close colleagues since. Reis introduced Ko to Brazil.

The worsening Zika outbreak rapidly became a priority for Fiocruz and there was no choice but to shift its resources toward a health threat that was steadily worsening, said Manoel Barral Netto, M.D., Ph.D., who was director of the Salvador center at the height of the crisis in early 2016.

He credited Ko and the Yale School of Public Health with providing assistance and leadership during the crisis. Ko, in particular, knows Salvador and the Brazilian health system well, and he has worked closely with the city’s public health professionals to help coordinate the city’s response.

“Albert has been very important [in our response],” he said. “He has been involved from the start.”

While science has the potential to eventually protect people from Zika by successfully developing a vaccine, other viruses, currently unknown like Zika was a few years ago, will likely emerge, and it will be the poor who again will suffer the most, Reis said. The underlying issues of poverty and health inequity are even tougher to resolve.

“I don’t think anyone has the magic bullet to solve these social and political problems,” he said.

BRAZIL

Now fluent in Portuguese, Ko first traveled to Brazil in the early 1990s and was quickly captivated by the people and culture, as well as by Brazil’s vibrancy and potential.

As a young doctor, he could also see the serious health challenges facing the country.

Ko has since become a leading expert on leptospirosis, a neglected tropical disease that particularly afflicts the urban poor in Brazil and other parts of the developing world. From the Salvador headquarters of Fiocruz, he works with and helps train the next generation of Brazilian scientists who will continue the fight against this rat-borne infection. YSPH students, meanwhile, routinely travel to Salvador to work with Ko and conduct field research.

Ko knows this expansive city intimately and is able to navigate his small car through a confusing and often congested network of roads with apparent ease. Brazilians seem to know him wherever he goes, and he enjoys a spectrum of local culture from raucous soccer games played in the city’s gleaming new stadium to intensely competitive dominoes with people who take the game seriously.

The experience with Zika has left scientists like Ko wondering if the epidemic was an anomaly. He thinks probably not. Chikungunya appeared suddenly in the Americas just a few years before, and Ebola nearly burst out of its traditional borders during the 2014 outbreak. Where will the next disease come from? No one knows for sure, but factors such as changing weather patterns and mass human migration are shifting the equations. Diseases no longer stay put. Traditional borders are melting, and the next pandemic can originate anywhere and reappear thousands of miles away virtually overnight.

And while the number of new Zika cases slowed and the epidemic started to fade from the headlines in 2016, it continues to take a heavy toll on Brazil. There is a generation of Zika babies who will need enormous resources going forth, and science, despite some concrete gains, still has much to learn about just this one virus.

“Zika is one of many infectious diseases that we have to face, particularly in poorer countries,” Ko said. “This makes it even more essential that we invest in young people in Brazil and elsewhere and train them to be the next generation of scientists.” YPH



BREASTFED

JENNY BLAIR

Working around the world, a Yale School of Public Health researcher seeks to increase breastfeeding one baby at a time.

Breast milk: it's liquid gold. For the vast majority of babies and mothers, breastfeeding is a safe, free and healthful choice, one that saves countless lives.

Yet relatively few mothers breastfeed for long. Many of them add or substitute with formula long before the baby has fully benefited from breast milk. Completing the recommended six months of exclusive breastfeeding (EBF) after birth – the single most powerful way to reduce infant mortality – is uncommon. In low- and middle-income countries, only 37 percent of babies receive EBF for the first six months of life. The United States' rate is 27 percent. In the United Kingdom, it's less than 1 percent.

Professor Rafael Pérez-Escamilla, Ph.D., director of the Global Health Concentration at the Yale School of Public Health, is working to change those numbers one country at a time. He's devised an evidence-based process that helps countries create a customized program to boost and sustain their breastfeeding rates. The Becoming Breastfeeding Friendly (BBF) process, now under way in Mexico and Ghana, is about to launch in three more countries. It's the culmination of Pérez-Escamilla's decades-long concern with infant nutrition.

"Very early on, I became convinced that the earlier in life that we start, the more successful we are going to be with health promotion and disease prevention," Pérez-Escamilla said. "The human race exists in large measure because of breastfeeding. What could be more important than that?"

FOR MOTHERS AND CHILDREN

Study after study shows how important breastfeeding is for both mothers and their children. A 2016 analysis in *The Lancet* estimated that universal EBF would prevent 20,000 annual maternal deaths from breast cancer alone, in addition to averting 823,000 child deaths. Breastfed babies suffer fewer bouts of diarrhea and fewer respiratory infections, they are less likely to become obese and they score higher on intelligence tests. Nursing mothers gain a natural, temporary form of birth control, and they enjoy a lower risk of diabetes and breast and ovarian cancers. Not to mention all that bonding time.

But as many mothers can attest, it's not always easy to breastfeed. And telling people "breast is best" is nowhere near enough. "In many countries, the vast majority of women already know that," Pérez-Escamilla said.

\$13 BILLION

HOW MUCH THE COUNTRY WOULD SAVE
IN MEDICAL AND OTHER COSTS ANNUALLY
IF 90 PERCENT OF U.S. BABIES BREASTFED
EXCLUSIVELY FOR SIX MONTHS

“The human race exists in large measure because of breastfeeding. What could be more important than that?”

~Rafael Pérez-Escamilla

One problem is a lack of expert help. Breastfeeding is a skill both mother and baby must learn. Assistance from a lactation counselor in the baby’s first month can be invaluable – a successful first few weeks can ensure smooth sailing afterward.

Learning how to breastfeed is just the start, though. All over the world, finding the time and a safe, clean and private place to nurse can be prohibitive. Work environments can be hostile to nursing mothers, and women have been harassed for nursing in public. Inadequate maternity leave and the difficulties of pumping do not help. The problem can be worse for women who earn a living in the informal sector, such as by selling produce at a public market.

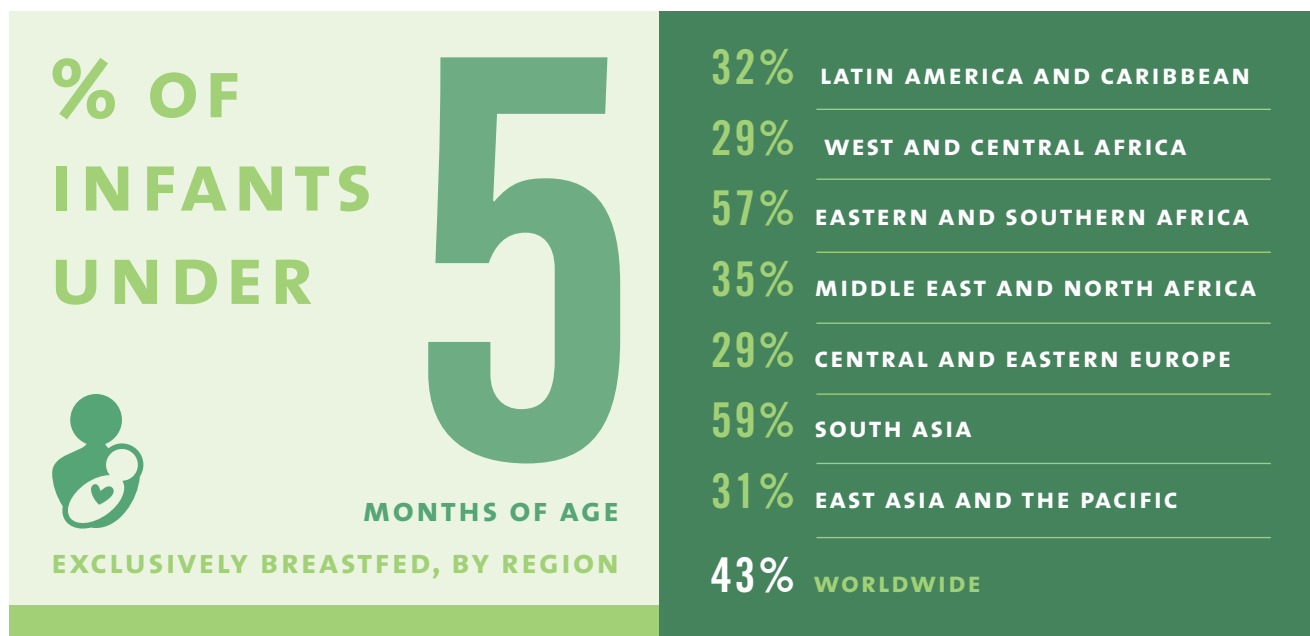
Add to that the pressure exerted by companies that sell baby formula. Marketing can be intense, including offers of free or discounted formula and promotion of the idea that the breast won’t give babies enough nutrition. Though the World Health Organization issued an ethical code concerning the marketing of baby formula back in 1981, it’s not often enforced.

“For example, in Mexico [these companies] are totally out of control,” Pérez-Escamilla said. “It is absolutely difficult to try to promote breastfeeding in that context.”

SCALING UP

Addressing all these factors was his aim when, in 2012, supported by the Bill & Melinda Gates Foundation, Pérez-Escamilla and his team sat down to study peer-reviewed and “gray” (derived from reports from international agencies) literature to learn what has and hasn’t worked in breastfeeding programs. The team then mapped out a group of interlocking processes, or “gears,” that are necessary to the “machine” needed to scale up breastfeeding rates and keep them high. The team dubbed this approach the breastfeeding gear model.

These gears include advocacy, political will and funding for program implementation; pro-breastfeeding legislation and policies relating to, for example, paid maternity leave; training of lactation professionals; social marketing based on a sound understanding of a community’s unique needs;



Source: UNICEF, 2015



BREASTFEEDING PROTECTS BABIES FROM INFECTIONS AND ILLNESSES, INCLUDING DIARRHEA, EAR INFECTIONS AND PNEUMONIA.

research and evaluation; and intersectoral coordination and monitoring of ongoing programs.

Then, thanks to a 2015 grant from the breastfeeding-focused Family Larsson-Rosenquist Foundation, Pérez-Escamilla's group devised the two-step BBF initiative.

Step one is a months-long assessment of 54 benchmarks around the country to generate a score on the BBF Country Index created by Pérez-Escamilla's team and a group of breastfeeding policy experts, including representatives from the World Health Organization, UNICEF and the Gates Foundation.

Each benchmark corresponds to a gear in the breastfeeding gear model. Countries with too many low benchmark scores and inadequate gears might fund and launch unfocused programs without seeing their EBF rates budge. So assessing what is and isn't in place is crucial.

In step two, the committee shows decision makers their "BBF report card" and issues recommendations. As of spring 2017, the BBF process was complete – and is expected to soon lead to implementation of new policies to protect, promote and support breastfeeding – in its first two pilot countries, Mexico and Ghana.



RAFAEL PÉREZ-ESCAMILLA

The Becoming Breastfeeding Friendly process has been introduced in Ghana to promote and support breastfeeding among all women.

FOCUS

ALUMNA LAUNCHES VIDEO SERIES TO ADDRESS RACIAL DISPARITIES IN BREASTFEEDING

DENISE MEYER

When Elizabeth G. Bayne learned that only 59 percent of African-American women breastfeed their babies, she was indignant.

