New Hope in Quest for AIDS Vaccine

Heartening news came in October when a consortium of researchers led by the Center For the AIDS Programme of Research in South Africa (CAPRISA) under its director, Dr. Salim Abdool Karim, also a professor of clinical epidemiology at Columbia, published in Nature Medicine a study showing a vulnerability that allows the human body to kill most strains of the human immunodeficiency virus (HIV), an important advance in the quest for an AIDS vaccine.

Vaccines are created by mimicking antibodies, which are produced by the body’s immune response to fight viruses. But HIV manages to evade this response because of the high genetic diversity of the virus and its ability to evolve rapidly—sometimes every day in a single patient—so antibodies cannot target it.

However, three years ago scientists discovered that some HIV infected people produce “broadly neutralizing antibodies” that are able to fight against most strains. Considered rare at first, broadly neutralizing antibodies are today believed to exist in one-fifth of infected people.

The problem is scientists did not know until now how the body produced these antibodies, making it impossible to create a vaccine that could replicate this response.

The researchers discovered unique changes in the virus in two women which enabled them to produce broadly neutralizing antibodies that killed up to 88 percent of HIV types. One of the two women had been enrolled in a large clinical trial by CAPRISA of an antiretroviral vaginal gel that appears to significantly reduce rates of HIV acquisition.

In follow-up studies of the two women, consortium researchers traced the evolution of the virus to understand how these women were able to produce the powerful antibodies.

“Now that we know one way to get the body to make broadly neutralizing antibodies, we need to figure out how to make an AIDS vaccine that mimics this,” says Dr. Abdool Karim.


An expanded version of this article can be read on the 2x2 project site at http://the2x2project.org/new-hope-in-quest-for-aids-vaccine
MESSAGE FROM THE CHAIR

Dear colleagues,

Welcome to the December 2012 issue of Two by Two, the Epidemiology Department newsletter. It has been an exciting fall semester thus far. Notably, our second annual Master’s Student Day on October 12 was a huge success, and we suitably celebrate the winners of the abstract competition in these pages. Our October 26 Columbia University Epidemiology Scientific Symposium (CUESS), Charting the next 25 years in social epidemiology, brought together the field’s rising stars and established leaders for a day of very provocative and productive discussion of the future of the discipline. Our November 29 CUESS, co-sponsored with ICAP, Eliminating pediatric HIV: Hype vs. hope, will be featured in the next issue of Two by Two.

As always, our faculty and students have produced more exciting research over the past few months than we can feature. In this issue we highlight the breakthrough work of Dr. Salim Abdool Karim in identifying a promising new avenue in the pursuit of an AIDS vaccine. Our Lines of Inquiry article explores the public health impact of our ever-increasing income inequality.

We are also thrilled to introduce our department’s newest and most exciting communications initiative, the 2x2 project, an innovative website that aims to communicate the science of epidemiology and public health to the broadest possible audience.

I hope you find the rest of the December 2012 Two by Two informative and interesting, and look forward to our work together in 2013. As always, special thanks go to all who have contributed to this issue.

Warm regards,

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.
Revisiting a historic public health effort on AIDS

Since the President’s Emergency Plan for AIDS Relief, commonly known as PEPFAR, began ten years ago, Columbia’s ICAP has lead in carrying out the initiative’s goals of establishing programs in Africa that have prevented millions of people from dying of AIDS and millions more from contracting HIV. Coinciding with the 30th Annual AIDS Conference, the Journal of Acquired Immune Deficiency Syndrome published a summer supplement that examines PEPFAR’s successes and makes recommendations for the next decade. Department faculty members Drs. Wafaa El-Sadr, Elaine J. Abrams, Andrea Howard, and Jessica Justman contribute to the issue, writing on topics such as male circumcision and HIV prevention, HIV-related tuberculosis, and in country ownership of PEPFAR-funded programs.


‘Deafening silence’ in U.S. politics on harmful drug policy

In a commentary for the Lancet, Dr. Ernest Drucker, adjunct professor of epidemiology, criticizes the “deafening silence on [drug policy] from U.S. politicians,” despite prisons overcrowded with inmates who have been sentenced for marijuana possession and a violent illegal drug trade that is fueled in part by the large U.S. market for illicit drugs like cocaine and methamphetamines.

“As political fears continue to trump health concerns about both licit and illicit drugs, deaths from drug overdoses increase—there were more than 40,000 such deaths in 2010,” says Dr. Drucker. “These are vital social and public health matters for the USA, as measured by morbidity and mortality alone, yet are ignored in our presidential politics.”

Mental health effects of Superstorm Sandy

Superstorm Sandy will cost an estimated $60 billion in property damage and lost business, but the storm’s mental health cost is less clear. Traumatic events like Sandy can cause some people to develop post-traumatic stress disorder, say Drs. Yuval Neria, professor of clinical psychology (in psychiatry and in epidemiology), and his colleague Dr. James Schulz in a commentary in JAMA, but its prevalence is generally lower after natural disasters than other kinds of traumatic events, such as terrorist attacks, and many individuals with early symptoms recover over time.

“Across all disaster types, a significant majority of the population experiences minimal health effects, instead displaying resilience, positive coping, and effective adaptation to the adverse circumstances,” the authors say.

An extended article by Drs. Neria and Schulz can be found on the 2x2 project at http://the2x2project.org/the-trauma-signature-of-hurricane-sandy

Vitamin D and hormone therapy combination could be beneficial for periodontitis

Symptoms of periodontitis, an inflammatory disease that weakens the gums and teeth, may be mitigated by a combination of female sex hormones and vitamin D, according to a new study by Dr. Ryan Demmer, an assistant professor of epidemiology, and his colleagues. The study found an association between a combination vitamin and hormone replacement therapy and less severe periodontitis-related problems, such as teeth falling out.

