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ON THE COVER: A view of *mycobacterium tuberculosis* through prismatic lenses
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Colleagues,

Welcome to the winter 2015 issue of 2x2.

Tuberculosis (TB) is a global epidemic. The World Health Organization estimates that a third of the world’s population is infected, and multidrug resistant strains present urgent new challenges for prevention and treatment. Epidemiology department investigators are taking on these challenges through approaches that range from molecular tracking of the ever-evolving *mycobacterium tuberculosis* to community-based adherence programs. In this issue our 2x2 project CHEFs (Communication in Health and Epidemiology Fellows) take a look at the innovative strategies our faculty are employing to combat the epidemic.

We also report on two symposia sponsored by the department this fall, each of which took on a timely public health issue. On October 12, *Vaccines and the public’s health: History, culture, and science* brought together experts from the domains of infectious disease, vaccine science, history, and ethics to capture the big picture. On October 15, *The surge: Politics, violence, and children in Central America and Mexico*, grappled with how to respond to the public health crisis resulting from the dramatic increase of unaccompanied monitors entering the country.

We feature the work our injury epidemiology and substance abuse epidemiology faculty are undertaking to monitor potential health outcomes as marijuana use becomes ever more commonplace in this country.

The past few months have been exceptionally rich with scholarly publications (see the lengthy bibliography at the back of the issue) and media coverage of the extraordinary work of our faculty. I hope you enjoy the small sampling we are able to present in these pages.

Warm regards,
Treating maternal psychiatric disorder with commonly used antidepressants is associated with a lower risk of certain pregnancy complications including preterm birth and delivery by Caesarean section, according to researchers at Columbia University’s Mailman School of Public Health, Columbia University Medical Center, and the New York State Psychiatric Institute. However, the medications—selective serotonin reuptake inhibitors, or SSRIs—resulted in an increased risk of neonatal problems. Findings are published online in the American Journal of Psychiatry.

“To our knowledge, the association between taking antidepressants in pregnancy and a lower risk of preterm birth is a novel finding,” said Dr. Alan Brown, professor of psychiatry and epidemiology and senior author. “Up to now, studies which were based on maternal underlying psychiatric illness had small sample sizes and reported inconsistent results.”

The Columbia researchers with colleagues in Finland studied 845,345 single births in 1996 through 2010 from the Finnish Medical Birth Register. They also analyzed data from national registers on prescription drug purchases, mothers’ psychiatric history, maternal medical history, hospital sources, and healthcare professionals. The women were categorized into mutually exclusive groups: SSRI users, those with a psychiatric diagnosis related to SSRI use but no antidepressant purchases, and those without a diagnosis or antidepressant purchases, to determine if outcomes were a result of maternal underlying psychiatric illness or due to use of the drugs.

This class of antidepressants is the most commonly used for treating depression and anxiety during pregnancy, with 4–10 percent of pregnant women prescribed them in Finland and in the U.S. A total of 12,817 women in the study had purchased the antidepressants during the first trimester or 30 days before the beginning of gestation, and 9,322 (59 percent) made two or more purchases.

The risk of preterm birth was 16 percent lower, and the risk of very preterm birth nearly 50 percent lower in women using the antidepressants during pregnancy compared to mothers with a psychiatric diagnosis but no medication use. Preterm birth is the most important single cause of neonatal and infant death and is associated with long-term neurological disabilities in the surviving infants.

Maternal psychiatric disorder without medication use was associated with an increased risk of Caesarean section (26.5 percent) compared to those without a diagnosis or antidepressant purchases (17 percent). There was a slightly greater risk of bleeding during or after delivery (3.5 percent) for women with a diagnosis but in the no-medication group as compared to those without a diagnosis or anti-depressant purchases (3 percent).

While the risk of being born small for gestational age did not differ for the babies of mothers with or without antidepressant drug treatment, SSRI use was associated with an increased risk of all neonatal problems, including breathing issues, that led to longer hospital stays and neonatal care.