"This issue resonated with me as a woman; it felt like a reproductive justice issue," said Bayne, M.P.H. '06, who notes that 75 percent of Caucasian women and 80 percent of Hispanic women breastfeed in the United States. Besides being free and readily available for most new mothers, breast milk provides infants with enormous health benefits.

"[Not breastfeeding] puts our children at higher risk for asthma, obesity, diabetes and other chronic diseases – the very same health conditions that disproportionately affect the African-American community," said Bayne, who lives and works in Los Angeles. "I feel so strongly about this."

Bayne, who in addition to her M.P.H. has an M.F.A. in film studies from the Art Center College of Design, took her first film production class as a public health student at Yale. She now uses her dual talents to address the breastfeeding divide.

Since first learning of the disparity in 2013, she began reviewing the literature and meeting with community health providers, community groups and African-American mothers. Once grounded in the issue and connected to a network of people involved in maternal health, she began doing ethnographic research. The video interviews from that research became the foundation of a public service campaign, *Chocolate Milk*, which began in 2014. "The campaign was essentially a Web series, said Bayne, who has produced over 30 videos featuring African-American women who nurse their babies, as well as a website and four social media channels. The videos from the

Web series are available on YouTube while Bayne and her team are working on a larger documentary.

Women of all ethnic backgrounds cite a variety of reasons for resorting to formula, she said. It is difficult to return to work while breastfeeding and oftentimes inconvenient and hard to breastfeed in public. Beyond that, women simply don't have confidence in their ability to do it.

“This issue resonated with me as a woman; it felt like a reproductive justice issue.”

~Elizabeth Bayne

But African-American women face some additional obstacles, said Bayne. The legacy of slavery and the stereotype of mummies and wet nursing have left an imprint with negative connotations about breastfeeding, she said. As a result, some African-American women view the practice as inappropriate or even “nasty.” And now that several generations of women have not fed their babies with breast milk, mothers and grandmothers don't understand feeding patterns or techniques or the challenges of breastfeeding during the first few weeks when they are helping their daughters adjust to motherhood, said Bayne.

These issues and others need to be addressed and overcome. *Chocolate Milk* is one response.

Bayne is currently raising funds for *Chocolate Milk*. To learn more about the project, visit her website at chocolatemilkdoc.com.

Elizabeth Bayne is working to address racial disparities in breastfeeding.



THE MAXIMUM THAT FAMILIES WHO FOLLOW BREASTFEEDING PRACTICES CAN SAVE ON INFANT FORMULA IN THE FIRST YEAR

\$1,500

“All we need is political will and a relatively small investment to improve breastfeeding globally.”

~Rafael Pérez-Escamilla

In the early 1990s, surveys in Ghana revealed a shockingly low 2 percent EBF rate. After the country passed new laws, including one mandating 12 weeks’ paid maternity leave, the rate climbed to 63 percent in 2008. But then it began to fall. By 2011, the rate was 46 percent. Ghana’s goal: 85 percent.

With its Breastfeeding Friendly Country Index scores in hand, Pérez-Escamilla flew to Ghana in February to present encouraging results. Ghana already has all eight gears in place, with four rated “strong” and the others of “moderate strength.” The team recommended that lawmakers increase maternity leave, train breastfeeding advocates and partner with media.

In Mexico, Pérez-Escamilla’s birthplace, the challenge is steeper and the goal more modest. With an EBF rate of only 15 percent, the country’s goal is to double that rate within 5 years. The committee suggested paid maternity leave, the expansion of hospital policies that promote nursing and the prevention of unethical marketing of infant formula, among other measures.

By 2019, scale-up in Ghana and Mexico should be complete. In the meantime, three new countries—Myanmar, Germany and Samoa—are beginning the benchmarking process.

In an ideal world, all newborns would benefit from a full course of human milk. That’s the goal of the Family Larsson-Rosenquist Foundation. The World Health Organization aims for 50 percent EBF by 2025. As for Pérez-Escamilla, his goal is simply to work with each country to help it reach its own goals.

“All we need is political will and a relatively small investment to improve breastfeeding globally,” he said. “It will be, perhaps, very surprising how soon after you start investing in these recommendations you can start seeing improvement.” [YPH](#)

Jenny Blair, M.D. ’04, is a writer in Michigan.



- ▶ BREASTFED BABIES ARE LESS LIKELY TO DEVELOP ASTHMA.
- ▶ MOTHERS WHO BREASTFEED HAVE A LOWER RISK OF BREAST AND OVARIAN CANCERS.
- ▶ BREASTFEEDING REDUCES THE RISK OF SUDDEN INFANT DEATH SYNDROME.
- ▶ CHILDREN WHO ARE BREASTFED FOR SIX MONTHS ARE LESS LIKELY TO BECOME OBESE.



FEATURE

UNCOVERING ASTHMA'S GENETIC ORIGINS



Researchers are combing through mountains of data to understand a disease that afflicts growing numbers of children and adults.

STEVE KEMPER

The statistics about asthma are staggering.

According to a recent Global Burden of Disease Study, more than 334 million people worldwide may suffer from this common chronic disease. In the United States, the Centers for Disease Control and Prevention reports that asthma afflicts an estimated 25 million people, about 8 percent of the population. It hits children even harder—about 10 percent of them have this respiratory malady that hinders breathing. Asthma accounts for a quarter of all emergency room visits and more than 500,000 hospitalizations in the United States each year. It kills about 3,500 Americans annually—most of these deaths are preventable with proper treatment—and contributes to another 7,000 deaths.

And the financial tab is steep. Medical care, absences from work and school and premature deaths cost the United States an estimated \$56 billion every year. Worse, all of these numbers are rising, alarmingly so among certain populations. In just a decade, for instance, the asthma rate among black children rose more than 50 percent, and the disease now affects 17 percent of this group.

Asthma is increasingly damaging to economies and public health, and researchers and policymakers have noticed. In recent years the United Nations has spotlighted the disease several times, citing it as a growing threat to global health and economic development. The Global Asthma Network, formed to improve asthma care internationally, has published two reports about the disease, most recently in 2014. In 2013 the World Health Organization (WHO) called for a global action plan and international monitoring of asthma and other noncommunicable diseases.

GENETIC SLEUTHING

To fight asthma effectively, its causes must first be identified. Scientists have established that the disease stems from some combination of genetic inheritance and environmental factors such as air pollution, chemical substances and indoor and outdoor allergens (smoke and pollen, for example).

But much about asthma remains unknown. “The fundamental causes of asthma,” according to the WHO’s most recent fact sheet, “are not completely understood.” Science

is still many years away from solving the mystery of the biological causes of this disease.

“Asthma is what we in the field of genetic epidemiology classify as a complex trait,” said Andrew T. DeWan, M.P.H., Ph.D., associate professor in the Department of Chronic Disease Epidemiology. “Genetic characteristics inherited from your parents make about a 50 percent contribution to the risk of developing asthma, but there is also a large component that is not inherited—all sorts of environmental influences.”

So far, researchers have postulated associations between asthma and more than 400 genes, a huge pool of possibilities. But that’s just the start of this disease’s complexity. To discover asthma’s foundations, researchers must identify not only the causative genes but also the specific mutations within them that point to the disease. Further, the genes that may affect risk for asthma seem to connect or interact in myriad combinations, and these are not necessarily consistent: the combinations that lead to asthma seem to vary from individual to individual and group to group.

All of these possible genetic combinations may be further influenced, or not, by how they respond singly or collectively to factors in each individual’s environment. A cluster of genetic characteristics that leads to asthma in one person might have little or no effect on someone else, possibly because of other genetic factors or because of differences in the individuals’ environments. To muddy things further, a study published recently in *JAMA: The Journal of the American Medical Association* found that a third of 600 adults diagnosed with asthma didn’t actually have the disease, which casts some doubt on statistics about asthma.

DeWan works to cut through this welter, winnowing out the genes or genetic combinations that probably don’t lead to asthma and verifying those that look promising. “A lot of my research,” he said, “is focused on dealing with this mixed bag of results to get a better biological understanding of asthma.”

Much of this is done through large-scale statistical analysis of genetic data, looking in big populations for mutations linked to the disease. A recent study that DeWan co-authored, for instance, surveyed the scientific literature to find genes that have been associated with asthma.

“These big data sets will give us the statistical power to find what is really a needle in a haystack.”

~Andrew DeWan

DeWan and his colleagues identified 251 of them, then tried to replicate those findings through a genetic analysis of an independent population. (They recently updated their search; the current count of genes reportedly associated with asthma is now over 400.) In their statistical analysis, DeWan and his colleagues got minor hits on several genes and also identified one previously unassociated gene (*RAD50*), but they were unable to replicate any links to asthma in the vast majority of reported genes.

That doesn't necessarily mean these genes aren't implicated in the disease, noted DeWan, “but the caveat in our paper is that there may be many false positives in our initial literature search. That's one reason genetic epidemiologists require that results be replicated.”

Though many findings about genetic contributions to asthma may seem inconsistent and ambiguous, the picture is slowly coming into better focus as more studies connect the same genes, such as *ADAM33* and *ORMDL3*, to the disease. “I think the true number of genes that contribute in some way to the risk of developing asthma is well over 100,” said DeWan.

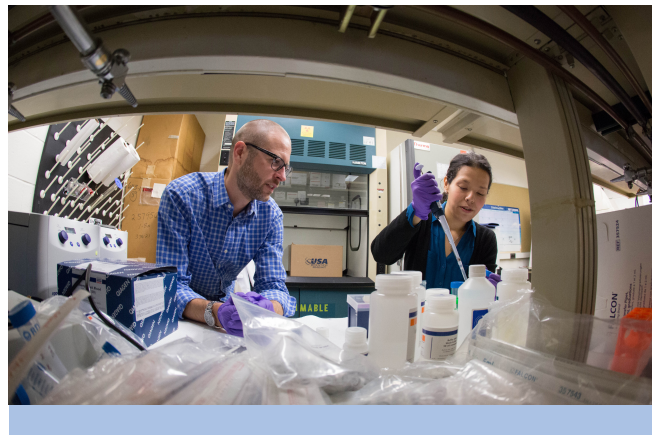
To whittle that number further, he will continue to combine the technological power of high-speed sequencing with the growing quantity and availability of genetic data. The sequencing of the human genome, coupled with advances in computer power, has made possible a revolution in genetic analysis. But to continue that progress, researchers such as DeWan need more extensive genetic data.

That's happening. Many large population-based studies in the United States and abroad are genotyping and sequencing their subjects, each of them collecting data on 50,000 to 100,000 individuals. “To detect the small effects of these genetic variants on asthma, we need much larger sample sizes,” said DeWan, “and we're now getting to that point. We're trying to understand which inherited genetic variants are contributing to an individual's risk of developing asthma by looking in large populations, and these big data sets will give us the statistical power to find what is really a needle in a haystack.”