“What really excites us about this project is the fact that we were able to integrate methods from both basic science and population science to better understand the inter-relationship between hormone replacement therapy, vitamin D levels, and the inflammatory disease, periodontitis,” says Dr. Demmer and the study’s lead author Dr. Daniel Jönsson.


Risk of autism found to increase with father’s age

A case-control study in the Caribbean adds to growing evidence linking autism with paternal age. The study by Drs. Hans Hoek, an adjunct professor of epidemiology, Ezra Susser, professor of epidemiology and psychiatry, and their colleagues finds that children born on the island of Aruba of older fathers are more likely than those of younger fathers to have an autism spectrum disorder. The risk is more than two times as great for children of fathers in their 30s and 40s and over three times as great for children of fathers over 50 compared with children of fathers under 29.

IN THE NEWS

Do copays and deductibles deter use of breast cancer meds?

A new American Cancer Society study led by professor of epidemiology and medicine Dr. Alfred Neugut will examine how insurance co-pays and deductibles affect cancer patients’ adherence to treatment, looking also at variables such as age, ethnicity, and economic status.

“Co-payments and deductibles are useful in reducing your enthusiasm for going to the emergency room or getting unnecessary tests, but we don’t want them so high they stop you when you really need something,” Dr. Neugut says. http://www.nydailynews.com/life-style/health/columbia-doctor-studying-link-co-pays-cancer-treatment-article-1.1172656#ixzz296k8h5CQ

Wet hair probably not a cause of the common cold

Each winter parents tell their children that going outside during winter with wet hair is an invitation for a cold. But there is no evidence that this is actually the case, says Dr. Stephen Morse, professor of clinical epidemiology.

The relationship between temperature and the viruses that cause cold and flu has never been seriously studied, but Dr. Morse doubts a connection. Although in the U.S., peak cold and flu season occurs in the winter, in humid, subtropical regions, the flu often peaks in both winter and summer. “I doubt wet hair is the cause of the spike” in the Tropics, he says. http://online.wsj.com/article/SB10001424127887324276404578044523795203926.html

Residents in ‘ugly’ NYC neighborhoods heavier than those in attractive ones

New Yorkers in “uglier” neighborhoods have higher body-mass indexes (BMI) on average than those in neighborhoods that have more “attractive community and natural features” such as sidewalk cafes, landmark buildings, and trees, says a new study published in the American Journal of Preventive Medicine by assistant professor of epidemiology Dr. Gina Lovasi, associate professor of epidemiology Dr. Andrew Rundle, and their colleagues.

The Upper East Side, Chelsea, and Gramercy are some of the lowest BMI neighborhoods in the city, while neighborhoods deemed unattractive by the researchers’ criteria—East New York and Sunset Park in Brooklyn; Jamaica in Queens; and Mott Haven and Hunts Point in the South Bronx—are some of the highest BMI areas. The more attractive neighborhoods may “encourage active life styles which support a healthy weight,” says Dr. Lovasi. http://www.nypost.com/p/news/local/city_waist_lands_Wj2JQEJMGSiy0897jVrqWN

Half of adults in New York will be obese by 2030

Over half of adults in New York State will be obese by 2030 if the current trend continues, according to a study by the Robert Wood Johnson Foundation together with the not-for-profit Trust for America’s Health.

“Right now a quarter are obese, which is a pretty astonishing figure,” says Dr. Mary Ann Chiasson, associate professor of clinical epidemiology and vice president of research and evaluation for Public Health Solutions. “Chronic diseases are expensive not only in terms of healthcare but personally. If you can’t walk from here to the door because you have chronic obstructive pulmonary disease or your diabetes is so bad or you if you’ve had an amputation the quality of life is low.” http://statenisland.ny1.com/content/ny1_living/health/169142/study-half-of-all-new-york-adults-will-tip-scales-by-2030

A promising new arthritis drug

Dr. Lloyd Sederer, adjunct professor of epidemiology and medical director of the New York State Office of Mental Health, writes about his experience with a new arthritis and tendinitis treatment that has also been used by Kobe Bryant, Alex Rodriguez, and Pope John Paul II. The drug, called Regenokine, seems to work better than most anti-inflammatories used to treat osteoarthritic pain because it addresses the inflammatory disease process, increasing the amount of anti-inflammatory proteins in a joint, says Dr. Sederer. http://www.theatlantic.com/health/archive/2012/10/an-arthritis-treatment-worthy-of-the-pope-and-kobe/261606/
IN THE NEWS

What to expect from marijuana legalization

The legalization of recreational marijuana use in Washington and Colorado will almost certainly have an impact on public health. One possible result suggested by research from Dr. Guohua Li, professor of anesthesiology and of epidemiology, is an increase in incidences of driving while high on the drug. He has found in several studies that people who drive within a few hours of using marijuana are more than twice as likely to be involved in a car crash compared with other drivers. http://www.foxnews.com/health/2012/11/08/new-marijuana-laws-will-be-public-health-experiment-experts-say/

Obesity is bigger than the individual

America’s rising obesity rate is not simply a result of failure of individual willpower but is also the product of social and environmental factors such as air pollution and an unhealthy food environment that cause people to gain weight, says Dr. Andrew Rundle, associate professor of epidemiology. “It’s an epidemic of 1,000 paper cuts. For some people, appeals to personal responsibility will work. For others, we have to think about all the systemic things going on. I don’t discount personal choice and responsibility. It’s just way more complicated than that,” he says. http://articles.chicagotribune.com/2012-09-30/business/ct-met-obesity-factors-20120930_1_weight-gain-nutrition-obesity-research-center-obesity-rates

