Duration of diabetes associated with stroke risk

The risk of suffering a stroke increases with the duration of type 2 diabetes, according to a new study by senior author Dr. Mitchell Elkind, Associate Professor of Neurology and Epidemiology (in the Sergievsky Center), and colleagues at Columbia University Medical Center. Stroke risk triples for those who have diabetes for 10 years or more, according to the study, which was published in the American Heart Association Journal Stroke.

“The findings emphasize the chronic nature of diabetes and the fact that it damages the blood vessels over time,” says Dr. Elkind.

The results are part of the long-term Northern Manhattan Study (NOMAS), based at Columbia’s Neurological Institute and Division of Stroke and Critical Care, which examines stroke and stroke risk factors in a population in Washington Heights.

Researchers followed nearly 3,300 people, average age 69, who had never had a stroke. When the study began, nearly 22 percent of participants had diabetes, and after an average of 9 years of follow-up, an additional 10 percent had developed diabetes. The researchers controlled for factors such as age, smoking history, and history of heart disease.

The study looked exclusively at ischemic strokes, which occur when blood to the brain is blocked because of a clot. Diabetics may be at an increased risk for stroke because of thicker plaque in neck arteries, higher prevalence of hypertension, accelerated vascular complications, and clotting abnormalities.

Although stroke rates have been declining in recent years, increased incidence of diabetes at younger ages than before may lead to a higher stroke burden in the future, according to Dr. Elkind. Over half of the nearly 26 million Americans with diabetes are younger than age 65, according to the American Diabetes Association.

Young people should try to delay the onset of diabetes through regular exercise, a healthy diet, regular doctors’ visits, and avoiding smoking, according to Dr. Elkind.

“We used to think of type 2 diabetes as a disease people get when they are older, after a lifetime of poor dietary habits,” said Dr. Elkind. “But the age at diagnosis is getting younger and younger because of the obesity problem among young people.”

Publications including the Boston Globe, U.S. News & World Report, and USA Today reported on the study.

MESSAGE FROM THE CHAIR

Dear colleagues,

Welcome to the April 2012 issue of Two by Two, the Epidemiology Department newsletter. As ever the case, the achievements of our students, faculty, and staff over the past two months are far too numerous to allow us to do them justice in these pages. A few highlights: I am particularly excited about the work of the recently launched Complex Systems Approaches in Population Health Student Modeling Group (page 15), and impressed with the excellent research of Dr. Mitchell Elkind addressing the links between diabetes and stroke risk featured on our front page. Our Lines of Inquiry series continues with a closer look at the role of place in today’s obesity epidemic, and we profile the work of an important partner at CUMC, the Center for Interdisciplinary Research to Reduce Antimicrobial Resistance.

April kicks off with three major events in one week: an open house for the Executive MS in Epidemiology on April 3, a celebration of Dr. Guohua Li’s new book, Injury Research: Theories, Methods, and Approaches on April 4, and Dr. Wafaa El-Sadr’s prestigious University Lecture on April 5. We’ll close the month with the second annual Alan Berkman Memorial Lecture, to be delivered by Dr. Salim Abdool Karim on April 25. The first Columbia University Epidemiology Scientific Symposium, entitled Modern Controversies in Screening, will take place on May 11, and on May 14 we will honor our graduates and our own faculty luminaries with a very special celebration. More details about all of these are in this issue of Two by Two.

Warm regards,

UPCOMING APRIL—MAY

SOCIAL EPIDEMIOLOGY
FRIDAY, APRIL 20 10:00-11:30 AM
THURSDAY, APRIL 26 4:00-5:30 PM
THURSDAY, MAY 17 12:30-2:00 PM
FRIDAY, MAY 18 10:00-11:30 AM

PSYCH / NEURO EPIDEMIOLOGY
THURSDAY, APRIL 26 12:30-2:00 PM
THURSDAY, MAY 31 12:30-2:00 PM

LIFECOURSE EPIDEMIOLOGY
TUESDAY, APRIL 17 1:00-2:30 PM
TUESDAY, MAY 15 1:00-2:30 PM

EPIDEMIOLOGY INNOVATION
WEDNESDAY, APRIL 18 8:30-10:00 AM
WEDNESDAY, MAY 16 8:30-10:00 AM

CHRONIC DISEASE EPIDEMIOLOGY
FRIDAY, APRIL 20 12:00-1:00 PM
FRIDAY, MAY 11 12:00-1:00 PM

INFECTIOUS DISEASE EPIDEMIOLOGY
FRIDAY, APRIL 27 3:00-4:30 PM
FRIDAY, MAY 11 3:00-4:30 PM

Follow us on Twitter twitter.com/cuepidemiology, and "like" us on Facebook facebook.com/cuepidemiology to keep up with the latest Department news and events.
Borna virus dismissed as cause of mental illnesses

A study published in Molecular Psychiatry by the Center for Infection and Immunity's (CII) Dr. Mady Hornig (lead author), Director of Translational Research, and Dr. Ian Lipkin (senior author), Director and John Snow Professor of Epidemiology, has ruled out Borna disease virus (BDV) as a cause of mental illnesses such as bipolar disorder, schizophrenia, anxiety disorder, and dementia. Over the last 30 years, genetic fragments and antibodies of BDV, which cause behavior disorders in other mammals and birds, were reported to be prevalent in psychiatric patients. But after conducting the first blinded, matched, case-controlled study of humans, Drs. Hornig, Lipkin, and their colleagues found no evidence of active or historical BDV infection in any of the subjects. The study provides a “gold standard” for investigating links between persistent viral infection and human disease, according to a commentary in the same issue by Dr. Michael B.A. Oldstone, an expert in molecular virology at the Scripps Research Institute.