The analysis entails sequencing the genomes of thousands of people and then looking for mutations, and combinations of mutations, common to people with asthma. If DeWan and others can identify the ones that contribute to asthma, they may be able to predict who will develop the disease. Once that's possible, so is prevention.

“If we can understand the biological processes that cause asthma,” said DeWan, “we can develop better treatments for it and intervene at a pharmaceutical level to prevent or lessen the symptoms.”

Someday genetic markers could help identify which individuals will respond, or not respond, to certain drugs and treatments, opening the way to effective targeted therapies. Genetic knowledge might also make it possible to predict which environmental factors should be avoided by people with a certain combination of mutations. “The goal is to reduce the overall severity of asthma and its public health costs,” said DeWan.



HAROLD SHAPIRO

Andrew DeWan and Yasmmy Salinas extract genomic DNA from saliva samples collected as part of FastGen, a study of genetic variants contributing to asthma susceptibility in families that have multiple children with asthma. The DNA samples are currently being sequenced to reveal all of the genetic variants in the protein-coding regions of the genome.

WHY ASTHMA?

These possibilities lie well into the future. In addition to his statistical analyses of large populations from all over the world, DeWan is conducting a local study named FAsTGen (Family-Specific Genetic Variants Contributing to Asthma Susceptibility). Funded by the National Institutes of Health, DeWan and his team have recruited almost 250 two-generation families who have a minimum of three children, at least two of whom have asthma. This is a narrowly focused study, but these families are more likely to have inherited genetic variants contributing to asthma, due to the fact that multiple family members have asthma. DNA samples have

<p>Asthma affects millions of people in the United States alone and cuts across all social, economic and class lines, though significant disparities remain. The percentages of children under 18 years of age with the condition are as follows:</p>	9.9%	MALE
	6.9%	FEMALE
	7.5%	WHITE
	13.5%	AFRICAN-AMERICAN
	10.5%	FAMILY INCOME LESS THAN \$35K
	7.2%	FAMILY INCOME MORE THAN \$100K
	9.8%	LIVING IN NORTHEAST
	7.3%	LIVING IN MIDWEST
	8.5%	NATIONAL AVERAGE

Source: CDC, 2015

been collected from all participants, and their exomes are being sequenced.

“That’s the quick part,” said DeWan. “We’ll probably be analyzing these data for the next couple of years, looking for rare mutations that are contributing to the development of asthma in individual family members.”

DeWan likes working on asthma because it’s a major public health problem with complex causes. “From a methods or analytical perspective, there are a lot of extremely interesting challenges,” he said. “And if we can develop methods to detect genetic associations in a really complex trait such as asthma, maybe we can do this with other traits such as cancer or COPD (chronic obstructive pulmonary disease).”

A Ph.D. candidate working in DeWan’s lab, Yasmmy Salinas, is searching for genetic links between asthma and obesity. Researchers have noticed that the two diseases often occur together and seem to instigate each other, but any genetic connection remains unclear.

“One of the hypotheses,” said Salinas, “is that they are controlled by the same metabolic pathways, so there is probably a set of genes that affects both diseases. I will look for these genes by studying the whole genome of a large adult population.” With support from an NIH predoctoral research grant, she will be analyzing a Norwegian cohort of more than 50,000 people. This sort of large-scale genome-wide analysis done simultaneously on multiple diseases is a new development in genetic epidemiology.

Salinas doesn’t know what she will find, but the possibilities excite her. If she can identify a gene or genes linked to both asthma and obesity, those genes could be pharmacologically targeted to prevent them from activating the diseases. That could be particularly important, noted Salinas, “because the population of asthmatics who are obese tends to have much worse outcomes, and the medications available for asthma don’t work quite as well in that population. We hope we can find a more targeted therapy for that population.”

Salinas was drawn to the study of obesity-related conditions like asthma partly for personal reasons. She grew up in a city once called “the fattest city in America” — McAllen, Texas — and has seen her own family members suffer from the wide-ranging health effects of obesity.

“That’s how I got interested,” said Salinas, who plans to pursue a career in academia after graduation in 2019. “I hope to make a difference in the prevention of these diseases.” **YPH**

Steve Kemper is a freelance writer in Connecticut.



FRACKING'S FALLOUT

An interview
with Nicole Deziel

NICOLE C. DEZIEL, M.H.S., PH.D., is an assistant professor in the Department of Environmental Health Sciences. Her research focuses on exposure to environmental toxins and the role they may play in the onset of human disease, including those specific to women's and children's health. She has investigated several types of pollutants, including pesticides, persistent organic pollutants and polycyclic aromatic hydrocarbons. Her research also includes hydraulic fracturing, or "fracking," and how chemicals used in the process and released into the air or water may adversely affect communities of people living nearby.

Much of your research is on the possible health consequences associated with hydraulic fracturing, or "fracking." Can you briefly describe what fracking is?

ND: Hydraulic fracturing and fracking are terms used to describe unconventional oil and gas (UO&G) development, which is a complex process of extracting fossil fuels from deep rock formations. The process involves pumping millions of gallons of pressurized water, sand and chemicals into drilled wells that extend a mile or more below ground to create cracks in the rock, releasing oil or gas. This industry has greatly expanded in the past decade due to advances in drilling and other technologies.

How widespread is fracking in the United States today?

ND: Hydraulic fracturing occurs in at least 25 states. There have been approximately 300,000 wells drilled and hydraulically fractured since 2000. An estimated 10 million people live within one mile of an oil or gas well, potentially placing them in contact with chemicals released into the air or water.

How many chemicals are used in the fracking process and what are some that cause particular concern?

ND: There have been more than 1,000 chemicals produced or emitted by the hydraulic fracturing process. However, fewer chemicals are emitted at any individual well. Our research has demonstrated that chemicals involved in or produced by UO&G development may include known or suspected reproductive and developmental toxicants and carcinogens. These compounds may be released into the air or water, potentially exposing nearby populations. There is limited information about whether this process could contaminate the air or water in nearby communities and whether adverse health effects may result.

What are some of the potential human health effects associated with exposure to these chemicals?

ND: The current evidence regarding the health effects of UO&G development is inconclusive. However, a handful of human health studies of UO&G development have observed an increase in adverse perinatal outcomes; asthma exacerbations; dermal irritation; increased hospitalization rates; nasal, headache and fatigue symptoms; and childhood leukemia.

Are children at particular risk?

ND: Children are often more likely than adults to be at risk from environmental hazards because of their different exposure and activity patterns and their different physiology. Children breathe and drink more relative to their body mass than adults do, and therefore if the air or water is contaminated they may experience a higher dose of the contaminant. Children's natural defenses are also less-developed. Additionally, they may be vulnerable to damage during rapid growth periods, when their organs and systems are undergoing differentiation and maturation.

“**BECAUSE CHILDREN ARE A VULNERABLE POPULATION, RESEARCH EFFORTS SHOULD BE DIRECTED TOWARD FURTHER INVESTIGATING WHETHER EXPOSURE TO [FRACKING] IS ASSOCIATED WITH AN INCREASED RISK OF CHILDHOOD LEUKEMIA.”**

~Nicole Deziel



Nicole Deziel

What are some of the specific diseases potentially associated with fracking that may affect young people?

ND: Increases in adverse perinatal outcomes such as low birth weight and birth defects have been observed in the children of mothers who live in areas with oil and gas activity in the vicinity of their homes. However, additional studies are needed before these effects can be conclusively linked to hydraulic fracturing.

Is there evidence that exposure to a fracking site is associated with leukemia?

ND: It is possible that proximity to UO&G development could increase the risk of childhood leukemia, based on several lines of evidence. We identified 55 known, probable or possible carcinogens (20 of which are associated with leukemia and/or lymphoma specifically) that are potential water contaminants and/or air pollutants related to UO&G development. Our study provides some support for the hypothesis that exposure to UO&G development could increase the risk of leukemia. A new study by researchers in Colorado observed that children with a common form of leukemia were 2.8 times as likely to live near areas of dense oil and gas activity. Furthermore, large influxes of oil and gas workers and their families into rural areas experiencing oil and gas booms could introduce new infectious agents, which could lead to childhood leukemia as well. Because children are a vulnerable population, research efforts should be directed toward further investigating whether exposure to UO&G development is associated with an increased risk of childhood leukemia.

If fracking is occurring far underground, how do people come into contact with the potentially toxic chemicals?

ND: Drilling operations could possibly contaminate drinking water sources through several mechanisms. Pathways of potential groundwater and surface water contamination from UO&G development may include leakage from

deteriorating or improperly constructed wells; spills and leaks of hydraulic fracturing fluids and wastewater; improper wastewater storage and treatment; and migration of chemicals from fractures to shallow aquifers. A recent study found that there were 6,622 reported spills associated with 21,300 unconventional wells from 2005 to 2014 in Colorado, New Mexico, North Dakota and Pennsylvania alone.

UO&G development activities that could generate air pollution include operation of diesel-powered equipment; use of vehicles to transport materials and waste to and from the site; addition of sand (silica) to the fracturing fluid mixture; volatilization of compounds from wastewater; processing and distribution of oil and gas; and flaring or burning off gas. Air pollutants such as diesel exhaust, fine and coarse air particulates, crystalline silica and polycyclic aromatic hydrocarbons are examples commonly cited as being generated during various phases of UO&G development.

Is there anything that families who live in close proximity to a fracking site can do to protect themselves and the health of their children?

ND: It is difficult to make specific recommendations due to the limited data available on the potential for increased exposure to harmful chemicals. If people are concerned about their air or water, they could contact state or federal authorities and have their water tested. If they notice any changes in their water, they could substitute bottled water or install a filtration system if feasible.

What are your future research goals in this area?

ND: My research aims to address two critical gaps: (1) whether people living in communities in close proximity to UO&G operations experience increased exposure to toxic or carcinogenic compounds and (2) whether they experience adverse health effects. **YPH**




45%

OF CHILDREN IN SAMOA
ARE OVERWEIGHT OR
OBESE.

A PROBLEM IN PARADISE

JENNY BLAIR

The Samoan islands are grappling with public health problems; children may provide some solutions.

For 3,000 years, people have fished and farmed the Samoan islands of the South Pacific Ocean. They thrived on papaya, breadfruit and taro; they caught and prepared fish with lime and coconut.

After World War II, everything changed: the population boomed, food imports began, lifestyles shifted. And in recent decades, the Samoans have suffered some of the highest rates of obesity, diabetes and heart disease in the world. In the early 2000s, the adult overweight and obesity rate in the territory was nearly universal, at 93 percent, while the rate for children was close to 45 percent. Nearly 1 in 3 adults in American Samoa has diabetes. These diseases of modernity kill many islanders at a grievously early age.

Samoa's devastating public health problems are entangled with food and other cultural practices, as well as with the very genes that have helped Samoans survive for millennia. Since 2009, Nicola Hawley, Ph.D., an assistant professor in the Department of Chronic Disease Epidemiology, has

worked to pinpoint these factors and figure out how and when to intervene. Early childhood, she believes, is the best time.