Thorough hand washing important during flu season

Although washing one’s hands—especially during the flu season—is a basic part of hygiene, many people do not do it properly, or at all. “The big mistake people make is that they just rub their palms together and they don’t get to the dirtiest parts of the hands—under and around the fingernails,” says Dr. Elaine Larson, professor of pharmacology and therapeutic research and of epidemiology. http://www.sfgate.com/health/article/Wash-those-germy-hands-it-s-flu-season-3994647.php

Happy 350th birthday to epidemiology

Although John Snowe’s 1854 cholera map of London is often cited as the first instance when epidemiology was used to combat a mass outbreak, the discipline has deeper roots. According to Dr. Alfredo Morabia, professor of clinical epidemiology, those roots reach back to 1662, when the King of England decided a new approach was necessary to combat the then-raging bubonic plague. “He decided to collect population data for the first time, so that when plague was around, people could know where it was, and therefore plan and escape in a very orderly way,” Dr. Morabia said in a talk given at the Harvard School of Public Health in September. http://www.hsph.harvard.edu/news/features/features/morabia-epidemiology-350th-birthday.html?utm_source=SilverpopMailing&utm_medium=email&utm_campaign=09.27.12%20%281%29

NEW RELEASE

Dr. DiMaggio publishes book on SAS

A new book by associate clinical professor of anesthesiological sciences and epidemiology Dr. Charles DiMaggio called SAS for Epidemiologists: Applications and Methods was published in November by Springer. The comprehensive text covers the use of statistical analysis system software or SAS for epidemiology and public health research. It is directly applicable to students and researchers in the fields of public health, biostatistics, and epidemiology. Through a "hands on" approach to the use of SAS for a broad number of epidemiologic analyses, readers learn techniques for data entry and cleaning, categorical analysis, analysis of variance, linear regression, and much more.
Dr. Greenlee elected to head oncology society
Dr. Heather Greenlee, assistant professor of epidemiology and medical oncology, has been elected to serve as president of the Society for Integrative Oncology for a term beginning in October 2013. The Society for Integrative Oncology is a multi-disciplinary organization of professionals dedicated to studying and facilitating the cancer treatment and recovery process through the use of evidence-based, comprehensive, integrative healthcare.

Dr. El-Sadr featured at World Leader’s Forum
Dr. Wafaa El-Sadr, professor of medicine and epidemiology, was a panelist at the Columbia World Leader’s Forum in September, called “A Future without AIDS: Dream or Reality?” The event was moderated by PBS senior correspondent Ray Suarez. Dr El-Sadr spoke at the event about the strong local response to AIDS in the regions she works in: “In multiple countries in sub-Saharan Africa, alongside the scale-up of treatment we are also seeing a decrease in risky behavior at the population level and a decrease in new HIV infections.”

Dr. Abdool Karim and Dr. Galea elected to the Institute of Medicine
Drs. Salim Abdool Karim and Sandro Galea were elected this year to the Institute of Medicine of the National Academies, one of the highest honors in the fields of health and medicine in the U.S. In total, five Columbia University Medical Center faculty were elected this year.

Dr. Li will lead new injury center
Dr. Guohua Li has received $4.2 million over five years from the National Center for Injury Prevention and Control to set up the Injury Control Research Center at Columbia.

Dr. Link recognized with Psychiatric Institute award
Dr. Bruce Link, professor of epidemiology and sociomedical sciences, was presented with the New York State Psychiatric Institute’s Mumford Award, a yearly grand rounds lecture established in memory of Dr. Emily Mumford who was a professor of clinical sociomedical sciences in psychiatry and public health at Columbia and was known for her work on the effect of psychotherapy in lowering later medical care costs. The award was established to preserve her interest in the contribution of the social sciences to medicine.

Dr. Kuhn receives grant for pediatric HIV research
Dr. Louise Kuhn, professor of epidemiology, has received $3.7 million over five years from the National Institute of Child Health and Human Development to study host epigenetic and mitochondrial function in HIV-infected children. Other faculty members who will work on the grant are Drs. Mary Beth Terry and Elaine Abrams in epidemiology, Drs. Regina Santella and Shuang Wang in biostatistics, and Dr. Marc Foca in pediatrics.
Silvia Martins, MD, PhD, is a psychiatric epidemiologist who focuses on population-level risk factors for addiction, such as race, socio-economic status, and neighborhood environment.

She came to the department this summer from Johns Hopkins’ Bloomberg School of Public Health with plans to expand her ongoing research on gambling disorders and non-medical prescription opioid use as well as to build collaborative initiatives with faculty here and abroad on the issue of mental health and substance abuse in South America.

Hailing from the Brazilian state of Paraná, Dr. Martins first became interested in studying addiction while treating patients with substance use disorders during her psychiatric residency at the Universidade de São Paulo in Brazil.

“I thought they were really challenging patients but that we could do something to improve their lives. I just thought it was a fascinating area,” she says.

At the time, there was not a lot of information about the psychiatric profile of people struggling with addiction, and few medications were available to treat addiction problems. [There are still few proven effective drugs that target addiction, but doctors commonly prescribe medications to treat conditions like depression and anxiety that are often seen among people struggling with addiction].

After her medical training, Dr. Martins entered the psychiatry PhD program, also at the Universidade de São Paulo, and at that stage, decided that she wanted to study addiction from an epidemiologic perspective.