A link between type 2 diabetes and cognitive disorders in ethnic minorities

Ethnic minorities are much more likely than whites to suffer from type 2 diabetes which usually develops in one’s adult years and can also predict one’s likelihood of developing a cognitive impairment disorder such as Alzheimer’s. A new study in Ethnicity and Disease senior authored by Dr. Jose Luchsinger, Associate Professor of Medicine and Associate Professor of Epidemiology, with co-author Dr. Nicole Schupf, Professor of Clinical Epidemiology (in the Sergievsky Center, the Taub Institute, and the Department of Psychiatry), and colleagues now finds that high rates of type 2 diabetes could predispose ethnic minorities to cognitive impairment disorders and dementia. The 7-year longitudinal study examined 941 individuals over 65, finding that 31 percent of whites, 49 percent of blacks, and 56 percent of Hispanics developed a cognitive impairment disorder, and that the disparities between ethnic minorities and whites were partially explained by higher diabetes prevalence in blacks and Hispanics. The findings place added importance on closing the gap in diabetes rates between ethnic minorities and whites.

Osteoporosis drug could cause serious complications in patients with genetic variation

A new study has identified a genetic variation that puts patients who take bisphosphonates—a drug class that prevents bone mass loss—at risk for developing serious necrotic jaw bone lesions. Bisphosphonates are currently taken by 3 million women in the US to prevent or treat osteoporosis and by thousands more cancer patients to prevent the spread of bone cancer. Study leader Dr. Athanasios I. Zavras, Associate Professor of Dentistry and Epidemiology, and colleagues ran genome-wide analyses of 30 patients who were taking bisphosphonates and had developed osteonecrosis of the jaw and compared them to several bisphosphonate users who were disease free. Patients who had a small variation in the RBMS3 gene were 5.8 percent more likely to develop the jaw problem. “These drugs have been widely used for years and are generally considered safe and effective,” says Dr. Zavras. “But the popular literature and blogs are filled with stories of patients on prolonged bisphosphonate therapy who were trying to control osteoporosis or hypercalcemia only to develop osteonecrosis of the jaw.”


Cigarette first thing in the morning may pose greater throat cancer risk

A new study senior authored by Dr. Steven Stellman, Professor of Clinical Epidemiology, in Cancer Causes Control has found that smokers who have a cigarette soon after waking up in the morning are more likely to suffer certain throat cancers than those who light up later in the day. Past research has found that how soon one smokes after rising can be used to indicate the intensity of that person’s smoking habit. Dr. Stellman’s study found that the risk for early smokers was confined to supraglottic cancers—those occurring above the vocal cords—but not glottis cancers, which occurs in the vocal cords. The study completes a trio by Dr. Stellman and colleagues looking at “time to first cigarette of the day” as a predictor of larynx, lung, and head and neck cancer risk in smokers.

IN THE NEWS

Dr. Deckelbaum comments on heavier American kids and too small desks

U.S. schools are running up against the problem of obese students who have trouble fitting behind standard size desks, according to an ABC news report. Should schools accommodate growing rates of obesity among children by purchasing larger desks for those who cannot sit comfortably behind the current desks? Dr. Richard Deckelbaum, Robert R. Williams Professor of Nutrition (in Pediatrics) and Professor of Epidemiology, spoke to the network about the problem, suggesting schools focus on long-term changes that aim to prevent obesity and ease children’s obesity rates. “I would hope that even if schools did buy [larger furniture], they would also provide children and their families with information and options for healthy nutrition and opportunities for increased physical activity. In this way, the problem can be addressed within the next few years before these children are afflicted by diabetes or cardiovascular disease as adults,” he said.

Dr. Westhoff remarks on whether faulty birth control pill packaging will cause unintended pregnancies

In February Pfizer Inc. recalled about a million packs of birth control after discovering a packaging error in which some placebo pills were marked as active pills. Asked by the Wall Street Journal to comment, Dr. Carolyn Westhoff, Professor of Obstetrics/Gynecology, Epidemiology, and Population & Family Health at New York Presbyterian and CUMC, said the risk of pregnancy from taking one or two inert instead of active pills is low but is greater if women missed a larger number.

Dr. Lebwohl comments on new colonoscopy study

A new study shows colonoscopies dramatically reduced the death rate from colorectal cancer when the screening procedure led to removal of precancerous polyps. There had not been strong evidence prior to this study on whether colonoscopies actually reduce deaths. Quoted in the New York Daily News, Dr. Benjamin Lebwohl, Assistant Professor of Clinical Medicine and Clinical Epidemiology (who was not a researcher on the study) said, “We certainly detect cancers early due to screening colonoscopies, but the ultimate proof of a test’s effectiveness lies in its ability to prevent death. This is an exciting study because it shows this procedure saves lives.”