"The situation in terms of chronic disease in the adult population in Samoa has gotten so bad now that there needs to be some kind of generational shift—public health interventions targeting children—in order to have the most effect," Hawley said.

IMPORTED FOODS

Part of the archipelago is a sovereign nation called Samoa, and part is the U.S. territory of American Samoa. Samoans from both polities share a gene pool, but American Samoa was the first to see noncommunicable-disease rates rise, as it took up imported food, technology and sedentary lifestyles earlier. Imported foods like cake, bread and canned meat are cheap and readily available across Samoa.

Jennifer Park, M.P.H. '16, measures a child's arm circumference in Saleimoa Village, Samoa.

Mothers who consume these foods may put babies at a disadvantage. Hawley found in a 2015 study that 86 percent of American Samoan mothers were overweight or obese in early pregnancy, which can raise the risk of obesity in babies.

Many of these infants are then fed formula. Though most were born at a healthy weight, they gained weight fast. By four months, both boys and girls were above the 90th percentile for weight, and they tended to stay large. At 15 months, nearly 23 percent of boys and close to 17 percent of girls were obese, and obesity was more likely in those fed formula. In 2013, Hawley found that exclusive breastfeeding for the first six months protects a Samoan child from this rapid weight gain. Unfortunately, this practice is not widespread. Only 28 percent of Samoan mothers in the study were still exclusively breastfeeding at four months.

But early infancy could be the perfect time to intervene. Prenatal care is excellent in the Samoas, Hawley said, so including public health messages during routine pregnancy checkups is one potential approach. Her team is now teaching pregnant women about breastfeeding and gestational weight gain, and they're showing a video they shot about the importance of gestational diabetes screening.

A rapid influx of cheap, low-quality calories can displace important micronutrients, like iron. In Hawley's 2017 *Public Health Nutrition* study of 305 toddlers in independent Samoa, 1 in 5 had moderate or severe growth stunting, 1 in 3 was anemic and 16 percent were overweight or obese. Some of those heavy children — who tended to come from wealthier families — also had anemia and/or stunting.

That link to wealth is a clue to cultural food practices. Not only are imported foods becoming cheaper in Samoa, they also denote status.

"If you show up [at a social gathering] with a can of tinned corned beef, you're much more well-received than if you show up with papayas from your garden," Hawley said. In the latter case, "you're considered to be less well-off or not wanting to make a good-enough contribution."

Such foods can nonetheless exact a high price. In July 2016, Hawley's team announced in *Nature Genetics* that it had tracked down a "thrifty" gene, common among



16%

OF TODDLERS IN SAMOA
ARE OBESE.

Samoans but almost nonexistent elsewhere. This gene likely helps people extract more nutrition from food, which would have conferred a survival advantage on earlier generations. Its effect on body size is the largest ever found. To understand how the gene interacts with other factors, Hawley and her colleagues returned to Samoa this summer to follow the development of obesity and other diseases in pregnant women and in toddlers and adults.

RESEARCH IN SAMOA

Originally from the United Kingdom, Hawley signed on to her first project in Samoa in 2009 during a postdoctoral fellowship at Brown University. Brown epidemiology professor Stephen T. McGarvey, Ph.D., M.P.H. '84, with whom she still collaborates, was about to begin a genome study on the islands.

"I was looking for something to do that was not behind a desk, and off I went to Samoa," Hawley recalls. There, she fell in love with its culture and people, whom she finds warm, caring and receptive to new ideas.

Despite a cultural preference for large body size, which denotes strength, beauty and wealth, the islanders are growing concerned about their health. Hawley said Samoans hope to lead the Pacific in understanding their health problems and solutions.

Some are training to do so. As of this summer, five Pacific Islander students attending U.S. universities joined Hawley's team; all of them intend to return to the Pacific to work in their own communities. Add that to her local collaborators—a group of committed physicians and public health experts intent on exacting positive change—and the likelihood for success is real.

Though Hawley cherishes Samoa (and she finds its traditional food delicious!), the capacity-building process means that she might not be needed there indefinitely. That's fine with her.

"I would love to not be working in Samoa in 15 years," she said. "I would love it if Samoan public health researchers and clinicians were doing what I'm doing now. Even better if these problems are solved." **YPH**

Jenny Blair, M.D. '04, is a writer in Michigan.



NEW DEAN

YALE vs HARVARD
NEW LONDON, JUNE 24-19
YALE 19-52-8 HARVARD 19-54-4
GREGORY C. GATES '50 No. 5

HAROLD SHAPIRO



“THERE IS AN INTERDISCIPLINARY NATURE TO MANY OF THE CHALLENGES AND PROBLEMS WE ARE FACING, INCLUDING AIDS, CLIMATE CHANGE, OPIOID ADDICTION AND SEDENTARY LIFESTYLES.”

~Sten Vermund

NEW DEAN MAKING A MARK

Sten Vermund is implementing ambitious plans for YSPH.

As Sten H. Vermund began his deanship at the Yale School of Public Health, he quickly identified the political shift under way in America and how the YSPH community will see its mission and values tested in the coming years.

“There will be great challenges to health, diversity and social justice,” Vermund said during an introductory town hall meeting last November. Given this, Vermund, M.D., Ph.D., identified four specific areas where he believes members of the YSPH community need to be vigilant and assertive: affirming the school’s core values in support of diversity, inclusion, social justice and collaboration; helping shape policy and educating the public about the facts on health care access, health disparities and issues such as climate change and obesity prevention; bringing innovative research to the attention of nonfederal funders; and redefining what a public health education looks like for future students.

A tall and slender man with white hair and beard and glasses, Vermund also intends to build on the legacy of his predecessor, Paul D. Cleary, Ph.D., by strenuously promoting collaboration across disciplines, Yale schools and universities.

“There is an interdisciplinary nature to many of the challenges and problems we are facing, including AIDS, climate change, opioid addiction and sedentary lifestyles,” Vermund said. “We can’t do it alone. We need to partner with allied disciplines and other schools.”

Vermund, who is also the Anna M.R. Lauder Professor of Public Health and professor of pediatrics at the Yale School of Medicine, officially began his five-year term at Yale on February 1. He began his medical career in pediatrics, a field of medicine that is “inherently prevention-oriented.” There is no reason for a child to die of diphtheria, when a vaccination could have saved him or her, he said. Similarly, there’s no need for a child to die because he or she fell out of an eighth-story window, when window guard regulations could have been enforced.

These thoughts got Vermund more interested in global health and prompted him to pursue a second career, one in public health. While clinical medicine is essential, Vermund was drawn to having a broader impact on disease conditions that can only come from being a public health practitioner.

“That was appealing to me,” he said. “It felt like the natural step after pediatrics.”

Vermund, who earned his M.D. from Albert Einstein College of Medicine and trained in pediatrics at Columbia University, pursued his growing interest in public health by earning a master’s degree in community health in developing countries at the London School of Hygiene and Tropical Medicine, a diploma in public health at the Royal Institute of Public Health and Hygiene and a Mellon Foundation-supported fellowship in clinical epidemiology at Columbia-Presbyterian Medical Center. He received his Ph.D. in

epidemiology from Columbia University. He is a former professor of pediatrics, medicine, health policy and obstetrics and gynecology at Vanderbilt University in Tennessee and former director of the Vanderbilt Institute for Global Health.

In the mid-1980s, Vermund helped establish the first adolescent health clinic to provide care to HIV-infected youth in New York City. His work showed that HIV is a risk factor for cervical cancer, which prompted routine cervical cancer screening for HIV-infected women worldwide, Yale President Peter Salovey, Ph.D. '86, and Yale School of Medicine Dean Robert J. Alpern, M.D., noted in a letter to the Yale community announcing Vermund's appointment late last year.

As a member of the National Academy of Medicine (formerly known as the Institute of Medicine), Vermund spent decades focused on global health issues, including the risk of cervical cancer in countries where Pap smears are uncommon. He and his research team developed a technique to visually detect cervical lesions. With this, they created a screening program in Zambia that has become a center for training throughout the world. In 2000, he helped found the Centre for Infectious Disease Research in Zambia, now one of the country's largest nongovernmental organizations.

Vermund knows that in following Cleary, who served two terms as dean, he has big shoes to fill. He plans to build on Cleary's work to make the school more diverse and inclusive. "We don't fully reflect the American population in terms of its diversity," he said, adding that diversity expands the overall educational experience and, therefore, it is essential to YSPH's mission.


Vermund also wants to offer students more financial support. One way to do that, he said, is by cultivating greater alumni involvement. "We have some 5,000 alumni. They provide critical services to the school," Vermund said. "Maintaining strong ties with them is vital, and I hope to get to know as many of them as I can."

Vermund plans to develop centers and institutes that foster interdisciplinary topic-oriented excellence. Furthermore, he wants to encourage public health students to collaborate with other Yale students across disciplines and professional schools to create high-impact solutions to current health problems.

The school's size—YSPH is not one of the largest schools of public health, but not one of the smallest either—is "a big advantage" in these and other areas, said Vermund. Students don't get lost in the crowd, but they have the resources they need to do serious work. "I'd say we're just about the right size," he added.

In terms of the educational experience, Vermund wants to offer more joint degrees, shorter courses and opportunities for distance learning. He also wants to see an expansion of mathematical modeling, which is still a new specialty for many students and faculty at the School of Public Health. He finished the work Cleary began: making the Social and Behavioral Sciences Division into a full department.

Vermund is married to Pilar Vargas, a child psychiatrist, and they have two adult sons. In his free time, he enjoys golf, tennis and cycling; he also likes to collect stamps and visit museums. For Vermund, being at Yale is an inspiration.

"I have to pinch myself every time I think about how lucky I am to have this opportunity—to come to Yale in this leadership position," he said. "I am thrilled to be here." 



TONY BACEWICZ

Sten Vermund rides his bicycle to an appointment after attending an alumni event in New Haven.

23%

OF YSPH INTERNSHIPS
ARE GLOBAL.

A DEFINING EXPERIENCE

JENNIFER KAYLIN

YSPH students travel the world for ambitious summer internship projects.

During her Yale School of Public Health summer internship in South Africa, Divya Chandra faced many challenges, including obtaining approval to work in a clinic, working with incomplete data and transportation.

But nothing topped the time a baboon tried to steal her bag.

Chandra, a second-year M.P.H. student, dealt with each challenge along the way and successfully completed the overseas assignment that is a cornerstone of the M.P.H. experience at the Yale School of Public Health.

“It’s overwhelmingly transformative,” said Felicia C. Spencer, the director of the school’s career management

center. “It’s a unique opportunity for students to move forward with the process of realizing their dreams.”

The 10- to 12-week full-time summer internship, which is mandatory for a master’s degree, usually is done between students’ first and second years. It allows students to participate in real-world public health initiatives and research through local, national and international placements. Students travel to more than 20 countries to work for organizations ranging from the World Health Organization to small human rights nongovernmental organizations. The internship is also a chance for students to clarify their professional goals and start making decisions about their careers.