She moved to the U.S. to do her post-doctoral fellowship at Johns Hopkins in 2003 and stayed until 2012 as a faculty member in the department of mental health.

She chose to come to Columbia this year because of the department of epidemiology’s strong programs in social and psychiatric epidemiology. She had also collaborated in the past on substance abuse research with epidemiology faculty members Dr. Deborah Hasin and Dr. Kerry Keyes.

Unlike substance abuse disorders, behavioral disorders like “problem/pathological gambling” are generally not classified as addictions, a source of controversy in the lead up to the publication of the DSM-V manual.

Dr. Martins plans to investigate developmental risk factors for problem gambling in Puerto Ricans, who among Latinos have some of the highest rates of substance addiction but are under-studied as a population. Together with colleagues in the psychiatry department, she will compare gambling patterns of Puerto Ricans in New York City and in the island of Puerto Rico to see if there is a difference that could be attributable to their social and acculturation status.

Separately, she plans to examine young adult addiction to prescription opioids like Oxycontin, which has been steadily on the rise over the past decade. For this research, Dr. Martins will examine another under-studied population, those young adults who do not go to or graduate from college.

She will also collaborate with Drs. Ezra Susser and Sandro Galea of the Global Mental Health Program to assess substance abuse disorders among patients with serious mental illness in Brazil, Argentina, and Chile.

Also in Latin America, she and colleagues are collecting data from over 15,000 middle and high school students in the state of São Paulo to try to understand patterns of binge drinking and illegal drug use, which is on the rise in that country. Unlike in developed nations like the U.S. where binge drinking is most prevalent in lower economic groups, the highest rates of binge drinking in Brazil are seen among the nation’s wealthiest teens.

In addition to her research, Dr. Martins is the academic coordinator of the new T32 Substance Abuse Training Program directed by Drs. Hasin and Galea and is a member of the doctoral admissions committee.

While she does not have much free time between work and raising her three-year-old son Tomás with her husband, she says that for fun she likes to go to movies and museums in New York City.
Niki Palmetto, PhD, says she never would have expected she would work at Pfizer—much less in her current position as associate director of epidemiology at the pharmaceutical maker. But, she admits, this is probably because she wasn’t entirely sure what that job meant.

In her role at Pfizer, Dr. Palmetto works on safety issues surrounding drugs. She and her colleagues are charged with identifying rare and long-term side effects of the products.

Given the short duration and small size of most randomized control trials, long-term effects aren’t caught in those initial studies. Dr. Palmetto and her team conduct database and de novo studies, design active surveillance programs to closely track patients, and design surveys to monitor the understanding of drug risk on the part of both physicians and patients.

This wasn’t the path Dr. Palmetto had seen for herself before entering the public health field. After graduating from Tufts University with a bachelor’s degree in psychology and a minor in community health, she felt pulled to California. She settled in San Francisco and began working at the University of California, San Francisco in clinical research for rheumatic diseases. While an MPH was always on her mind, she thought medical school was in her future, and she took the MCATS even as she received an acceptance to the Mailman MPH in sociomedical sciences program.

While completing her master’s, Dr. Palmetto worked with Drs. Ilan Meyer and Sharon Schwartz on minority stress and health research, but found herself gravitating towards epidemiology electives. These two professors took note of how Dr. Palmetto’s focus had begun to shift, and one day suggested that she consider the PhD program in epidemiology, particularly the psychiatric epidemiology track.

With her interests now lying more in understanding the causes of certain health outcomes and their prevention, as opposed to treating those outcomes, Dr. Palmetto entered the PhD program on the Anna Gelman scholarship immediately after finishing her MPH. By her second year, she had been accepted into the psychiatric epidemiology training, or PET, fellowship. Dr. Schwartz remained a mentor throughout the program, as someone who was able to identify Dr. Palmetto’s strengths and help shape her academic and career trajectory—seeing qualities that Dr. Palmetto says she did not see in herself.

During her doctoral career, Dr. Palmetto worked with Dr. Leslie Davidson on research regarding intimate partner violence in youth, including conducting the fieldwork for data collection. She cites this as giving her the understanding of how important quality research is from start to finish. For her dissertation, Dr. Palmetto worked with both Dr. Schwartz and Dr. Bruce Link, exploring the reliability of suicide attempt reports in a longitudinal, nationally representative U.S. sample. In this role, she examined how individual mental health and demographic characteristics impacted the reliability of a person’s report—for example, if the individual was depressed or not the day they were asked about suicide attempts.

Dr. Palmetto says she is continuously using skills obtained from Columbia’s program. “Particularly the study design aspects of the curriculum,” she adds.

“I think it is fascinating that there are so many different career paths one can take with an epidemiology degree—my closest epi friends are working in non-profits, academia, the government, and industry. We were all in the same program, and we all speak the same language—but just slightly different dialects,” she says.
DiLenny Roca-Dominguez, a senior cluster administrator, or SCA, administers pre- and post-award grants and works on budgeting and planning for the department’s epidemiology innovation and social epidemiology clusters and their affiliated centers including the Center for Social Inequalities and Health.

DiLenny has been with Columbia since 1995. She graduated from the university with a B.S. in neuroscience and behavior and went on to hold various administrative positions where she learned about policies and procedures, budgeting, managing grants, contracts and programs.

She credits her interest in finance and management to her first job, in the office of the vice president of budget and financial planning at the medical center. Her boss at the time taught her weekly “finance 101” lessons by scribbling notes on the cardboard backings of his coffee-stained notebooks, tearing them off, and giving them to her to study.