Dr. Drucker in the New Yorker and the Lancet

For a recent article about prisons called "The Caging of America," New Yorker writer Adam Gopnik consulted Adjunct Professor of Epidemiology Dr. Ernest Drucker’s A Plague of Prisons. The book "makes the case that talk of an epidemic of imprisonment is more than a metaphor, and that what we are enduring is really best understood through the model of a classic runaway plague rather than as the consequence of rational decisions,” Mr. Gopnik said. Dr. Drucker’s book was also reviewed in The Lancet in February and written up on the Nieman Watchdog website under the headline “What if prison is the disease, not the cure?”

Drs. Marshall, Galea, and Prescott on National Guard troops and the risk of alcohol abuse

National Guard soldiers are at a significant risk of developing alcohol abuse problems and related disorders like post-traumatic stress during and after deployment, according to a study reported on by the US News & World Report and published in February in the Drug and Alcohol Dependence Journal by lead author Dr. Brandon Marshall, a former post-doctoral trainee in the Department; senior author Dr. Sandro Galea; Dr. Marta Prescott, a project manager in the Department; and colleagues. “The high prevalence of alcohol abuse during and after deployment observed here suggests that policies that promote improved access to care and confidentiality merit strong consideration,” says Dr. Marshall.

Dr. Abdooll Karim warns about the effect of budget cuts on HIV/AIDS treatment

While there is increasing evidence supporting the efficacy of early antiretroviral therapy for treatment and prevention of HIV, researchers have expressed worry that new advances in this area could be passed over because of recent austerity-driven budget cuts to programs like the President’s Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS. Commenting for an article in Nature, Dr. Salim Abdooll Karim, Professor of Clinical Epidemiology and Director of the Centre for the AIDS Programme of Research in South Africa, says: “Ultimately we’re going to have to wait for the Global Fund and PEPFAR to increase their resources if we are to truly impact this epidemic. We’re not going to be able to do it with the resources currently being made available.”
Dr. Li releases foundational injury epidemiology textbook

That “accidents happen” is taken for granted, but are they actually more predictable and preventable than we think? That is the premise of Injury Research: Theories, Methods, and Approaches (Springer 2012) a newly released book edited by Dr. Guohua Li, Finster Professor of Epidemiology, and Dr. Susan P. Baker of Johns Hopkins University. Injuries such as motor vehicle crashes, poisoning, burns, and falls, are not just accidents but occur in patterns that merit rigorous study and multiple levels of intervention.

Featuring a team of experts from a range of disciplines, the book provides a comprehensive reference resource for contemporary theories, methods, concepts, and techniques readily applicable to injury surveillance, etiological studies, clinical research, and implementation and evaluation of interventions. The text also covers a wide array of the scientific underpinnings in injury-reduction approaches from public health, medicine, engineering, behavioral science, law, public policy, and health economics. It should serve as a bedrock text for researchers, practitioners, and graduate students in fields concerned with public safety and population health, such as injury control and prevention, safety engineering, risk management, emergency medical services, trauma care, health promotion, law enforcement, and criminal justice. For more about the book, visit springer.com/medicine/book/978-1-4614-1598-5

The Department will celebrate the publication of Dr. Li’s new book with a reception on April 4 from 6-7 pm in Hess Commons that is open to faculty, staff, and students.

BRIEF MENTIONS

Gregory Cohen co-authors study in JAMA

A new study in JAMA co-authored by doctoral trainee Mr. Gregory Cohen finds that post-traumatic stress disorder in returning veterans of the wars in Iraq and Afghanistan is associated with high-risk use of prescription opioids.

Faculty members’ cancer screening program chosen for CDC visit

The Northern Manhattan Cancer Screening Partnership (NMCSP), directed by Dr. Al Neugut, was chosen as one of five screening sites from across the country for a visit that will inform a report from the Centers for Disease Control and Prevention on programs that show potential promise for promoting fecal-based colorectal cancer screening. NMCSP and its predecessor, the Columbia University Colorectal Cancer Screening Program, which was co-directed by Dr. Neugut and Dr. Grace Hillyer, have demonstrated high rates of success in cancer screenings. Their strategies include pairing colorectal cancer screenings with breast cancer screenings, having bilingual staff on hand for one-on-one educational consultations, and doing intensive post-screening follow-up.

SUBMITTED GRANTS

DEPARTMENT OF EPIDEMIOLOGY, JANUARY–MARCH 2012

ASSISTANT PROFESSOR

ASSOCIATE PROFESSOR

PROFESSOR

0 3 6 9 12 15

APRIL 2012
Dr. Barbara Barlow, Professor Emerita of Surgery in Epidemiology, has dedicated her career to ensuring the safety of children in their neighborhoods and homes. As the founder and executive director of the Injury Free Coalition for Kids, she has been a self-described “pit bull” for getting child injury recognized as a public health issue and significantly reducing youth injuries nationwide.