“Our findings provide evidence that taking these antidepressants is associated with a lower risk of preterm birth and Caesarean section and further confirm the results from previous research of a higher risk for several neonatal problems,” noted Dr. Brown. “Given these divergent findings, the decision whether to prescribe these medications during pregnancy should be individualized to the mother’s medical and psychiatric history.”

The increasing national focus on personalized or ‘precision’ medicine is misguided, distracting from broader investments to reduce health inequities and address the social factors that affect population health, two leading public health scholars argue in the New England Journal of Medicine.

“There is now broad consensus that health differences between groups and within groups are not driven by clinical care, but by social-structural factors that shape our lives,” write Dr. Sandro Galea, dean of the Boston University School of Public Health and adjunct professor of epidemiology at Columbia, and Dr. Ronald Bayer, professor of sociomedical sciences and co-director of the Center for the History and Ethics of Public Health at Columbia University’s Mailman School of Public Health.

“Yet seemingly willfully blind to this evidence, the United States continues to spend its health dollars overwhelmingly on clinical care. It is therefore not surprising that even as we far outpace all other countries in spending on health, we have poorer health indicators than many countries, some of them far less wealthy than ours.”

Drs. Bayer and Galea say that while investments in precision medicine may ultimately “open new vistas of science” and make contributions to “a narrow set of conditions that are primarily genetically determined,” enthusiasm about the promise of this research is premature. Leaders of the National Institutes of Health (NIH) have praised President Barack Obama’s recent initiative to devote $215 million to personalized medicine, an emerging practice of medicine that uses an individual’s genetic profile to guide decisions in regard to the diagnosis and treatment of disease.

“Without minimizing the possible gains to clinical care from greater realization of precision medicine’s promise, we worry that an unstinting focus on precision medicine by trusted spokespeople for health is a mistake — and a distraction from the goal of producing a healthier population,” they write.

Arguing that clinical intervention will not remedy pressing health problems that arise from environmental conditions and inequities in income and resources, they cite a 2013 report by the National Research Council and the Institute of Medicine that found Americans fared worse in terms of heart disease, birth outcomes, life expectancy and other indicators than their counterparts in other high-income countries. The report concluded that “decades of research have documented that health is determined by far more than health care.”

They call for greater public investments in “broad, cross-sectional efforts” to minimize the socioeconomic and racial disparities in the U.S. that contribute to poor health.

Drs. Bayer and Galea say the NIH’s most recent Estimates of Funding for Various Research, Condition and Disease Categories report shows that total support for research areas including the words ‘gene,’ ‘genome’ or ‘genetic’ was about 50 percent higher than funding for areas including the word ‘prevention.’ And investment in public health infrastructure, including local health departments, lags substantially behind that of other high-income countries.

In explaining why they felt compelled to speak out, Drs. Galea and Bayer said they are wary that specialized medicine will push larger public health initiatives aside.

Individuals near the middle of the social hierarchy suffer higher rates of depression and anxiety than those at the top or bottom, according to researchers at Columbia University’s Mailman School of Public Health. Nearly twice the number of supervisors and managers reported they suffered from anxiety compared to workers. Symptoms of depression were reported by 18 percent of supervisors and managers compared to 12 percent for workers. Findings are online in the journal Sociology of Health & Illness.

While social disadvantage related to income and educational attainment is associated with a higher risk of most adverse mental health outcomes, these latest findings show that people towards the middle of social hierarchies suffered higher rates of depression and anxiety based on their social class and position of power in the labor market.

“Contradictory class locations are those that embody aspects of both ownership and labor, and using this construct we found patterns of depression and anxiety that are not easily detected or explained with standard approaches,” said first author Seth J. Prins, MPH, a doctoral student in epidemiology at the Mailman School of Public Health and fellow in the Psychiatry Epidemiology Training Program. “We explored how social class might influence depression and anxiety in ways that may be masked or incompletely explained by standard socioeconomic status measures.”

The researchers based their findings on the largest representative population data set ever used to test these hypotheses directly: the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a nationally representative survey of the U.S. population age 18 and older, interviewed in person. This study used data on the 21,859 participants who were full-time workers. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) Alcohol Use Disorder and Associated Disabilities Interview Schedule was used to assess DSM-IV psychiatric disorders.