In 2002, DiLenny started her career in public health and management at the National Program Office of the Injury Free Coalition for Kids. A program founded by professor emerita Dr. Barbara Barlow, Injury Free’s mission is to prevent injuries to children. Injury Free was initially awarded $15 million from the Robert Wood Johnson Foundation to replicate an injury prevention program at Harlem Hospital in 40 trauma centers across the country.

DiLenny has worked for over ten years with a dedicated team of leaders in the field of injury epidemiology and prevention to facilitate Injury Free’s national expansion, through site visits, coordination of the application review process, financial management, program management, and development.

Some of her most memorable moments involved working with local residents and volunteers to build over 44 safe community playgrounds across the county, including eight in the most severely damaged areas of the Gulf Coast after Hurricane Katrina.

“DiLenny has been integral to the development of the National Injury Free Coalition for Kids program,” says Dr. Barlow. “No task is too difficult for her.”

Dilenny continues to serve as the organization’s program administrator and recently also worked as program manager at New York Healthy Start, which is housed in the department of sociomedical sciences.

She was a prime candidate for the position of SCA because of the time she had spent at Columbia, her ability to work with faculty and staff interdepartmentally, and her interest in public health.

“DiLenny goes above and beyond the role of an SCA. She is intelligent, committed and innovative. She also uses her public health expertise to improve our projects as well as smooth the administrative path,” says Dr. Leslie Davidson, the leader of the epidemiology innovation cluster.

DiLenny has continued her education while working fulltime, earning an MPH in 2007 in health policy and management from the Mailman School.

Currently, she is working toward a business certificate in Columbia’s School of Continuing Education and is thinking about getting an MBA.

When she is not at work or in class, she is usually at her home in New Jersey, with her husband Fabricio, and their son Matthew, who is 5, and daughter, Brianna, who is 2 ½.

**APPOINTMENTS AND PROMOTIONS**

**STAFF**

Man Kai Wong was appointed as variable hours officer in the epidemiology innovations cluster.

Daniel Vail was appointed as program coordinator in the psych/neuro epidemiology cluster.

Emma Sacks was appointed as project coordinator in the psych/neuro epidemiology cluster.

Dana Greeson was appointed as project coordinator in the psych/neuro epidemiology cluster.

Tsitsi Masvawure was appointed as program manager in the psych/neuro epidemiology cluster.
The presentations were grouped under the department’s six clusters and ran the gamut of public health topics. Childhood mental health, surveillance of food-borne illness, the effect of prenatal exposure to toxic chemicals, risk factors for traffic fatalities, the quality of life of cancer survivors, and health disparities across the lifecourse are just a small sampling of the varied research done by students.

Like last year, the event was widely attended by first-year master’s students as well as faculty, doctoral students, and peers outside of the department.

According to Dr. Joyce Pressley, director of the department’s thesis-practicum program, and an associate professor, the event is the culminating experience of the epidemiologic practicum, preparing students to present and answer questions about their research in an academic conference setting.

Leading up to the event, each student prepares an abstract and either a poster or an oral presentation depicting his or her practicum experience. Practicum sites are spread all across the world, including at World Health Organization offices in Geneva, Senegal, and India; department of health offices in New Orleans and Los Angeles; and hospitals and academic departments throughout New York City, including at Columbia. The New York City Department of Health and Mental Hygiene continues to be one of the most active partners in the program, with opportunities for our students varying from mapping tuberculosis rates to looking at data on stillbirths and neonatal deaths.

Three winners are chosen from all of the abstracts to discuss their research in 30 minute slide presentations. This year’s winners exemplified in their presentations how new technological tools are being harnessed to advance epidemiologic research.
First Place


Ms. Vine’s research attempted to predict the success of New York City’s new ban on large sodas—those 16-ounces or greater. She and faculty adviser Dr. Claire Wang used National Health and Nutrition Examination Survey data to estimate whether the ban can significantly prevent weight gain in New Yorkers. In order for it to work, at least 80 percent of the 2 million people affected daily by the ban must not circumvent it—for instance, by opting to buy two eight ounce sodas, the authors found.

Second Place


Ms. Blachman-Forsay presented on her crowd-mapping efforts with faculty adviser Dr. Karestan Koenen as part of the Syria Crowdmapping project. The project gathers user-generated data to track sexualized violence in Syria, with the goal of raising awareness and allowing the data to be used for war crime prosecution. [Read more about Ms. Blachman-Forsay’s work with Women Under Siege in the October 2012 issue of Two by Two.]

Third Place

Matthew MacFarlane. Epidemiology innovation. “Exploring the feasibility of using mobile phone technology to improve an anti-malaria campaign in rural Senegal.” Senegalese Ministry of Health (Saraya, Senegal)

The role of new technologies in epidemiologic-based intervention was also the pur-view of third place winner Mr. MacFarlane, who carried out a survey looking at the feasibility of using mobile technology to improve an anti-malaria campaign in rural Senegal. Because citizens of this region heavily rely on their mobile phones, they could be useful tools in this campaign, MacFarlane found.

Dr. Sandro Galea noted at the conclusion of the presentations that all three share several common themes: integration of new technologies into epidemiologic research, modeling and prediction, a global scope, and policy relevance.
Over the last thirty years as income inequality has climbed to levels not seen since the Gilded Age, the U.S. has dropped below other developed nations on a range of health indicators, such as life expectancy and infant mortality rates.

Although some in this country, particularly the rich, the well-educated, and white and Asian populations, still score well on various health measures, other groups like black men, the poor, and even members of the middle class are falling behind. For instance, in 2001, Asian women in this country had a life expectancy nearly 21 years longer than poor urban black men.