Dr. Barlow had only the vaguest notion of injury prevention when she became the Chief of Pediatric Surgery at Harlem Hospital in 1975, but she soon was struck by the number of children she was seeing. They came to the hospital as victims of shootings, stabblings, and falls from windows. Some would grow up with permanent disabilities; a few would die. In one year in the 1980s, the hospital saw more than 350 severely injured children.

Patterns became apparent to Dr. Barlow. When the weather was warm she would frequently see children who had fallen out of open windows. Children who were hit by cars had often been playing in the streets just before.

She had seen nothing comparable in her life up to that point—her childhood and teenage years were spent in idyllic Lancaster County, Pennsylvania and then at Vassar College—and was outraged by it. Even her medical school experience at Albert Einstein College of Medicine and her surgical training at Bronx Municipal Hospital had not prepared her for what she saw in Harlem.

Dr. Barlow was glad she could save children’s lives in the operating room but wondered why they should even have to see the inside of a hospital in the first place.

“I said there must be a better way. There must be a way that we can make this community safer for children,” she recalls.

Out of this conviction was born “Children Can’t Fly,” an educational partnership with New York City, to reduce window falls. The city soon passed a law that required window guard installation in buildings. Within five years, the rate of child falls in Central Harlem had decreased by 96%.

In 1988 the Robert Wood Johnson Foundation agreed to support an injury surveillance and prevention initiative, called the Harlem Hospital Injury Prevention Program, that Dr. Barlow would run.

Their first goal was the rebuilding of Harlem’s 55 playgrounds. Dr. Barlow and her team had traced many child injuries to these neglected areas. Equipment was rusty and unsafe, and drug dealing and gang activity were rampant, pushing children to play in the streets where they were at risk for being hit by cars.

Dr. Barlow had to seek funding for the ambitious effort. She enlisted her husband, then an executive at Texaco, who reluctantly but successfully sought a donation from the company. A New York Times article about the dilapidated state of Harlem playgrounds generated enough contributions from readers to put the Injury Prevention Program over the top.

The group built playgrounds that were safe—cement and asphalt surfaces were replaced with softer material that absorbed falls—and imaginative—the first playground featured a kid-size model of the Apollo Theater stage and the Harlem River Bridge.

The Injury Prevention Program also formed a community coalition that attracted physicians, parents, teachers, city officials, and many other groups who monitored injuries and worked together on effecting changes in infrastructure and creating new after-school opportunities for children such as art programs and Little League.

As the program expanded, child injury rates in Harlem plummeted. Major injury admissions in Harlem have decreased by 60% since the program began.

Building on the success of the Injury Prevention Program, the Robert Wood Johnson Foundation gave Dr. Barlow a $15 million grant in 2001 to expand to 40 hospital sites under the name Injury Free Coalition for Kids. Dr. Barlow came to the Mailman School to establish the organization’s national office.

Currently, Dr. Barlow is the executive director of the national office of Injury Free, which is still headquartered at the Mailman School. Within the Department of Epidemiology she is a member of the Epidemiology Innovation Cluster and actively working with the cluster participants to establish an Injury Prevention Center in the Department.

In recent years Injury Free has added a focus on helping children recover from disasters such as 9/11, Katrina, and the shooting at Congresswoman Gabrielle Giffords’ constituent meeting in January 2011. Recently, the coalition built 9 new playgrounds in Gulf Coast areas that were hit by Hurricane Katrina and dedicated a playground to the Tucson, Arizona, school of 9-year-old Christina Taylor Green, who was killed at the event for Representative Giffords. Injury Free sites also continue to work on the broad spectrum of injury prevention focused on each site’s injury data.

In October, Dr. Barlow received the CDC Foundation’s Hero Award for her work, adding to the numerous other honors she has received, including awards from the American Academy of Pediatrics, the National Highway Traffic Safety Administration, and the American Public Health Association.

Despite these many accolades, Dr. Barlow says that the Coalition’s work will not be done, even when hers is: “I won’t be here forever, and I want this program to be here forever, because it really has made a difference.”
Dr. Heidi Jones ’10, an assistant professor at the CUNY School of Public Health at Hunter College, came to the Department of Epidemiology in 2006 as a mid-career public health professional to earn her PhD.

“I had been in the field as a public health researcher with an emphasis on reproductive health for over 10 years but had reached a glass ceiling in terms of how far an MPH degree could take me,” she says.

The doctoral degree paid off. Dr. Jones was offered her current position at Hunter almost right after graduation, the only job for which she applied. “I knew some of the faculty here, believed in the mission of the school and really felt it was the logical next step. Luckily for me they agreed,” she says.

Dr. Jones has over the course of her career focused on access to and quality of contraceptive services and diagnosis, management and screening of sexually transmitted infections (STI), and developing vaginal microbicides to prevent female sexual acquisition of HIV.

While at Columbia she was a co-investigator on a study with Dr. Carolyn Westhoff that assessed whether women could self-collect specimens to be used for cervical cancer screening using a self-lavaging device. They found that the device provided good specimens for HPV-tests and possibly for cervical cytology as well, and that women generally preferred using the device over a pelvic examination. It was one of the first studies to show that self-collection may be possible for cytology, as well as for HPV testing.