The researchers estimated the prevalence and odds of any lifetime and previous 12-month depression and anxiety by occupational class categories, income, and education. Class designations were made by sorting respondents into three categories: owners, who identified as self-employed and earned greater than $71,500; managers and supervisors, who occupied executive, administrative or managerial positions; and workers, who were defined by various occupation categories in the NESARC including farmers and laborers.

“We chose to focus on depression and anxiety because the average age of onset is older than age 18, and these disorders are likely to arise after entry in the workforce,” said Dr. Katherine Keyes, assistant professor of epidemiology.

Prior research has shown that work stress and job strain are important risk factors in developing depression. Workers with little opportunity for decision-making and greater job demands show higher rates of depressive symptoms.

“Our findings highlight the need for population health research to both conceptualize and measure social class in ways that go beyond the standard measures of socioeconomic status,” said Dr. Lisa M. Bates, assistant professor of epidemiology, “Standard measures are most readily available, but can mask important complexity in the relationship between social class and population health.”

Scientists in the Center for Infection and Immunity at Columbia University’s Mailman School of Public Health have discovered a new virus in seals that is the closest known relative of the human hepatitis A virus. The finding provides new clues on the emergence of hepatitis A. The research appears in the July/August issue of mBio, the online open-access journal of the American Society for Microbiology.

“Until now, we didn’t know that hepatitis A had any close relatives, and we thought that only humans and other primates could be infected by such viruses,” said lead author Dr. Simon Anthony, assistant professor of epidemiology at Columbia.

Hepatitis A viral infection, which impacts 1.4 million people worldwide annually, can cause mild to severe illness. It is a highly contagious disease that is usually transmitted by the fecal-oral route, either through person-to-person contact or through consumption of food or water. “Our data suggest that hepatitis A and this new virus share a common ancestor, which means that a spillover event must have occurred at some point in the past,” said Dr. Anthony. “It raises the question of whether hepatitis A originated in animals, like many other viruses that are now adapted to humans.”

The researchers discovered the new virus while investigating a deadly strain of avian influenza that killed over 150 harbor seals off the coast of New England in 2011. In an effort to determine what viruses might co-occur with influenza, researchers performed deep sequencing of all the viruses present in three of the marine mammals. They discovered a new virus that was genetically similar to hepatitis A and named it phopivirus. An analysis of additional animals living off the coast of New England (29 harbor seals, 6 harp seals and 2 grey seals) identified phopivirus in 7 more animals. The researchers say the virus appears to be fairly common in seals based on the juvenile animals examined for their study, and so far there is no evidence that it causes them any harm. However, they caution that further research is needed in mature seals, because if it acts anything like hepatitis A it might only cause disease in adults.

In the natural history of phopivirus and hepatitis A, it is unclear whether a common ancestor (virus) spilled over from humans to seals, vice versa, or from a third unrelated host that has not yet been identified. The researchers next plan to look at species that have close interactions with seals to see if they can find other wildlife reservoirs of hepatitis A-like viruses. “Coyotes regularly scavenge dead seals along the coast, so it would be very interesting to examine coyotes to see if they have any similar viruses,” said Katie Pugliares, a senior biologist at the New England Aquarium in Boston who was also involved in the study. Another project might study humans who eat seal meat to see if the seal virus has ever spilled over.

The vast majority of emerging infectious diseases in humans have origins in wildlife. In recent years, scientists in the Center for Infection and Immunity led by Dr. Simon Anthony have been working with partners at the EcoHealth Alliance, University of California Davis, and others under the auspices of the United States Agency for International Development’s PRE-DICT program to identify potential zoonotic viral threats to human health. “Our goal”, said Dr. W. Ian Lipkin, director of the Center and John Snow Professor of Epidemiology, is “to try to understand drivers of infectious disease emergence thereby enhancing pandemic preparedness.”

Men and women exposed in early gestation to the man-made Ukrainian Famine of 1932-33 in regions with extreme food shortages were 1.5 times more likely to be diagnosed with Type 2 diabetes in adulthood. In regions with severe famine there was a 1.3 fold rise in the odds of Type 2 diabetes, and there was no diabetes increase among individuals born in regions with no famine.