Some internships are paid and others aren't, but Yale offers mini-grants, available through alumni contributions, to help defray the costs associated with travel and living expenses.

Students recently worked in locales such as New Delhi, Samoa, Thailand, Malaysia, Ghana, Peru, Ecuador and Romania. Others stayed closer to home, doing their internships in Washington, D.C.; Nashville, Tenn.; and other places.

Projects were as diverse as the places students worked. They included assessing food insecurity along the coast of Ecuador; researching the reproductive health of female sex workers in Malaysia; evaluating nanotechnologies and biotechnologies developed by organizations across Asia and the Pacific; conducting a community-based survey to assess the nutritional status of children on the Samoan island of Upolu; and studying brucellosis and Q fever in livestock in Thailand.

Spencer said that some students have only a vague idea of how they want to spend their internship, while others have more defined plans. She and colleague Kelly Shay work with students to help them clarify their goals and decide what internship experience best suits them.

"Usually, by the end of the semester their plans have changed dramatically," Spencer said, "and that's fine; it's part of the process. Every student is unique, so we give them a lot of face time."

She said the internship experience often influences students' job choices after they graduate. "Some students get jobs where they interned."

After the internship is over and students return to Yale, they participate in lunchtime chats where they describe what they did and what they learned and share advice with first-year students, who are already starting to think about their internships.

"The internship helps get students excited about life after Yale and their purpose in life; it's a very maturing experience," said Spencer. "They finally get to use what they've been learning in class all year." **YPH**

ROXANNE WINSTON ► SAN FRANCISCO

Winston worked with the TransLife Program at the San Francisco AIDS Foundation and hosted a transmasculine health panel. She conducted independent research on the health effects of stigma on receptiveness and adherence to care among transmasculine and gender-nonconforming communities.

Winston's goal is to be a nurse practitioner who specializes in primary care for marginalized populations, particularly gender and sexuality minorities. Winston said the internship gave her a deeper understanding of health issues affecting these populations.

During the summer of 2016, she coordinated the organization's first transmasculine health event, bringing together community leaders from across the city to talk about the health services and politics affecting transmasculine people.

"I also met so many wonderful people through my interviews, whom I appreciate tremendously for opening up about their experiences in order to inform my research," she said.



Roxanne Winston, left.

COURTESY OF ROXANNE WINSTON

100%

OF STUDENT APPLICANTS
RECEIVED SOME FUNDING
FOR AN UNPAID SUMMER
INTERNSHIP.

ELISABETH SKILES ► CHICAGO

Skiles worked as a case manager intern at RefugeeOne, a refugee resettlement agency, where she helped refugees, asylees, parolees and secondary migrants resettle in Chicago. Her clients were from Burma, Cuba, Democratic Republic of Congo, Eritrea, Iran, Iraq and Syria.

After graduation, Skiles wants to work to improve the health and lives of refugees and internally displaced people through policy and advocacy.

“Each time I got to witness a refugee’s resilience, I experienced my favorite moment at RefugeeOne,” Skiles said. “But there is something about seeing it with children that makes the resilience all the more amazing to me and makes me more committed to serving this community of people.”

ZHONGFEI YANG ► GENEVA, SWITZERLAND

Yang worked at the World Health Organization (WHO) on noncommunicable diseases (NCDs). He updated a checklist for assessing national NCD action plans, which helped engage countries in a self-assessment of their current plans. He also helped Indonesia edit its action plan and assisted the WHO in updating Web-based tools for developing national action plans.

Yang’s goal is to become a leader in government sectors to help set policies for a healthier world. Through his internship, Yang learned about the driving forces behind public health decision making. When he assisted Indonesia’s government in editing its action plan, for example, he learned that he needed to take the country’s public health status and specific needs into account.

The WHO’s 69th World Health Assembly was among his most memorable experiences, Yang said. “It was interesting and invigorating to listen to visions, strategies, challenges and concerns of different countries.”



COURTESY OF ELISABETH SKILES

Elisabeth Skiles



COURTESY OF ZHONGFEI YANG

Zhongfei Yang

Byron Kennedy, New Haven's health director, said his education at the Yale School of Public Health gave him an appreciation of the power of data. He wants to better utilize data to combat the city's health challenges.

ALL HEALTH IS LOCAL

JENNIFER KAYLIN

Elm City's new health director moves to address disparities and engage community.

Former Speaker of the U.S. House of Representatives Tip O'Neill once memorably said that all politics is local.

Byron Kennedy, the new health director for New Haven, holds the same view, but with a twist. Kennedy believes all health is local.

By that he means that health care providers offer care, but they also engage with the community. "You know where and how patients live on a granular level," Kennedy said. "I like working at the local public health level. It's different from working at the state or national level, where you don't really know the community partners."

Kennedy, M.P.H. '01, M.D. '04, Ph.D. '04, who started in the director's position in May 2015, sees public health as something of a contact sport. "It's where the rubber hits the road," he said. "You engage with the community as well as with your staff and other stakeholders. You need to be ready and willing to answer questions, to defend your budget and to push hard for the things you need to do your job."

In Kennedy's relatively short time in charge of New Haven's health, he's already faced a series of challenges.

A few months into his tenure, 17 people were treated for drug overdoses and three died. The authorities believe the patients had used heroin or, more likely, fentanyl.

In response to the crisis, Kennedy helped produce a robocall, which alerted city residents about what was happening. Then Kennedy directed his staff from the city's needle exchange program to contact clients, including intravenous drug users, to warn them in person about the recent overdoses.

He also worked to secure more Narcan, an important tool in the war against heroin abuse because it can save someone who is having a life-threatening reaction. New Haven's problem was that the city's stock of Narcan was dangerously low. Whatever existed was supplied to the city's first responders, but fortunately a generous supply of the drug was located and donated to the city by the state.

Kennedy's initiation to New Haven didn't end there. He and his staff immediately had to turn their attention to a heat wave in the summer of 2015. "We got the word out that libraries and schools and water parks were open to cool people down," Kennedy said. "We told the public to stay



“What can I do to be impactful?”

~Byron Kennedy

hydrated, to stay in cooler environments and not to leave children or pets in cars.”

Kennedy, who is board-certified in preventive medicine, with expertise in community-based approaches aimed at improving the health of vulnerable populations, was public health commissioner for the Monroe County health department in New York before returning to New Haven. His goal for New Haven is to create a more patient- and community-centered environment. To that end, he’s redesigned the department’s clinic to give it “less of a 1960s prison look.” There is now children’s television programming, an X-ray room and other services. It offers evening hours and will soon offer weekend hours, and it treats about 15 patients a day. “The clinic,” Kennedy said, “is the visible sign of what we’re trying to do here.”

Asthma is a chronic health problem in New Haven that concerns Kennedy. The state hospitalization rate for asthma is 14 per 10,000 people. In New Haven, the rate is 75 per 10,000 people. To combat those numbers, Kennedy offers children a summer asthma camp to help them learn how to use their inhalers. His goal is to reduce hospital visits by up to 80 percent and school absenteeism by a third.

Another challenge, one that Kennedy sees as a “major project,” is the health disparities that exist in New Haven along racial and economic lines. “I want to shine a light on those disparities and find ways to eradicate them,” he said.

Kennedy uses an “egalitarian leadership style” that is both “respectful and team-oriented.” He believes in an approach in which everyone contributes. “That approach gives you a fuller perspective of the situation,” he said. “No person is more important than another.” Upon arriving in New Haven, Kennedy said he went on a “learning and listening tour,” always asking the question, “What can I do to be impactful?”

Kennedy chose a career in public health rather than one in general practice because “I like problem solving. It’s more limited when your involvement is with one patient at a time.” Something Kennedy learned at the Yale School of Public Health that he’s determined to bring to the New Haven Health Department is an appreciation for data and data analytics. “I want to apply that lens to the health challenges New Haven faces,” he said. “Many public agencies aren’t used to being informed by data routinely. Our department isn’t as robust as it can be. I want to change that.”

Kennedy knows he could have chosen a career in medicine that would have been more lucrative and more predictable, but that didn’t appeal to him. “There’s never a dull moment – that’s what I love,” he says about the field he chose. “I have a schedule, but I know that on any day it can change on a dime.” **YPH**



75
 PEOPLE PER 10,000 ARE
 HOSPITALIZED FOR ASTHMA
 IN NEW HAVEN.
 THE STATE’S RATE IS 14 PEOPLE PER 10,000.

ALUMNI NEWS

TROYEN A. BRENNAN, M.P.H. '84, M.D. '84, J.D. '84, was appointed to the board of directors of Decibel Therapeutics, a company focused on discovering and developing new therapies to protect, repair and restore hearing. Troyen is executive vice president and chief medical officer of CVS Health.

COURTNEY CHOY, M.P.H. '16, was awarded a Fulbright grant to continue her work with the Samoa Ministry of Health. For her yearlong Fulbright research project, Courtney is exploring the role of the Samoan home environment in shaping child dietary and physical-activity behaviors.

RICHARD D'AQUILA, M.P.H. '79, was named president of Yale New Haven Health, a position he will hold along with his role as president of Yale New Haven Hospital. In his new role, he will collaborate with local health care providers and hospitals to enhance access to specialty medical care in local communities across Connecticut.

LT. COL. STEPHANIE DAVIS, M.P.H. '12, was the 2015 recipient of the Julian E. Ward Award. Stephanie was honored for her commitment to excellence and leadership while a resident at the United States Air Force School of Aerospace Medicine.

STEVEN JONAS, M.D., M.P.H. '67, M.S., has released an e-book with Punto Press titled *Ending the "Drug War"; Solving the Drug Problem: The Public Health Approach*. The book proposes a public health approach to dealing with the use of recreational mood-altering drugs.



BARMAK KUSHA, M.P.H. '98, has accepted a position at John Snow Inc. (JSI) as a program manager in the JSI Immunization Center. He oversees a portfolio of projects strengthening routine immunization systems in French-speaking Africa and the Caribbean, supports new business development and is involved in mobile health and applied-technology efforts.

TASSOS C. KYRIAKIDES, Ph.D. '99, participated in an Olympism For Humanity Charity Bike Ride in the summer of 2016. A team of five cyclists rode from Thessaloniki to Ancient Olympia in Greece over six days. They stopped at cities along the way for discussions and presentations, while connecting with people and promoting Olympism, peace, humanity and sports.

YUNA LEE, M.P.H. '09, Ph.D. '17, joined the Columbia University Mailman School of Public Health faculty as an assistant professor of health policy and management.

AARON LUKSE, M.P.H. '11, and Melissa Ivins-Lukse, a 2011 graduate of the Yale School of Forestry & Environmental Studies, are excited to announce the birth of their daughter, Abigail Rose Lukse, on May 14, 2016.

BO NEMELKA, M.P.H. '14, has co-authored a book, *The Middle School Student's Guide to Academic Success*.