A native New Yorker, Dr. Jones long knew she wanted to work in a field that allowed her to help redress health disparities. “I grew up on the Upper West Side in Manhattan and have always been keenly aware of social inequities, which were clearly visible just by crossing from one side of Broadway to the other,” she says.

After earning a Bachelor of Arts in political science with a concentration in development from Wesleyan University, Dr. Jones worked on reproductive health research at the Guttmacher University. She went on to work at the Population Council for 9 years, where she focused on improving reproductive health outcomes in resource poor settings. While working, she earned an MPH from Hunter.

During her PhD, Dr. Jones worked full-time as a research assistant in the Department of Obstetrics & Gynecology for Dr. Westhoff. That experience culminated with an opinion piece the two of them published in the *Journal of Women’s Health*, which called for reducing the number of pelvic exams women undergo in their lifetime for routine screening.

Dr. Jones became interested in pursuing an academic career while serving as a teaching assistant for Dr. Sharon Schwartz’s Epidemiology 2 course in methods, realizing that she enjoyed teaching as well as research. “[Dr. Schwartz] was thrilled each time a student asked an insightful question or wrote her emails, or taped an interpretive dance [which they did] about how to select controls in a case control study.”

One of Dr. Jones’ favorite experiences in Epi was studying for the qualifying methods exam with her cohort. “[It was] a fabulous luxury to be able to sit in the Epi conference room and hash out and challenge one another’s understanding of key epidemiological concepts,” she says.

She recalls standing in line with fellow students Vera Frajzyngier and Kerry Keyes for the Shakespeare in the Park’s rendition of *Hair* while they quizzed each other with flash cards for the exam.

During school, Dr. Jones and her colleagues also began a writing group that was inspired by Dr. Susie Hoffman’s writing workshop. They would provide feedback to one another on manuscripts, grant applications, and ultimately dissertations. Today the group still meets, but as a book club.

Dr. Jones praises her many enriching experiences in Epi and the direction it gave her for her current position at Hunter:

“I am a strong believer in the value of public education and am thrilled to be teaching at Hunter and to be able to share what I learned at Columbia with my students.”
As Senior Cluster Administrator for the psych/neuro epidemiology cluster, Kerri Zezulinski assures the smooth functioning of all aspects of cluster life, from managing grants to organizing seminars, for the group of over 20 faculty that are active in the cluster.

Kerri works with faculty on grant proposals related to psychiatric or neurologic epidemiology studies which are submitted for funding to the federal government and other sources, and she manages accounts of grants that are active.

She also helps coordinate seminars and other events for the cluster. She works closely with the other SCAs and the Department Administrator to manage more general administrative and financial tasks and has been committed to working towards more efficient operations on the 15th floor.

Those who work with Kerri describe her as an eager learner who is easy to work with. "Kerri and I started in the Department at the same time and have been learning the ropes together. She is a delight to work with—smart, organized, and cool under pressure. I am thrilled to have her on our team," says Dr. Karestan Koenen, who is the leader of the psych/neuro cluster.

According to Department Administrator Christina McCarthy, "Kerri is a great co-worker—she’s motivated, insightful, and genuinely interested in ensuring that the faculty she supports have the resources and information they need to conduct their research."

Before coming to Epidemiology last summer, Kerri was executive assistant to the chair of the department of radiology at Memorial Sloan-Kettering Cancer Center. Prior to that, she worked in healthcare financing for a private company and did benefits administration at Aetna. She has a master’s degree in nonprofit management from the New School and an undergraduate degree in sociology from Long Island University-Southampton.

Kerri is a native of Long Island and has lived in New York for most of her life, aside from a few years spent in Philadelphia after college. When she returned to New York City, she began volunteering at the Whitney Museum in order to meet new people and learn more about art. She is an avid museum-goer, making time to visit one of the city’s many museums 1-2 times per month.

One of her favorite recent exhibits is “Arts of the Islamic World” at the Metropolitan Museum of Art.

Kerri also likes to hike in nearby New York state parks and bicycle from her Harlem residence to various parts of the city. She is on her bike every weekend, one of her favorite rides being along the Hudson River, looping around lower Manhattan. When she has time, she likes to travel and in recent years has taken a road trip from Seattle to San Francisco and visited Austria and Serbia.
Dr. Neomi Vin-Raviv, a postdoctoral research fellow in the Department of Epidemiology, has never taken an easy path.

Growing up in the Israeli city of Haifa, Dr. Vin-Raviv was drawn to working in health at a young age. When she was 15 she began volunteering for the Israeli Red Cross. She was sent as a medic to the sites of car accidents and even to emergency baby deliveries during the first Gulf War. After high school, she served in the Israeli army for 2 years as an aviation medicine instructor. She became the first woman in Israel to work in a hypobaric (altitude) chamber where she trained air crew members to deal with hypoxia symptoms and rapid decompression.