Researchers at Columbia University’s Mailman School of Public Health, the Komisarenko Institute of Endocrinology and Metabolism in Kiev, Ukraine, and the Cheboratev Institute of Gerontology in Kiev are the first to conduct a large-scale study of the relationship between famine severity during different stages of prenatal development and Type 2 diabetes risk. Findings are online in the Lancet Diabetes and Endocrinology.

Scientists have long known that poor living conditions around the time of birth may have long-lasting effects on health. For Type 2 diabetes, they suspected that nutrition in pregnancy was a possible explanation but studies with reliable measures of the severity and timing of under-nutrition in pregnancy in large representative populations were not yet available.

The new Lancet study included all 43,150 cases of Type 2 diabetes diagnosed at age 40 or over in the Ukraine national diabetes register between 2000-2008. The researchers matched these records with all 1.4 million individuals in the 2001 census who were born in the selected regions between 1930-1938 and still alive in the year 2000.

“The most important finding of our study is the dose-response relation between the severity of famine exposure in early gestation and the likelihood of later diabetes,” said Dr. L.H. Lumey, associate professor of epidemiology and the study’s first author.

Data for the years 1932-1934 show that the odds for diabetes were highest and the birth counts lowest in early 1934, nine months after famine mortality peaked between May to July 1933. Using month of birth, the researchers identified early gestation as a timeframe that appears to be particularly sensitive to long-term effects of prenatal famine. They were able to quantify the impact of prenatal famine on Type 2 diabetes in men and women, accounting for region of birth, seasonal effects, and their possible interactions. Results were the same for both sexes.

According to the researchers, the relation between season of birth and Type 2 diabetes was likely related to seasonal differences in food availability. The authors point out that deficiencies of a low-calorie diet most likely worsen during the winter and spring when food stocks from the previous harvest are depleted.

A Commentary article in the same issue of the Lancet Diabetes and Endocrinology by Harvard Professor Matthew W. Gillman notes that the study had a large sample size, reasonably precise information about the timing of the famine, geographical variation in the same country, and clinical outcomes – a combination of strengths missing in other famine studies. Findings “raise the possibility that the first trimester of pregnancy holds crucial clues about the development of diabetes in offspring later in life.”

There is an emergent and promising field of research on schizophrenia prevention, yet little is known about the potential harm and risks inherent in identifying and labeling young people at risk. A study led by researchers at Columbia University’s Mailman School of Public Health and New York State Psychiatric Institute found that young people identified as at clinical risk for psychosis described feeling stigmatized by the symptoms that led them to seek help to a relatively stronger degree than the risk label, or the stigma of coming to a specialized clinic. The study is the first to address the separate effects of symptoms and labeling on stigma in young people identified as at clinical high risk for schizophrenia and related psychotic disorders. Findings are online in the journal Schizophrenia Research.

“The clinical high-risk state is an incredibly important advance in psychiatry that enables identification of at-risk youth prior to development of full psychosis,” said Dr. Lawrence H. Yang, associate professor of epidemiology at the Mailman School of Public Health and first author. “We were able to distinguish feelings of stigma due to attending a specialized high-risk clinic from the stigma of having symptoms and experiences. While the stigma of symptoms and experiences appear greater, the results indicate that both forms of stigma provide targets for intervention.”

The new paper reports the findings from a prospective cohort study at the New York State Psychiatric Institute at Columbia University at the Center of Prevention and Evaluation, or COPE, a comprehensive program that offers treatment and resources to participants about early symptoms and risk of schizophrenia. Upon joining COPE through community identification in clinics and schools, young people were told that while they were at increased risk for psychosis as compared with the general population, it was likely that they would not develop psychosis. They were also told that if they did develop psychosis, they would receive immediate treatment, which tends to be effective. In this study, young people were asked about their stigma experiences on average about 11 months after they entered the COPE program.