“America is a very wealthy country, but we have one of the lowest life expectancies in the developed world,” says Dr. Ichiro Kawachi, a professor of social epidemiology and chair of the department of society, human development, and health at Harvard University’s School of Public Health.

That health markers in this country have worsened at the same time the income gap has widened is not a coincidence, says a controversial 2009 book called The Spirit Level: Why More Equal Societies Almost Always Do Better.

The authors, British social epidemiologists Drs. Richard Wilkinson and Kate Pickett, argue that the level of inequality in a nation more than that nation’s wealth is what determines health and other quality of life measures.

Rich but unequal nations like the U.S. and the United Kingdom have much worse health outcomes across the board than other rich countries with narrower differences in income, such as Japan and the Scandinavian nations, the authors say.

Released in 2009, soon after the financial crisis, The Spirit Level took off across the Atlantic, especially in the U.K., where controversial post-recession austerity measures have been criticized for contributing to the nation’s rising income and race inequality.

Even Tory Prime Minister David Cameron has endorsed the findings of the book.

As the BBC put it in October of 2010: “It is not every day that a future British Prime Minister name checks someone from the


rarefied world of social epidemiology."
In the U.S., on the other hand, discussing the connection between inequality and health has mostly taken place among social epidemiologists and other social scientists.
"It has been totally lost in the current political climate exactly how inequality harms health," says Dr. Yvette Cozier, an assistant professor of epidemiology at Boston University’s School of Public Health, who studies the effects of racial inequality on health.
In the 1990s, policy elites on both sides of the Atlantic, up to U.S. President Bill Clinton and British Prime Minister Tony Blair, believed that "a rising tide lifts all boats," that income inequality is not a problem if the gains of the rich lift up the middle and working classes. This was the prevailing view into the early 2000s, a period when the rich pulled far ahead of everyone else.
But as a result of the financial crisis of 2008, the sentiment has begun to change and attention is starting to focus on income inequality's effect on society and social cohesion.
While it is clear there is a strong relationship between income and health, researchers are still trying to understand the "pathways" by which income inequality leads to worse health outcomes.
"The intuition that inequality is divisive and socially corrosive has been around since before the French Revolution," Dr. Wilkinson says in a TED talk from July 2011. "What’s changed is we can now look at the evidence. We can compare societies, more and less equal societies, and see what inequality does."
Mining copious amounts of health and income data and using sophisticated study design methods that allow them to control for various confounding factors, social epidemiologists have found that inequality affects everything from people’s ability to afford adequate healthcare to the inner workings of their endocrine and immune responses.
That said, it is impossible to demonstrate a straight-forward cause and effect relationship.
"Inequality is not any one kind of event, like a terrorist attack. It’s very much in the fabric of our daily life. It’s hard to show that there is a direct connection between living in a society like that, and this is why your blood pressure went up today," says Dr. Kawachi.
One area of research has looked at how markers of inequality lead to psychological and physiological problems. For instance the stress of unequal conditions can lead to unhealthy behaviors like smoking and over-eating, as well as a physiological response that disrupt the endocrine system.
"Inequality in all of its forms, whether it’s in extremely low wages, lack of a safety net, racial or gender discrimination, these types of things, creates a [stress] response. What any organism does toward stress is try to adapt. There’s a big expense of effort that goes into to that," says Dr. Cozier.
Findings like this could strengthen the case for policies that seek to redistribute income from the 1 percent to the rest of society.
Inequality research like that presented in The Spirit Level has been criticized by some of Drs. Wilkinson and Picketts’ peers as singularly focused. Reducing inequality alone will not suffice if there continues to be, as there is now, a lack of capital investment in social services, says Dr. George Kaplan, an emeritus professor of epidemiology at University of Michigan’s School of Public Health and the founder of the school’s Center for Social Epidemiology & Population Health.
He points to a 2005 study that compares income inequality and health measures across metropolitan areas in the U.S., Canada, the

Only in the U.S. and Great Britain was there a significant relationship between inequality and mortality across urban areas, according to the study. The researchers suggest that this is because both nations are organized so that big spending decisions on services like education and health are made at local and state, not federal levels as they are in Canada, Sweden, and Australia.

Dr. Kaplan illustrates that point with the following example: “Does a woman in the lowest tenth percentile economically in the New Orleans metro area have the same chance of having a child with health problems as a woman in the Hartford, Connecticut, metro area [where there is more investment in social services] who’s in the lowest tenth percentile? Everyone knows the answer is no.”

Although awareness of inequality is growing in the U.S.—witness the mainstreaming of the Occupy Wall Street “1 percent” versus “99 percent” terms, and surveys finding that a majority of Americans believe the rich need to pay more in taxes—it remains to be seen whether the country’s policymakers are willing to act.

One contention from the The Spirit Level that could persuade them is that unequal societies are not just worse for the poor but for the rich.

This is seen for instance in emergency rooms, where insured and uninsured patients alike encounter long wait times and over-worked staff, conditions created because the E.R. cannot turn away uninsured Americans, of which there are millions.

“It’s the spillover effect of living in an unequal society,” says Dr. Kawachi. “Yet so far “health implications have not mattered to politicians. Other aspects of inequality may have mattered to them,” says Dr. Kaplan.

For this reason, some academics believe that they need to speak up more on the grave health effects of inequality.

“As epidemiologists, our job is to really count and calculate and study these relationships, but the piece that we don’t have is that of advocating,” says Dr. Cozier. “I wish that more of us would be able to advocate and explain and really get out there and push the message that there is inequality.”