After the conclusion of her military service, Dr. Vin-Raviv went on to earn a BA from Bar Ilan University in Ramat Gan, Israel, in interdisciplinary studies in social science and studies in life science. Observing that there were few cancer epidemiologists in Israel, Dr. Vin-Raviv decided to pursue that field, earning her MPH and PhD in Epidemiology from Haifa University.

For her MPH thesis, she examined cancer incidence and survival among Holocaust survivors who had immigrated to Israel after World War II. Several people advised her against studying survivors because they would be difficult to recruit and possibly hard to talk to. However, Dr. Vin-Raviv persisted. “Even when people say something will be difficult, it doesn’t deter me,” she says.

Her study eventually broke through, finding that Israeli Holocaust survivors had a higher incidence of all cancers, especially breast and colorectal cancer, compared to Jewish immigrants from Europe who had not been interned during the Holocaust. The results of Dr. Vin-Raviv’s work were published in the *Journal of the National Cancer Institute* and aroused considerable interest both in Israel and the US. Based on this paper, the government designated cancer a compensable injury for Holocaust survivors in Israel. Dr. Vin-Raviv’s PhD thesis followed up this work with a case-control study of Jewish women Holocaust survivors to examine the association between caloric restriction during the Holocaust, post traumatic stress disorder (PTSD), and breast cancer later in life.

After her PhD, she decided to broaden her research experience to include early lifecourse studies, particularly molecular epidemiologic studies and advanced statistical techniques. She was especially intrigued by the path-breaking work of Dr. Mary Beth Terry on early life exposures including intrauterine environmental exposures and the effects these exposures may have on epigenetic changes (including changes in DNA methylation) and breast cancer risk. As a result, she chose to come to Columbia, and was awarded a prestigious post-doctoral fellowship from the Environment and Health Fund in Jerusalem, Israel, to do research in this area. Her new research project offers her the unique opportunity to further her knowledge and understanding of how early environmental life exposures can influence the health risks faced by individuals later in life.

While working with the Holocaust survivor population, Dr. Vin-Raviv developed an interest in mental health outcomes in cancer epidemiology. In addition to her work with Dr. Terry, Dr. Vin-Raviv is also examining the patterns and demographic, clinical, and psychological risk factors associated with PTSD following breast cancer with Drs. Al Neugut and Sandro Galea using the Breast Cancer Quality of Care Study dataset.

Dr. Vin-Raviv’s husband Erez has been very happy to join her for a two year sojourn in the New York area. Erez is a mechanical engineer working on medical endoscopic devices for a company in New York. They both live in New Jersey with their seven-year-old twin girls, Yael and Saar.
What’s place got to do with it?

How the built environment is linked to obesity

What if the places we call home are causing us to gain weight? These are the findings of a growing body of research that examines how societal and environmental changes may be responsible for the three-decade rise in obesity rates and associated health problems like asthma, cardiovascular disease, and diabetes.

“Societal changes over decades have dramatically reduced the need for physical activity in daily life while creating ubiquitous barriers to physical activity,”¹ says a recent paper by Dr. James Sallis and colleagues at Active Living Research, a Robert Wood Johnson Foundation program based at the University of California-San Diego.

Public health experts at Active Living and other institutions have over the last decade offered new revelations about the source of the American obesity epidemic. The problem, they suggest, is larger than a personal failure to eat right and exercise. It is a problem of how the built environment of office parks, malls, cul-de-sacs, and drive-thrus is organized to discourage people from making healthy choices.

The numbers alone suggest obesity is a problem not just of the individual but of society. Today, over one in three Americans is obese, and it is predicted that younger generations may be the first in US history not to outlive their parents because of obesity-linked comorbidities.²

“When everyone begins to develop the same set of symptoms, it’s not something in our mind, it’s something in our environment,” says Dr. Richard Jackson, Chair of Environmental Sciences at the University of California, Los Angeles School of Public Health and host of a PBS special called “Designing Healthy Communities” that began airing earlier this year.

Dr. Andrew Rundle, an Associate Professor of Epidemiology at the Mailman School is director of the Built Environment and Health (BEH) Project at Columbia, an interdisciplinary program that uses spatial data to examine the implications of the built environment, including land use, public transit, and housing on physical activity, diet, and obesity. Studies conducted by BEH have consistently found that proximity and accessibility of parks and trails, and a neighborhood’s walkability, are associated with greater physical activity and that access to public transportation is associated with lower body mass index. City dwellers generally are less likely to be


obese because an urban layout promotes more physical activity.

“I see a role for personal responsibility, but I strongly believe that we have organized our society such that my will power is constantly being challenged,” Dr. Rundle says.

BEH studies have also shined a light on disparities related to socio-economic factors in urban settings. Unlike other parts of cities, low income neighborhoods have high rates of obesity, defying the conventional hypothesis that urban environments have uniformly healthier populations.

“TIlr sidewalks are not in as good shape. Probably their parks are not as high a quality. They’re not going to have the aesthetics. They’re not going to have the street trees. And we see less safe street crossings in lower-income neighborhoods,” says Dr. Sallis.3

The economic variation is linked to other predictors of obesity, such as food environment. One BEH study found that obesity rates in New York City are lower in neighborhoods where healthy food is easily accessible—neighborhoods that are typically economically well off.4

Researchers acknowledge that it is difficult if not impossible to conclude that the built environment directly causes obesity. One such challenge has to do with limits in the ability to study changes over time. Most built environment studies have been cross-sectional, meaning they have taken statistics from one point in history rather than over an extended period and therefore are limited in establishing temporality.