Dr. Yang is also the principal investigator of a multi-site five-year project currently funded by the National Institutes of Health that is building upon the current study to understand stigma better in the clinical high risk state for psychosis. This project, which is being conducted at New York State Psychiatric Institute, Beth Israel Deaconess-Harvard Medical Center, and Maine Medical Center, will enable Dr. Yang to corroborate these initial findings, as well as to examine whether vulnerability to stigma is affected by social cognition, like recognizing others’ intents and emotions in their facial expressions and in what they say.

“This study confirms that the young people we identified as at risk for psychosis were more troubled by the symptoms they were having than by any label given to them,” said Dr. Cheryl Corcoran, senior author and Columbia University assistant professor of Clinical Psychiatry and a research scientist at the New York State Psychiatric Institute. “We are also encouraged to learn how much these young people resist or disagree with pervasive negative stereotypes of psychosis or schizophrenia and that this relative lack of stigma associated with a risk label might mean that more young people will seek out the treatment and services they need.”


Identifying youth as “at risk” for mental problems may be less stigmatizing than the symptoms

related media coverage

Medical News Today
bit.ly/1FSXAes

PsychCentral
bit.ly/1hm8AW9

Psychiatric Advisor
bit.ly/1N2dx4I
Marijuana is going mainstream. So far, 23 states have legalized medical use of the drug or effectively decriminalized it. Ohio recently voted against legalization, but another 17 states will consider the issue next year. As laws and societal mores around marijuana are rewritten, public health scientists at the Mailman School are taking a close look at a range of issues, from who is using it and how widely to its long-term consequences.

Epidemiology professor Dr. Deborah Hasin has written more than 350 papers on the epidemiology of drug and alcohol use disorders. In October, she published a study in JAMA Psychiatry finding marijuana use among adults more than doubled between 2001 and 2012. The numbers of people diagnosed as abusing the drug or dependent on it also climbed, reaching nearly 7 million, or nearly three in ten users. Was legalization of marijuana for medical purposes a factor? Among one group, at least, it wasn’t. A study of teenagers, published by Dr. Hasin in Lancet Psychiatry, found teen use of pot was elevated in states with medical marijuana laws, but because the rates of use were higher in these states before they even passed the laws, some other factor seems to be responsible for both the higher rates of use and the laws.

As director of the Substance Dependence Research Group at the New York State Psychiatric Institute, Dr. Hasin sees considerable evidence that using marijuana involves some risk. “Our studies show there are dangers from using marijuana,” she says. “Others have shown lasting impairments in brain functioning among adolescents who are heavy, regular users, while adults with marijuana use disorders show impairments across various areas of functioning.”

Dr. Silvia Martins, associate professor of epidemiology, points to a wealth of data on the health risks of regular marijuana use. Using it this way over the long-term is associated with
reduced IQ, and with hallucinations, schizophrenia, and major depression, particularly if adults started using it heavily as teenagers. “Research shows that about one in eleven users can become addicted,” she says. “Regular and heavy marijuana use during the adolescent years can affect brain development and may reduce thinking, memory, and learning.”

Some of us are more attune to the risks than others. A study by Dr. Martins published in Drug and Alcohol Dependence earlier this year found women were twice as likely to see regular use of cannabis as potentially harmful, although that number had dropped from 59 percent in 2002 to 27 percent in 2012.

What Is the evidence for medical marijuana?
Three-quarters of Americans favor using marijuana for medicinal purposes. Many in the medical community too favor its use for pain, as muscle relaxer, appetite enhancer, and for other reasons. Yet there has been very little careful research to back up this and other potential upsides. “We see segments on the news about children with epilepsy showing tremendous improvement from taking the drug,” says Dr. Hasin. “Yet while it does help some, it could harm others, and we still need rigorous studies and data to guide our decisions about medical marijuana.”

One significant hurdle to research: marijuana is still classified as a Schedule I drug. This could change. Recently presidential hopeful Hillary Clinton echoed the sentiment of the American Medical Association by saying she would like to see marijuana reclassified so it can be more easily studied. “I want to move from Schedule 1 to Schedule 2 so researchers can research what’s the best way to use it, dosage, and how it works with other medications,” she said.