A version of this article appears online http://the2x2project.org/health-gap-wealth-gap

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Charting the future of social epidemiology

A Columbia University Department of Epidemiology Scientific Symposium

Social epidemiology is a relatively new area of epidemiology, coming into its own over the past quarter century.

As social epidemiology has grown in scope, the field has expanded to examine not only how societal influences shape human health but how these influences interact with biological, neurological, molecular, and genetic factors.

This was the message at the third Columbia University Epidemiology Scientific Symposium (CUESS) on “Charting the next 25 years of social epidemiology” on October 26, which drew nearly 200 attendees.

The event was deliberately organized to bring together rising stars and established luminaries in the field.

“Dr. Galea and I observed that a really talented, well-trained, and creative cohort of young social epidemiologists was emerging—one that would shape the field for years to come. We decided that it was time for them to recognize and to collectively embrace the opportunity and challenge that this emergence creates,” said social epidemiology cluster leader and professor of epidemiology and sociomedical sciences Dr. Bruce Link, who hosted the event.

Panels allowed for extended discussion periods between the senior faculty, junior faculty, and the audience members, which covered everything from the philosophical underpinnings of the discipline, to cutting edge methodological approaches, to whether social epidemiologists should act as policy advocates.

The area of genetics is just one example of how social epidemiology has evolved to incorporate “hard science” in its research.

Social scientists have in the past been wary of drawing on genetics in their research because “it hearkens back to an era when we said inequality was based on genetic factors,” said Dr. Maria Glymour, assistant professor of society, human development, and health at the Harvard School of Public Health.

But the rise of a field called epigenetics, which looks at how genes and the environment are inter-related, is bridging this “nature versus nurture” divide.

Researchers in the field examine how societal and environmental influences alter gene expression, also known as phenotypes.

“Epigenetics is going to allow us to perhaps marry sociology and biology,” said Dr. Yvette Cozier, an assistant professor of epidemiology at the Boston University School of Public Health. “We can move beyond the dichotomy of the two to really understand how social determinants get under the skin.”

Scientists are also looking at biologic responses to negative life experiences like economic hardship, partner violence, neglect and abuse, racism, and
job stress, in order to gain a better understanding of how they trigger the body’s stress response and lead to illnesses, like cardiovascular disease, diabetes, and anxiety.

“What we’ve failed to take into account is that these are all related to each other,” said Dr. Shakira Suglia, an assistant professor of epidemiology who does research in this area.

Despite the newer focus on genetics and biology, social epidemiologists still place great importance on social inequalities, like neighborhood segregation, gender inequality, and income inequality.

Dr. Magdalena Cerdá, an assistant professor of epidemiology, described an innovative study design known as a natural experiment to show the crime rate improvement after a public transportation network was built in poor neighborhoods of Medellin, Colombia.

With the increasing wealth gap in America and other nations, research on inequality has surged in recent years, observed Dr. Leonard Syme, professor emeritus of epidemiology and community health/human development at the University California-Berkeley School of Public Health.

When he first began his career, the idea that there were social classes in the U.S. was vigorously contested – the presumption was that we lived in a “classless society,” says Dr. Syme.

All in all, the event showed that social epidemiology is far from a soft science, as panelist Dr. Nancy Adler, vice-chair of the department of psychiatry at University of California-San Francisco, put it:

“I’ve been trying to change the terminology to the hard sciences and the harder sciences.”

CUESS is an ongoing symposium series that brings the best minds in our field together for a full day of discussions on the most pressing health questions of our time. We encourage participants to follow our Twitter @cuepidemiology for coverage of the event and to tweet about it using the hashtag #CUESS. For more information about future CUESS events, visit http://cuess.org.
the 2x2 project

The department is engaged in communicating our science internally and externally, through multiple fora.

During the past year we have been making wider use of social media to break news about new faculty research, as well as communicate about the large number of events we sponsor, including symposia, grand rounds, seminars, special lectures, training and cluster seminars, and social gatherings.

In our ongoing effort to translate our science to a community beyond our department, our school, and the university, we have expanded our science coverage in our Two by Two publication and have now launched an exciting and innovative new website: the 2x2 project.

The 2x2 project: communicating our science

The 2x2 project aims to inform the health conversation through timely and effective communication of emerging public health science, to meet the department’s vision of translating our scientific findings into practice.

Healthy societies depend on citizens who are informed about disease and wellness. In an era of rapidly emerging infectious disease, epidemic levels of obesity, and a rise in the diagnosis of neurological disorders such as autism, it is important that the general public understands health risks and how to address them. However, too often evidence-based information does not reach the public as quickly or smoothly as false information. Epidemiology, which is the science of public health, is critical to understanding many of our most challenging health problems and therefore should not be limited to the scientists and practitioners who have access to the literature. What’s more, we see translation of the science as one of the core functions of a leading Department of Epidemiology.