For instance, in the suburbs, higher obesity rates may be the result of automobile-dependent planning that discourages physical activity; alternatively, heavier people might be attracted to the suburbs because they do not have to be as active as in cities.

Or as Dr. Gina Lovasi, Assistant Professor of Epidemiology and an investigator in BEH puts it, “If more runners move to areas near a park, the park has not necessarily caused more people to run.”

Recognizing that lack of longitudinal information is a hurdle to understanding whether neighborhoods cause obesity, BEH is planning to expand an investigation into New York City’s food environment by using data that will allow them to study a 20-plus-year period.

BEH is also working toward more accurate ways to measure neighborhoods by collecting GPS and accelerometer data from participants for spatial analyses. The idea is to define a neighborhood based on the unique geographic area that each person accesses—where they purchase or consume food and partake in physical activity—rather than use an administrative definition of a neighborhood such as a zip code or a half-mile radial area around a study participants home.

Other data advances involve using three-dimensional models of New York City generated using laser ranging technology (LIDAR) to measure land-use, green space, and urban forestry, and the use of Google Street View to perform virtual neighborhood audits to collect data on built environment conditions.5

BEH hopes this more advanced data will lead to findings that offer more clarity about how our surroundings determine choices that lead to obesity. Such results could feed into interventions that focus on modifying the built environment.

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An interdisciplinary approach to the study of healthcare infections

CIRAR and the Department of Epidemiology

At Columbia’s Center for Interdisciplinary Research to Reduce Antimicrobial Resistance (CIRAR) “interdisciplinarity” is not merely a buzzword, it is the way the organization runs.

CIRAR is a center of excellence housed in the School of Nursing that collaborates with the Department of Epidemiology and across the medical center. A hub of cross-disciplinary research, studies within CIRAR bring together the expertise of a variety of professionals including epidemiologists to research infections transmitted in patient care settings.

The Center was founded five years ago by its director Dr. Elaine Larson on a planning grant from the National Institutes of Health. A Professor in the Department of Epidemiology and a Professor of Pharmacology and Therapeutic Research in the School of Nursing, Dr. Larson is considered a leading expert on hand hygiene, antimicrobial resistance, and the spread of infections in healthcare settings.

She became interested in hand hygiene as a critical care nurse while observing that hospital staff often didn’t wash their hands after interacting with patients.

As she investigated whether there was a link between hand hygiene and healthcare associated infections (HAI), Dr. Larson decided to bring in other professionals who could add different skills and insight to the research, including a surgeon, an epidemiologist, nursing staff and administration, a microbiologist, a statistician, and a dermatologist. They found that there was indeed a clear causal link between lack of hand-washing on the part of staff and HAI.

Another of Dr. Larson’s studies found that antibacterial products are no more likely to prevent infections than products without antibacterial agents. She has also helped sound the alarm on the danger of antibiotic resistance in communities.

Like many public health questions, hand hygiene and antimicrobial resistance are issues that require a multi-disciplinary approach, says Dr. Larson.

“Something as simple as hand hygiene requires a lot of different perspectives. You have to look at the efficacy of soaps, at behavioral sciences for the reasons people do not wash their hands, at microbiology, and study the politics and the guidelines.”

CIRAR currently has several active grants. One $3.5 million grant called Prevention of Nosocomial Infections and Cost-Effectiveness Refined (P-NICER) investigates whether compliance requirements are effective in reducing the rate of infections contracted during hospitalization, a problem which costs hospitals an estimated $25-$31.5 billion annually.

Another grant looks at the efficacy of programs that try to reduce the overuse of antibiotics in neonatal intensive care units, which can result in antibiotic resistance. With $4.7 million funding over 5 years, the “iNAP study (“Improving Antimicrobial Prescribing Practices in the Neonatal Intensive Care Unit”) will attempt to propose an optimal intervention strategy to prevent antimicrobial resistance.

While working across disciplines may seem intuitive, in practice it can be difficult for researchers to execute, says Dr. Larson.

“Although interdisciplinarity has become the model of scholarly inquiry frequently espoused by researchers, the assumption that anyone can do interdisciplinary work with no preparation is incorrect,” Dr. Larson said in an article published in a 2011 issue of Nursing Outlook.

The idea that researchers to a certain extent must be trained in interdisciplinarity was the underpinning of the program established out of CIRAR in 2007, called the Training Interdisciplinary Research on Antimicrobial Resistance (TIRAR). Several program mentors are on the faculty of the Department of Epidemiology, including Drs.
TIRAR is one of the first training programs to focus on developing interdisciplinary researchers in various healthcare professions. It brings together pre-and post-doctoral trainees with backgrounds in epidemiology, medicine, nursing, immunology, biomedical informatics, genetics, and microbiology, among other areas. Trainees join studies that investigate antimicrobial resistance in various settings, such as hospitals and prisons.