STEVEN R. NEWTON, M.P.H. '89, has been promoted to president of North Texas Operations for Baylor Scott & White Health in Dallas. He has responsibility for the 11 hospitals from the legacy Baylor Health Care System. Steven has been a hospital president for more than 25 years.

ALISON NORRIS, Ph.D. '06, M.D. '08, received a \$100,000 Grand Challenges Explorations grant from the Bill & Melinda Gates Foundation. Alison, an assistant professor at Ohio State University's College of Public Health and the College of Medicine, will assess how individuals' contraceptive needs and identified barriers explain contraceptive use over time.

THOMAS C. QUADE, M.P.H. '99, was named president of the American Public Health Association. Thomas is the health commissioner for Marion County, Ohio. He previously served as the deputy health commissioner for Summit County, Ohio.

PATTI R. ROSE, M.P.H. '85, Ed.D., authored *Health Disparities, Diversity, and Inclusion: Context, Controversies, and Solutions*, which was published in February by Jones & Bartlett Learning. The book explores diversity and inclusion and solutions to the health status gap in the United States.



MOLLY ROSENBERG, M.P.H. '10, Ph.D., has been named assistant professor in the Department of Epidemiology and Biostatistics at the Indiana University School of Public Health-Bloomington. Her research is focused on identifying novel interventions to improve sexual health.

YASMMYN D. SALINAS, M.P.H. '14, was awarded the Yale School of Public Health's Teaching Fellow Award in May 2016. Now in its second year, this award recognizes a Ph.D. student who demonstrates outstanding performance as a teaching fellow and promise as a future teacher.

DECHEN WANGMO, M.P.H. '07, founder and executive director of the Bhutan Cancer Society, has been awarded the National Order of Merit (Gold) by His Majesty the 5th Druk Gyalpo. The award coincided with the 109th National Day in Trongsa, December 17, 2016.

THEODORE J. WITEK JR., M.P.H. '82, Dr.P.H., was named to the board of directors of Helix BioPharma, an immuno-oncology company developing drug candidates for the prevention and treatment of cancer. He is senior vice president and chief scientific officer of Innoviva and an adjunct professor and senior fellow at the Institute of Health Policy, Management & Evaluation at the Dalla Lana School of Public Health, University of Toronto.

HAVE AN UPDATE? Your classmates want to hear about you! Send your news (and photos) to ysph.alumni@yale.edu.

“IN THE LONG TERM, IT’S THE GREATEST PUBLIC HEALTH THREAT THAT THE WORLD IS FACING.”

~Robert Dubrow

GREENHOUSE GAS EMISSIONS AND HEALTH

New YSPH program addresses climate change.

The cook stove is the most common of household appliances, but in much of the developing world it presents a danger. Inefficient, poorly ventilated wood-burning cook stoves release carbon dioxide, the main greenhouse gas that causes global warming. They also emit toxic indoor air pollutants that cause serious health problems, especially for women and children. Many not-for-profit organizations coordinate projects to improve cook stove efficiency around the world, but it is not always easy to tell which projects are the most effective.

In the first of a series of new workshops organized by the Yale Climate Change and Health Initiative (CCHI), Yale School of Public Health students and other students from across the University learned how to think critically about such projects. In an April session, students evaluated greenhouse gas emissions reduction projects in developing countries, including ones in Malawi, Uganda and Peru, that seek to improve cook stove efficiency. They also analyzed other projects designed to reduce greenhouse gas emissions.

“Climate change is relevant to most areas of public health,” said Robert Dubrow, M.D., Ph.D., professor and faculty director of CCHI. “In the long term, it’s the greatest public health threat that the world is facing.”

Students reviewed projects on a website of an organization called Cool Effect, which identifies some of the best greenhouse gas emissions reduction projects in the world to make it simple for supporters to donate. In addition to clean cook stove projects, other projects that students analyzed in this workshop included a wind power project in Costa Rica, biogas projects in Vietnam and India and a tropical forest protection project in Peru.

Though it is imperative for governments from developed countries to provide financial support to programs in developing countries that reduce greenhouse gas emissions, Dubrow said, many projects are fueled by private donations in the form of carbon credits. Students learned to judge each project by critically examining its public health benefits, its positive impact on the local economy and its environmental benefits. For this first workshop, the Yale School of Public Health donated a total of \$8,000 to the projects that workshop students deemed to have the greatest impact. Future workshops are planned, including an annual workshop during orientation week for new M.P.H. students.

A 2015 report by the Lancet Commission on Health and Climate Change concluded that addressing climate change could be the world’s greatest current global health opportunity. That’s because there is still time to avert the most catastrophic public health effects of climate change, which include illness and death caused by natural disaster, airborne pollution, vector-borne disease, food insecurity and related violence.

While developed countries are primarily responsible for climate change and richer people produce more emissions, it’s generally poor nations, and poor individuals within rich nations, who bear the brunt of the adverse effects of climate change, Dubrow said.

CCHI is a multidisciplinary effort that seeks to educate and train future leaders on the health impact of climate change, as well as to foster research that addresses the related public health challenges. CCHI is funded by Cool Effect’s founders, Richard and Dee Lawrence, through a grant from their Overlook International Foundation.

Jeanna Canapari

1,800

U.S. COLLEGE STUDENTS
PER YEAR DIE FROM
ALCOHOL-RELATED INJURIES.

RISKY DRINKING PREVIEWED AT YSPH

Documentary outlines dangers of alcohol abuse.

Alcohol is a fact of American life, used for socializing, celebrating and relaxing. But for too many, it often leads to abuse and dependence.

An advanced screening of HBO's *Risky Drinking*, a documentary on the dangers of alcohol abuse, took place in November at the Yale School of Public Health. The film tells the story of four people, ages 28 to 55, as they manage their alcohol use, which ranges from binge drinking to alcohol dependence. By sharing the personal experiences of the subjects and offering information from addiction experts, the film examines the high cost of drinking, which for many begins in college.

Almost 60 percent of college students have used alcohol, according to the National Institute on Alcohol Abuse and Alcoholism. It is estimated that more than 1,800 college students die from alcohol-related injuries and nearly 100,000 experience sexual assault or date rape related to alcohol use every year. Men in their 30s and 40s are the most common alcohol abusers, and 80 percent of people who have been treated for an alcohol problem relapse in the first year.

Vasilis Vasiliou, Ph.D., professor and chair of the Department of Environmental Health Sciences, said the showing of *Risky Drinking* was "timely," as it came on the heels of a U.S. Surgeon General's report, which called substance abuse "an epidemic that is causing great human suffering and economic loss."

Michael Greenwood

Yale SCHOOL OF PUBLIC HEALTH

JOIN US FOR A
SCREENING AND PANEL
DISCUSSION OF HBO'S
SOON-TO-BE-RELEASED
DOCUMENTARY FILM
ON ALCOHOL ABUSE

**RISKY
DRINKING**

HBO DOCUMENTARY FILMS in association with the NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM presents RISKY DRINKING
© 2017 NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM. ALL RIGHTS RESERVED. PHOTO BY JEFFREY M. HARRIS FOR THE NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM

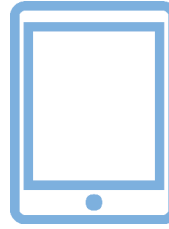
COMING SOON
HBO

ARE YOU AT
RISK?

Nov. 17
5:30 P.M.
60 COLLEGE ST.
WINSLOW AUDITORIUM

**DINNER
SERVED**

DISTINGUISHED PANELISTS INCLUDE ELLEN GOOSENBERG KENT, ACADEMY AND EMMY
AWARD WINNING DIRECTOR; CARRIE WILKENS, CENTER FOR MOTIVATION & CHANGE;
REPRESENTATIVES FROM THE YALE SCHOOL OF PUBLIC HEALTH, YALE SCHOOL OF
MEDICINE AND THE NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM



FURTHER PLANS INCLUDE PROVIDING MORE ONLINE COURSES AS WELL AS ACCESS TO EDUCATIONAL MATERIALS THAT SYRIAN MEDICAL STUDENTS CAN DOWNLOAD.

AMID WAR, MEDICAL STUDIES IN SYRIA

YSPH collaboration helps train future doctors.

Students and faculty at the Yale School of Public Health have joined forces with colleagues across campus and at other universities to help medical students in Syria continue their education amidst a brutal war that shows no sign of ending.

“There are hundreds of Syrian medical students who want to study medicine, but they can’t,” said Kaveh Khoshnood, M.P.H. ’89, Ph.D. ’95, associate professor and one of the lead faculty members involved in Yale’s response to the Syrian crisis. “The pipeline of doctors and nurses has been destroyed.”

The situation is dire. Syrian students, always in small groups, are forced to study in basements and bunkers so that they aren’t targeted for aerial bombardment by Syrian and Russian fighter jets.

In response, YSPH is collaborating with the School of Medicine, Yale University and The Global Institute for Health and Human Rights of the University at Albany, State University of New York, to assist medical students in Syria in continuing their education.

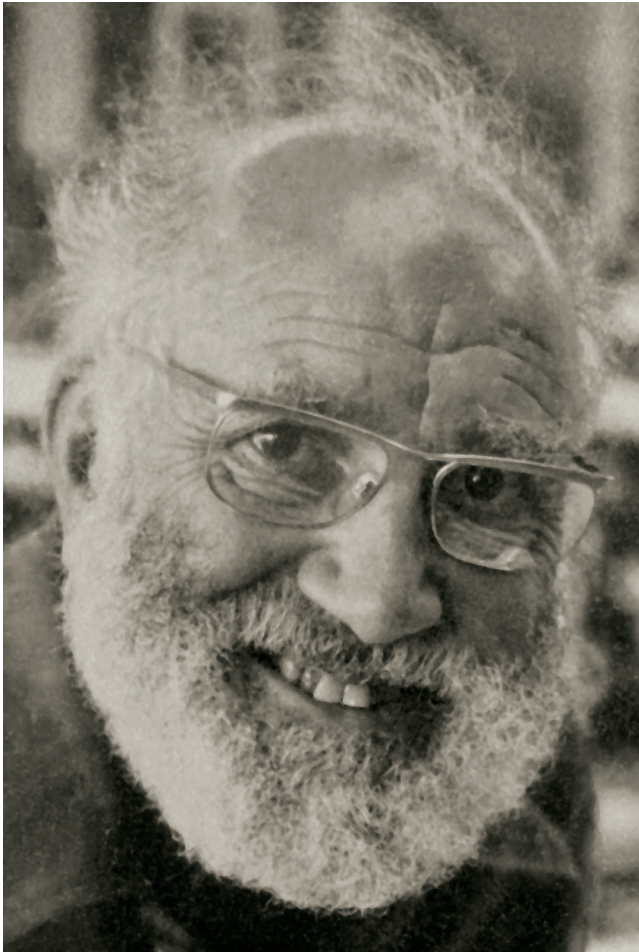
Members of the response team are making online learning available. They plan to send tablets preloaded with medical information, such as anatomy and histology. The tablets can also facilitate online instruction, which is a challenge when electricity and access to the Internet are disrupted. A handful of Yale faculty members are working with Yale librarians and others to provide free access to thousands of online materials used by Yale students.