The 2x2 project aims to counter-balance the stream of misleading sound bites with clear and engaging communication about health beyond the headlines. Our goal is to engage an audience beyond our scientific colleagues, one that includes thought leaders and policy makers from outside the discipline.
Our coverage thus far has included:

- **Soda ban science** Weighing the evidence behind the sugary drink limits in NYC [http://the2x2project.org/doing-the-right-thing](http://the2x2project.org/doing-the-right-thing)
- **Pain in the developing world** Severely needed pain management is being stifled in developing countries [http://the2x2project.org/developing-palliative-care](http://the2x2project.org/developing-palliative-care)
- **Economic bust, health boom?** Why bad economic times may equal good health [http://the2x2project.org/recessions-and-health](http://the2x2project.org/recessions-and-health)
- **Disease moves beyond the Tropics** Temperatures are rising. So is Chagas disease. [http://the2x2project.org/climate-change-chagas](http://the2x2project.org/climate-change-chagas)
- **Behavior’s role in an AIDS-free generation** Behavioral change is integral to a ‘Generation without AIDS’ [http://the2x2project.org/behavioral-intervention-aids-free-generation](http://the2x2project.org/behavioral-intervention-aids-free-generation)
- **A new wonder drug for heart disease?** Why an affordable four-in-one pill has not reached the U.S. [http://the2x2project.org/the-polypill](http://the2x2project.org/the-polypill)
- **Why is Medicare so expensive?** A five-part series [http://the2x2project.org/medicare-episode-1](http://the2x2project.org/medicare-episode-1)
- **Weekly round-up** The best and worst of health in the headlines across the web [http://the2x2project.org/weekly-roundup-9](http://the2x2project.org/weekly-roundup-9)
- **Public health under Romney** What public health would look like if he were elected president [http://the2x2project.org/public-health-under-romney](http://the2x2project.org/public-health-under-romney)
- **Mental health and Hurricane Sandy** What we can expect and what we can do [http://the2x2project.org/mental-health-and-hurricane-sandy](http://the2x2project.org/mental-health-and-hurricane-sandy)
- **Treating the mental wounds of war** Is the U.S. prepared to help returning veterans? [http://the2x2project.org/treating-the-mental-wounds-of-war](http://the2x2project.org/treating-the-mental-wounds-of-war)

### Social media

In our ongoing effort as a department to marry science with new forms of communication, the 2x2 project has widely employed social media to communicate our coverage. We have developed an active presence on Twitter and Facebook, which has significantly broadened the reach of our coverage.

The editorial team of the 2x2 project encourages faculty, students, and staff to consider submissions to the 2x2 project. More information about submissions is on the website. As it continues, the 2x2 project will expand our base of contributors to leading academics, journalists, and other thought leaders.

Learn more at [http://the2x2project.org](http://the2x2project.org).

### Training the next generation of communicators

The department has established an additional educational component to the 2x2 Project called the Communication in Health and Epidemiology Fellowship (CHEF), to advance the goal of training the next generation of epidemiologists to be effective health communicators. Through a competitive application process, the department chooses four public health students or recent graduates as fellows to learn about the theory and practice of communicating health information to the public and to contribute to the writing, editing, publicizing, and operations of our website.

[facebook.com/the2x2project](http://facebook.com/the2x2project)
[twitter.com/the2x2project](http://twitter.com/the2x2project)
Despite success, a controversial procedure

Male circumcision and the prevention of HIV

A COLUMBIA UNIVERSITY EPIDEMIOLOGY GRAND ROUNDS

Although it is believed to be the world’s oldest planned surgical procedure, male circumcision has only recently been tapped as a public health intervention. The development has been fueled by research finding that the procedure significantly reduces the risk of contracting HIV and other sexually transmitted infections (STI).

Yet campaigns to circumcise adolescent and adult men, particularly in southern and eastern Sub-Saharan Africa where rates of HIV infection are high and circumcision is uncommon, have been modest.

Part of the hold-up is due to ethical concerns that have been raised about the practice, and the research finding that women are still equally at risk of contracting HIV from a circumcised partner as from an uncircumcised partner. There are also concerns that people may get the false idea that safe sex practices are not necessary if the man is circumcised.

To shed light on the controversial issue Dr. Ronald Gray, a researcher and proponent of male circumcision, spoke in October at the department’s Columbia University Epidemiology Grand Rounds, or CUEGR.

Research has consistently shown that uncircumcised men are at greater risk of contracting HIV because their inner foreskin is especially vulnerable to the virus.

A 2011 investigation by Dr. Gray, a professor of epidemiology at Johns Hopkins University’s Bloomberg School of Public Health, and his colleagues that followed Ugandan study participants during and after a circumcision intervention trial found that their risk for acquiring HIV declined nearly 60 percent.

The benefit of male circumcision for their female partners has been less clear. So far studies have found that circumcision of HIV-infected men does not protect their uninfected partners from HIV. In fact, a woman is more likely to contract HIV from a circumcised HIV-positive partner than an uncircumcised partner if the couple has resumed intercourse before the surgical wound is completely healed.

If the wound has healed, the risk of female infection is the same as with an uncircumcised man, Dr. Gray points out. However, decreasing the prevalence of HIV-positive men through circumcision campaigns will in the long run help to lower HIV incidence in women as well.

Dr. Gray also noted that, despite claims to the contrary, circumcision does not decrease men’s sexual satisfaction, and their female partners actually report greater satisfaction, according to a 2009 study he conducted with colleagues. For this reason, circumcision campaigns in places like Uganda are often directed toward women, the thinking being that they would encourage their male partners to get circumcised.

There have been signs that the circumcision outreach is working. Dr. Gray and colleagues showed earlier this year that in Uganda, population-wide circumcision had led to a 37 percent decrease in HIV incidence. While this is encouraging, incidence for women has not yet declined.

Critics claim that other strategies, like educating and changing behaviors surrounding condom use are more viable than circumcision.

Dr. Gray endorses those efforts as well, but he says he also must acknowledge the reality: “I don’t know how to change behavior, I wish I did.”
If you have a study, news story, award, or other milestone you’d like to share in Two by Two, please email Elaine Meyer at em2642@columbia.edu with your submission.