Ms. Laurie Conway, who has worked as a critical care nurse in the US and abroad with a focus on infection prevention, came to the TIRAR program as a PhD candidate in order to do research that takes a population health approach to infection prevention. “I would not have come to Columbia without CIRAR,” she says. Like Dr. Larson, Ms. Conway says healthcare-related infections cannot be solved by only one discipline, which is why she values CIRAR:

“CIRAR gets me out of nursing. It gets me to go to Mailman, to go to P&S. I wouldn’t do that without having interdisciplinary colleagues.”

During his medical residency, a current post-doctoral trainee Dr. Ben Miko focused on HIV research and treatment, but his interests shifted when he started seeing people in the hospital who had become sick with staph infections. The experience encouraged Dr. Miko to join the lab of Dr. Frank Lowy to work on a pilot study of incidences of sexual transmission of staph infections at an STD clinic in Baltimore.

Dr. Miko is currently the lone physician among the trainees at CIRAR, but he enjoys working with colleagues from other fields. The program has always thrived on its mixture of physicians, nurses, microbiologist, computational biologist, and epidemiologists.

“If your goal is to come up with information that can be applied to a population of patients, you need to be bridging research sciences with the more practical disciplines of nursing and medicine,” he says.

TIRAR holds monthly seminars that require trainees to field questions from audience members in multiple disciplines.

In a December seminar, Ms. Conway and fellow pre-doctoral trainee Ms. May Uchida presented their research into the efficacy of HAI prevention efforts across the country as part of the P-NICER grant. They employed the sociologic method of qualitative research, which involves analyzing the content of participant interviews by using sophisticated coding software. Ms. Uchida said she would not have known to use this method without the opportunity TIRAR gave her to collaborate with sociologists.

One of the biggest difficulties for TIRAR is keeping up a momentum for interdisciplinary work and training, Dr. Larson says. Researchers will drop out if it is not clear that the training program benefits their own work. “[One] challenge is maintaining the interest of a rich cadre of researchers from multiple disciplines so that they continue their active involvement in the program as mentors,” she says.

Yet TIRAR has shown that the inherent value of interdisciplinarity work outweighs the barriers. Since it was founded in 2007, 7 trainees have completed the program. Today, all of them hold research positions in various academic institutions where they maintain a strong interdisciplinary focus in their scholarly endeavors.

As the program continues to graduate trainees, it promises to lay a foundation of researchers who are able to transcend silos and work together to further public health research and interventions.
‘Model’ student group

Trainees start complex systems group

Economists, ecologists, and engineers routinely build complex systems models. Could public health research benefit from implementing similar approaches? That is the thinking behind the new Complex Systems Approaches in Population Health Student Modeling Group, or CSAPH.

Doctoral trainees Jorge Luna and Carolyn Herzig started the group to expose students at the Mailman School to modeling public health problems using a complex systems approach. CSAPH plans to hold bi-monthly meetings to introduce various modeling paradigms and software realizations. The group also aims to hold conferences and panel discussions with invited speakers, link trainees up with mentors, seek funding opportunities for third-party training sessions, and identify opportunities for collaborative publication among group members.

Mr. Luna and Ms. Herzig have been assisted by master’s student Ashleigh McGirr, who has worked with computer models for her epidemiology practicum.

Mathematical models of complex systems have become widely used across the social and biological sciences to simulate systems such as the Internet, financial markets, air transport networks, and cells in the human body—systems that do not operate under linear or predictable patterns.

The advantage of a complex systems approach is that it can model individual behavior in a way that is not captured by traditional methods—looking at how people influence and are influenced by one another and simulating how various scenarios might play out within systems. For instance, bio-terrorism experts have built complex systems models that play out the effects of an anthrax scare on an urban population; economists frequently use them to understand financial markets.

In epidemiology and public health, the approach is particularly powerful in developing predictive models to understand how interventions might play out. Although most epidemiologic research does not presently use complex systems modeling, some epidemiologists believe the approach would more accurately capture how diseases spread. This is because, unlike traditional models, complex systems modeling does not make assumptions of independence and no feedback.

One example cited by Ms. Herzig in which a complex systems model would be useful is to look at how individuals might increase risky behavior if they believed they were otherwise protected, such as if an HIV vaccine were one day developed.

Complex systems approaches are also well-suited to understanding chronic diseases, which do not always have discrete causes that are easily isolated. A few scientists have referred to the chronic disease obesity as its own complex system that is best understood by exploring the dynamic interaction between genes, built environment, food network, social relationships, and other factors rather than attempting to isolate the relationship between each factor and obesity.

Mr. Luna and Ms. Herzig expect complex systems modeling will become more widely used in their field over the next decade. “Current trainees will be at a comparative disadvantage in a few years if they do not understand these concepts and if they lack skillsets to tackle applied projects,” says Mr. Luna.

The CSAPH group encourages trainees at all levels to come to their meetings, visit their website at csapopulationhealth.blogspot.com, and sign up to receive emails about future events. For more information and to join the email list, please send an email to Ms. Herzig [cht2115@columbia.edu] or Mr. Luna [jj2708@columbia.edu].


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