Further plans include providing more online courses as well as access to educational materials that Syrian medical students can download. More funding is urgently needed to support these and future initiatives.

More than a third of Syria’s hospitals have closed since the war started, and about 65 percent of Syrian health care workers have fled the country.

Jennifer Kaylin





FELLOWSHIP TURNS 50

Forerunner to global health celebrates milestone.

Living, working and doing research in remote settings does something special to a student. So concluded Wilbur G. Downs, M.D., M.P.H., an accomplished physician/scientist and renowned globetrotter who established the Downs International Health Student Travel Fellowship for Yale students in 1966.

Fifty years later, just as Downs predicted, the fellowship continues to be a seminal experience that expands students' world views and clarifies their priorities as health professionals.

"There is an enthusiasm derived from the excitement of living abroad and seeing the real world from the human health perspective," said Leonard Munstermann, M.A., Ph.D., senior research scientist and chair of the Downs Fellowship Committee.

During the Downs Fellowship's 50 years, more than 600 Yale students have had the life-changing experiences, and challenges, that the program offers.

>600

YALE STUDENTS IN THE
LAST 50 YEARS HAVE HAD
THE LIFE-CHANGING
EXPERIENCES—AND
CHALLENGES—THAT THE
DOWNS PROGRAM OFFERS.

In many respects, the fellowship was a forerunner to today's global health movement. It requires a minimum of 10 weeks of fieldwork. Applicants design projects using original research in resource-poor countries with marginalized populations. Master's and Ph.D. students in the schools of public health, medicine and nursing; the physician associate program; and the Graduate School of Arts and Sciences are eligible.

Fellows receive financial support, including airfare and ground transportation; funds for visa costs and medical expenses; evacuation insurance; and a modest stipend. Applications are evaluated on the basis of innovation, design and analysis, as well as the novelty of the cultural milieu to which a student will travel.

Once the work is done, students share their findings at the annual Wilbur G. Downs Fall Symposium and Poster Session. Most fellows develop their research into a thesis or dissertation. Many projects have led to outstanding theses and peer-reviewed publications, as well as oral presentations and posters at national and international health conferences.

Kaveh Khoshnood, M.P.H. '89, Ph.D. '95, associate professor at the School of Public Health and former chair of the Downs Fellowship Committee, said the fellowship is invariably a "transforming experience" for students. "When students go into the field, they encounter situations they didn't anticipate, such as trying to work when electricity and water aren't available," he said. "These are things you can't teach; they come from experience."

Jennifer Kaylin

Above: Wilbur Downs, who established the travel fellowship that bears his name, in 1966.



TONY BACEWICZ

“THE YALE SCHOOL OF PUBLIC HEALTH HAS BEEN A WONDERFUL PLACE TO HAVE A CAREER. I HAVE ENJOYED WORKING WITH SUPERB COLLEAGUES AND TEACHING THE BEST STUDENTS.”

~Michael Bracken

VETERAN SCHOLAR AND PUBLIC HEALTH EXPERT RETIRES

Michael Bracken honored with *festschrift*.

Scholars from around the world gathered in 2016 to honor the long and productive career of Michael B. Bracken with a daylong celebration of his scientific accomplishments.

Bracken stepped down after nearly 48 years at the Yale School of Public Health, where he earned three degrees before joining the faculty in the early 1970s. He continues to serve as co-director of the Yale Center for Perinatal, Pediatric and Environmental Epidemiology.

Bracken, M.P.H. '70, Ph.D. '74, Susan Dwight Bliss Professor Emeritus, is widely known for establishing the field of perinatal epidemiology and for his research on spinal cord injuries.

He is “one of the giants of public health,” said former YSPH Dean Paul D. Cleary.

Bracken noted that his time at YSPH spanned nearly half the school’s 100-year history. Bracken was at Yale during the riots that followed the assassination of Martin Luther King Jr., the 1970s Black Panther trials and the founding of the first federally funded community health clinics. He served with six deans.

“The Yale School of Public Health has been a wonderful place to have a career. I have enjoyed working with superb colleagues and teaching the best students,” he said.

During his long tenure, Bracken served as deputy dean of YSPH and was head of the Department of Chronic Disease Epidemiology. He has published roughly 400 articles, authored three books and served on numerous professional boards. Among his many awards, he was recognized with the Abraham Lilienfeld Award from the American College of Epidemiology and the Gordon Lecture award from the National Institutes of Health.

Bracken is staying on at the School of Public Health as a senior research scientist.

Denise Meyer



PATHS TO PUBLIC HEALTH

SWEPT UP IN GLOBAL HEALTH

Alice Conant drawn to YSPH's nurturing community.

Alice Conant describes herself as a “math nerd” who got swept up in global health.

As a freshman engineering student at the University of Pennsylvania, she approached infectious disease specialist Harvey Rubin, Ph.D., M.D., about an internship. He handed her an idea to solve the “last mile” problem – getting life-saving vaccines to remote areas lacking reliable refrigeration.

Close to 1.5 million children under the age of five die from vaccine-preventable diseases annually. Vaccines need to be refrigerated to maintain their potency, and in many rural parts of the developing world, reliable electricity for vaccine refrigeration is hard to find. Cellular technology might provide solutions. There are now more cell phones in the world than toilets, and access to cell service is growing exponentially.

So Conant spent the summer of 2010 looking at ways to harness energy from cell phone towers to power refrigeration. With a paper in the *New Scientist*, Energize the Chain

(EtC) was born. The organization partners with telecommunications companies and ministries of health in Zimbabwe and Ghana, which now have 312 vaccine refrigeration sites.

Conant, funded by a Fulbright grant, went on to explore the feasibility of bringing EtC to India. She also decided she needed to go back to school.

“I chose Yale because of the incredibly personalized welcome I received. When Professor Mark Schlesinger emailed me twice before the admitted-students weekend, something clicked,” she said. “He helped me see the incredible opportunity of Yale’s network that perfectly complemented my goals and ambitions. The small class size was also a huge plus, because there’s nothing more nurturing and inspiring than a close-knit academic community.”

Now a student in the Health Policy program with a secondary concentration in disease modeling, Conant loves being immersed in math again. This time, she said, it is “math with meaning.” Looking forward, she sees her next step as medical school. “I’m a puzzle solver who loves to think and bridge gaps across disciplines,” she said. “Medicine is the ultimate puzzle for me.”

Denise Meyer



Alice Conant (fourth from right) with colleagues in India.



MARCHING FOR SCIENCE

YSPH joins protest of proposed cuts to research.

Administrators, faculty and students from the Yale School of Public Health spent Earth Day (Saturday, April 22) rallying at sites around Connecticut and beyond to protest proposed cuts by the federal government to scientific funding.

YSPH scientists and future scientists could be found in Hartford and New Haven, Conn.; Washington, D.C.; and even in Fort Myers, Fl. Despite the geographical spread, their purpose was the same: to send a message to Congress and the president that scientific research improves and saves lives everywhere.

Student aid, the National Institutes of Health and the National Endowment for the Humanities are among the programs facing budget cuts if approved by Congress. The effect of the cuts on research universities such as Yale and on scientific progress would be devastating.

“Science has helped us better understand the Earth and the universe, increase quality and length of life and reduce hunger and human suffering,” Dean Sten Vermund said of his decision to participate. “The march supported evidence over opinion, progress over prejudice.”

Yale SCHOOL OF PUBLIC HEALTH



ANNUAL GIVING Daily Impact

When you make an annual gift to the Yale School of Public Health, it goes to work immediately, providing essential support for financial aid.

You are also helping to build Yale's future when you help us educate the next generation of leaders in public health. As the school expands its class size to meet public health demands, the need for financial aid has never been greater.

Your generosity makes a difference today and for many years to come.

yale.edu/giveSPH



“IT REMINDS US OF WHAT IT’S ALL ABOUT TO BE IN PUBLIC HEALTH. IT REMINDS US OF WHY WE DO WHAT WE DO.”

~Sten Vermund

DAY OF SERVICE

YSPH volunteers give back to the community.

Yale School of Public Health faculty, staff, students and alumni fanned out at sites across New Haven – and into neighboring Woodbridge and nearby Wallingford – on May 11 in the school’s third year of participation in the Yale Day of Service.

Scores of volunteers in commemorative white T-shirts pushed wheelbarrows full of dirt, painted, planted flowers, stocked food and spent time with residents at a home for people with HIV/AIDS. All the volunteers shared a similar motivation: to give back to the community.

“It reminds us of what it’s all about to be in public health,” said Dean Sten H. Vermund. “It reminds us of why we do what we do.”

This year’s participation in the Yale Day of Service included seven sites: Columbus House, Common Ground, Leeway, New Haven Farms and Stepping Stone Transitional Housing, all in New Haven; the Connecticut Food Bank in Wallingford; and Massaro Community Farm in Woodbridge.

The day ended back at the School of Public Health with an outdoor picnic in the courtyard and a big “thank you” from the dean for a job well done.



Top to bottom: Volunteers at New Haven Farms; Connecticut Food Bank; and Stepping Stone Transitional Housing.



AWARDS & HONORS

MICHELLE ACHEAMPONG, M.P.H. candidate in the Health Care Management Program, received the American College of Healthcare Executives Foster G. McGaw Graduate Student Scholarship for 2016.

MICHAEL B. BRACKEN, M.P.H. '70, Ph.D. '74, Susan Dwight Bliss Professor Emeritus and co-director of the Center for Perinatal, Pediatric and Environmental Epidemiology, was the 2016 winner of the Robert S. Gordon, Jr. Lectureship in Epidemiology. Bracken accepted the award from the National Institutes of Health Office of Intramural Research.

XI CHEN, Ph.D., assistant professor in the Department of Health Policy and Management, was named president-elect of the China Health Policy and Management Society (CHPAMS). He will serve in this position until 2018 and then as president from 2018 to 2020. CHPAMS, with more than 2,000 members, aims to foster closer collaboration between China and the United States on China's critical public health issues.

KATHRYN HACKER, Ph.D. candidate in the Department of Epidemiology of Microbial Diseases, received a Student Presentation Award at SACNAS 2016: The National Diversity in STEM Conference for her work, "Use of Tracking Plates to Identify Hotspots of Rat Abundance in Slum

Communities with High Endemic Leptospirosis Infection." SACNAS is dedicated to fostering the success of Chicano/Hispanic and Native American scientists in attaining advanced degrees, careers and scientific leadership positions.

DEBBIE L. HUMPHRIES, M.P.H., Ph.D., clinical instructor in the Department of Epidemiology of Microbial Diseases, was presented with the 2016 C.-E.A. Winslow Award by the Connecticut Public Health Association. The award recognizes excellence in research, education and/or practice.

JEANNETTE R. ICKOVICS, Ph.D., the Samuel and Liselotte Herman Professor of Social and Behavioral Sciences, was recognized with the Outstanding Community Partner Award at the New Haven Public Schools' Health & Wellness Summit.