Driving high
It’s well known that alcohol and automobiles are a deadly combination. According to the Centers for Disease Control, almost 30 people in the United States die in motor vehicle crashes that involve an alcohol-impaired driver every day. What about pot? While driving under the influence of marijuana is illegal no matter what state you live in, growing numbers of marijuana users are getting behind the wheel.

In an analysis of toxicology reports from fatal car accidents published in the American Journal of Epidemiology, Dr. Guohua Li, Finster Professor of Epidemiology and Anesthesiology, found that one in eight drivers tested positive for the drug—up three-fold from a decade ago. A study published in the journal Accident Analysis & Prevention, found that relative to drivers who tested positive for neither alcohol nor drugs, the odds of a fatal crash climbed 13-fold for drivers testing for alcohol alone, but 24 times for those positive for both alcohol and marijuana. Whether or not the driver was high was unknown—marijuana lingers in the system for days—but it does point to the fact that the driver uses marijuana. In the future Dr. Li says, a breathalyzer-type device might provide more accurate information on intoxication.

But the notion that alcohol is more dangerous than marijuana should be subjected to rigorous scrutiny and requires important qualification, argues Dr. Li. “Although alcohol is more addictive and more impairing to cognitive functions than marijuana, moderate alcohol consumption may confer significant health benefits,” he says. Whether marijuana has a similar upside remains to be seen. And there is always potential for its misuse. Says Dr. Li, “There is no such thing as safe substance abuse, regardless of the drugs involved.”
Mystery involving HIV meds

It’s a medical mystery: Some HIV-negative women are taking antiretroviral drugs (which they acquire through unknown channels). The discovery was made by Dr. Jessica Justman, associate professor of medicine in epidemiology, and colleagues who detected antiretroviral drugs in blood samples from 15 percent of research participants in Baltimore, MD and 7 percent of research participants in Bronx, NY. All women participating in the study reported unprotected sex with a man and at least one other risk factor for HIV infection in the six months prior to study enrollment. The data, however, were collected before antiretroviral drugs had been approved for HIV prevention (e.g. PrEP and PEP).

The women might have been self-medicating for hepatitis B or using the antiretroviral drugs for recreational purposes. More research is needed to determine the women’s motivations. The use of antiretroviral drugs must be closely monitored, as drug resistance can emerge if individuals become HIV infected while using these medications.

Read the full study at 1.usa.gov/1NqC5EV.


Caring for the whole (HIV+) person

HIV+ adults in South Africa are not receiving the care they need for their non-AIDS-related health conditions, such as cardiovascular disease. Dr. Miriam Rabkin, associate professor of medicine and epidemiology, and Dr. Wafaa M. El-Sadr, professor of epidemiology, found that 37.8 percent of patients at an urban HIV clinic in South Africa’s Free State Province had high blood pressure and 10.4 percent had elevated cholesterol levels. About 1/3 of those with high blood pressure and 2/3 of those with high cholesterol had not been previously diagnosed with these cardiovascular issues.

The authors label the failure to care for HIV+ patients’ heart health a “missed opportunity.”

Read the full study at bit.ly/1FZify5.


Painkillers outpacing street drugs in unintentional overdoses

Accidental deaths from drug overdose tripled between 1990 and 2006 in the U.S. and some of the deadliest substances are found in many Americans’ medicine cabinets. A study by Dr. Silvia Martins, Dr. Sandro Galea, and colleagues found that street drugs are causing fewer unintentional overdoses than they once did, while prescription drugs—especially opioid painkillers—are becoming more of a problem with increasing popularity and availability.

The systematic review article also revealed that drug overdose is not just an urban health issue: rural areas have recently seen a significant increase in overdose deaths. Substances most commonly associated with unintentional drug overdoses worldwide include prescription opioids, cocaine, and heroin.

Read the full study at bit.ly/1NBQyhh.

**“Weighty” matters in pregnancy**

About 47 percent of women gain too much weight during pregnancy, and moms at a healthy weight before getting pregnant may have the hardest time dropping those extra pounds—even seven years after giving birth, according to research by Dr. Elizabeth M. Widen, postdoctoral fellow, and Dr. Andrew Rundle, associate professor of epidemiology.

Read the full study at epi.is/1S6S0Ho.