MELINDA L. IRWIN, Ph.D., M.P.H., professor in the Department of Chronic Disease Epidemiology, received the Yale Class of 1961 Cancer Research Award at its 55th reunion. The annual award recognizes significant accomplishments in cancer research by a young member of the faculty. Funding from the award will enable Irwin to conduct analyses of novel biomarkers, which will help to provide insights into the relationship between exercise and cancer.

ANNE MARIE Z. JUKIC, M.S.P.H., Ph.D., assistant professor in the Department of Chronic Disease Epidemiology, won the Young Investigator Award from the Vitamin D Workshop's 2016 annual meeting in Boston.

MICHAEL J. KANE, M.A. '06, Ph.D. '10, assistant professor in the Department of Biostatistics, is a co-author of *Handbook of Big Data*. A review by the journal *Statistics in Medicine* said the book "provides a state-of-the-art overview of the analysis of large-scale datasets."

ELINA KURKURINA, M.P.H. candidate in the Department of Social and Behavioral Sciences, and **SONAM LAMA**, M.P.H. candidate in the Department of Chronic Disease Epidemiology, received the 2016 Retirement Research Foundation Master's Student Research Award by the American Public Health Association Aging and Public Health Section for their work, "Screening for Elder Abuse: Exploring the Acceptability of the Elder Abuse Suspicion Index to Law Enforcement Officers for Field Use."

BECCA LEVY, Ph.D., professor in the Department of Social and Behavioral Sciences, was named one of Next Avenue's 2016 Influencers in Aging. She and **MARTIN D. SLADE**, M.P.H. '01, lecturer in occupational

medicine at the Yale schools of public health and medicine, also received the Richard Kalish Innovative Publication Award from the Gerontological Society of America. Their article, “A Culture-Brain Link: Negative Age Stereotypes Predict Alzheimer’s Disease Biomarkers,” appeared in the journal *Psychology and Aging*.

XIAOMEI MA, Ph.D., associate professor in the Department of Chronic Disease Epidemiology, was named co-leader of the Cancer Prevention and Control Research Program at the Yale Cancer Center.

SUNIL PARIKH, M.D., M.P.H., assistant professor in the Department of Epidemiology of Microbial Diseases, was an inaugural recipient of the Yale Global Health Leadership Institute’s Hecht-Albert Pilot Innovation Award for Junior Faculty. The award is granted to faculty who engage students to advance new research and educational projects in global health at Yale.

ERIKA ROGAN, Ph.D. candidate in the Department of Health Policy and Management, received honorable mention for the 2016 Laurence G. Branch Doctoral Student Research Award for her manuscript, “Social Service Spending and Older Adult Health Outcomes: A State-Level Analysis.” The award was presented at the Aging and Public Health

Section awards ceremony of the 2016 American Public Health Association conference.

KRISTINA TALBERT-SLAGLE, Ph.D. ’10, senior scientific officer at the Yale Global Health Leadership Institute and lecturer in the Department of Epidemiology of Microbial Diseases, won the 2016 Poorvu Family Award for Interdisciplinary Teaching.

TIARA C. WILLIE, Ph.D. candidate in the Department of Chronic Disease Epidemiology and fellow at the Center for Interdisciplinary Research on AIDS, was selected to receive one of Yale’s inaugural 2016 Dean’s Emerging Scholars Research Awards from the Graduate School of Arts and Sciences and the Office of the Provost. This award was established by the university to expand and develop the pool of young scholars who will contribute to the excellence and diversity of future generations of faculty, throughout higher education.

IN MEMORIAM

JOHN MACIVER, M.D., M.P.H. ’53, died on June 8, 2016, at the age of 92, in North Chatham, Mass. John’s work was widely published, helped establish the standard of practice in psychiatric care in corporate settings and set the foundation for the normalization of psychiatric care in the workplace.

VIOLA J. “VI” SPINELLI, M.P.H. ’65, died at the age of 90 on August 15, 2016. After a distinguished career as a hospital administrator, Viola retired in 1988 and became a consultant in health care management with the Health Strategy Association of Massachusetts.

Send obituary notices to
ysph.alumni@yale.edu.

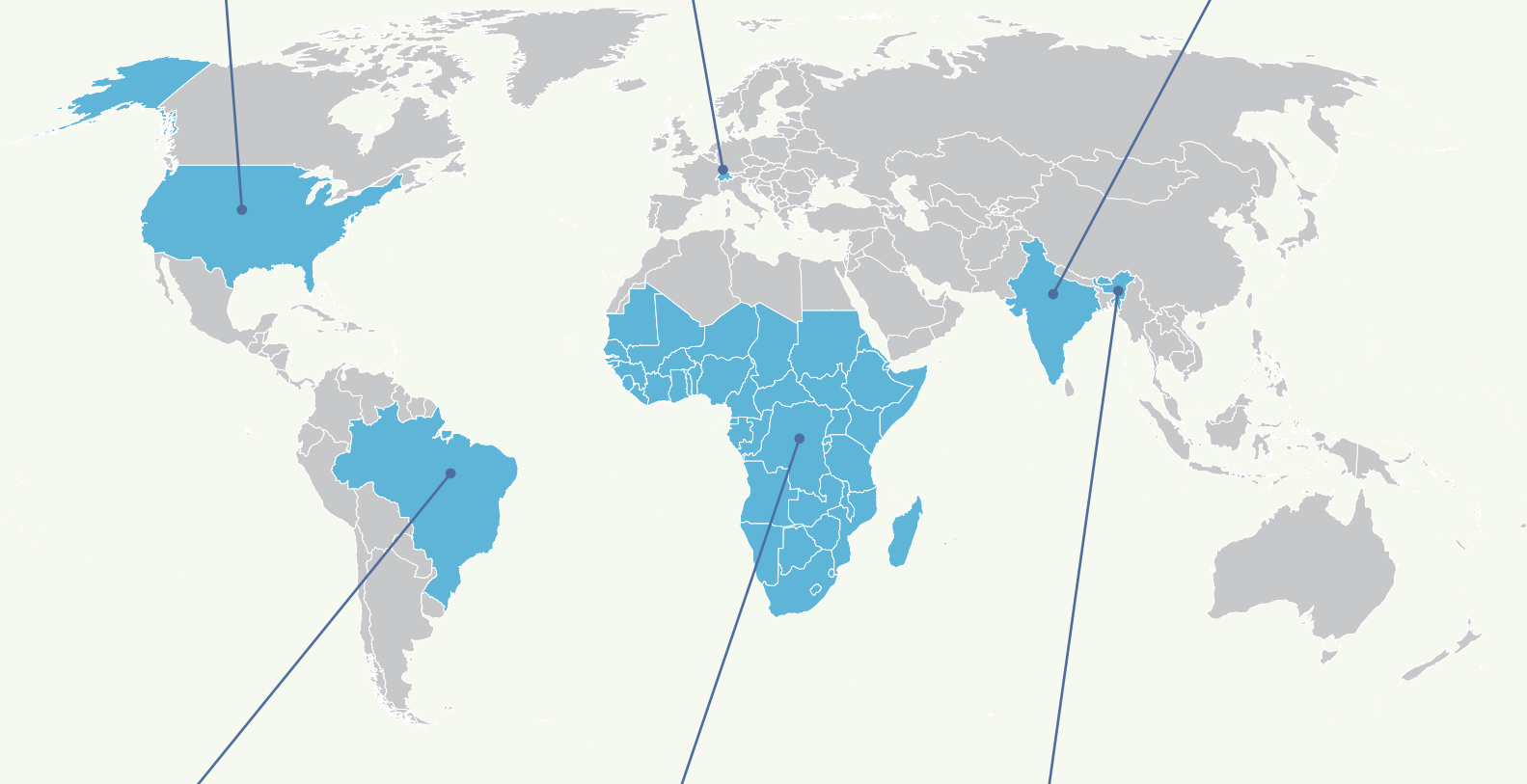


YSPH AROUND THE WORLD

UNITED STATES Teenagers in states with more liberal voting patterns are more likely to be vaccinated against human papillomavirus than peers in “red states,” YSPH research finds.

SWITZERLAND A YSPH student does a summer internship at the World Health Organization, preparing for an assembly that will address anti-microbial resistance.

INDIA YSPH researchers analyze historical data from India to develop a mathematical model that sheds light on the transmission of the bubonic plague.



BRAZIL YSPH scientists and their Brazilian colleagues discover a potentially novel treatment for fatal leptospirosis.

SUB-SAHARAN AFRICA Research finds that some antiretroviral therapy regimens for HIV considerably alter the effectiveness of a popular anti-malarial drug.

BHUTAN An ongoing partnership allows Bhutanese public health scholars to travel to and study at YSPH for a semester.

ON THE ISSUES

WITH KAVEH KHOSHNOOD

What is driving the global refugee crisis? Is the United States doing enough? Is Yale?

The current refugee crisis is a humanitarian and public health emergency of enormous proportions. The human suffering is immense and it cannot be ignored or made to go away.

There were an estimated 65.3 million people forcibly displaced in 2015, according to the United Nations High Commissioner for Refugees (UNHCR), the most since World War II. A total of 3.2 million were seeking asylum, and 21.3 million were escaping political violence. More than 50 percent came from Syria, Afghanistan and Somalia. The other nearly 41 million were internally displaced populations, people forced from their homes but still living in their native countries.

Political violence is one of the main drivers of forced displacement, but climate change is another contributing factor, which may become a bigger cause in the future. Historically, the United States has admitted more refugees than most other countries under UNHCR's resettlement program. Under President Obama, we had

committed to accepting 110,000 refugees in 2017, but President Donald Trump wants to reduce this number to no more than 50,000 (Trump's orders were blocked by federal judges and have not been implemented yet). The United States has the resources and the capacity to significantly increase the number of refugees it admits as well as support initiatives to help refugees in countries like Lebanon, which has accepted more than 1.2 million Syrian refugees and is overwhelmed.

I am pleased with Yale's response to the Syrian tragedy, which includes ongoing efforts to help medical students there continue their education. But much more can be done. Yale should further increase its scholarship on the crisis, its drivers, public health consequences and prevention strategies. The university should also assist Integrated Refugee & Immigrant Services (IRIS), the New Haven-based refugee resettlement program, with research.

I believe that public health professionals have a special role to play in addressing the refugee crisis, and I see every day the commitment and passion that are needed to do this at the Yale School of Public Health and the university.



STAN GODLEWSKI

Kaveh Khoshnood, M.P.H. '89, Ph.D. '95, is an associate professor at the Yale School of Public Health. He is currently working with colleagues at Yale and other institutions to help Syrian medical students continue their education amidst a civil war in that country. Khoshnood came to the United States in the 1980s as a young man, leaving his native Iran during a war with neighboring Iraq.

Yale Public Health
60 College Street
P.O. Box 208034
New Haven, CT 06520-2034

Non-Profit
U.S. Postage
PAID
New Haven, CT
Permit No. 526



MICHAEL GREENWOOD