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**Diet may affect breast cancer risk**

Want to lower your risk for breast cancer? Eating foods high in certain polyunsaturated fats, such as walnuts, salmon, and flaxseed oil, could help. Drs. Habibul Ahsan, Mary Beth Terry, and Alfred Neugut, all professors of epidemiology, co-authored a study that found that women who consumed high levels of Omega-3 and low levels of Omega-6 fatty acids were less likely to develop breast cancer.

The researchers analyzed the diets of approximately 30,000 women who enrolled in the Long Island Breast Cancer Study Project. Results from the study showed a 20 percent decrease in the odds of breast cancer among consumers of high levels of Omega-3 and low levels of Omega-6 compared to those who consumed low levels of Omega-3 and high levels of Omega-6 fatty acids. They concluded that women in the U.S. may be able to reduce their chances of developing breast cancer by altering their diets.

Read the full study at 1.usa.gov/1LkBJKa.


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**Location, location, location**

When it comes to health disparities, think “location, location, location.” The social, economic, and environmental conditions in your community can have a “large influence” on physical health and emotional well-being, according to a blog post from our social epidemiology cluster.

Many different elements in the environment are important and should be considered when developing programs for improving public health.

“All too often, as researchers, we can be singularly focused on our particularly area of interest. For some, neighborhood environment means parks and recreation areas, for others it means socioeconomic context, and yet others think of environmental pollutants. This discipline-specific focus can prevent the realization of all the available opportunities to improve public health.”

Read the full blog post at epi.is/1h2S6SJ.
Bias, bias everywhere

A biased interpretation, aka “spin,” was evident in 84 percent of journal articles’ abstracts and 88 percent of the stories found on Google Health News in recent studies by adjunct epidemiology professor Dr. Philippe Ravaud.

More research is needed to determine if the spin found in health-related news stories originates from the scientific articles themselves or if journalists misinterpret the information they read in press releases and academic journal articles.

Read the full study on bias in journal abstracts at 1.usa.gov/1QMgoNq.

Read the full study on bias in Google News stories at 1.usa.gov/1PCgrgo.


Refugees from the Middle East

How should we handle forced migration, such as the recent influx of refugees from Syria? In an editorial published in the American Journal of Public Health, epidemiology professor Dr. Alfredo Morabia outlines four critical steps.

He advocates that the United States 1.) respect migrants’ human rights and dignity, 2.) recognize that migrants themselves are not a threat to public health, 3.) acknowledge that illness prevention is better than treatment, and 4.) implement the policy recommendations passed in 1992 by the American Public Health Association.

Read the full editorial at bit.ly/1jQwqLs.


Stay in school to live longer?

Dutch men with higher levels of education outlive their less-educated peers—even after controlling for a host of other variables—finds a study by epidemiology professor Dr. L.H. Lumney.

According to the article, it’s “plausible . . . that increases in education could lead to increases in life expectancy.”

Read the full study at 1.usa.gov/1k7DCT8.

Tuberculosis through the looking glass

A prismatic view of novel research to combat an ages-old disease

BY EMILY AUGUSTINI, MPH ’16
PRATIVA BARAL, MPH ’16
EDITED BY DANA MARCH
White plague. Phthisis. Consumption. Depicted in early Egyptian art and referenced in the Bible, tuberculosis (TB) has been called many different names since it began infecting humans long before recorded history. For centuries, its cause was elusive. Ever since the 1882 discovery of Mycobacterium tuberculosis, the infecting agent, we have been searching for new ways to track the bacterium and minimize its effects. In the mid-20th century, antibiotics seemed to promise an end to the disease, but the microbe has become stubbornly drug resistant in the 21st century. One third of the world’s population is infected with TB. In 2014 alone, 9.6 million people fell ill with the disease. Across the globe, TB kills over 1.5 million people each year. Cases of multi-drug resistant (MDR) and extreme drug resistant (XDR) TB are rising at an alarming rate. Moreover, TB and HIV have developed into a co-epidemic, with 1.2 million people infected by both the TB bacterium and HIV virus worldwide. Of those living with both diseases, one in three people are never notified that they have TB and do not receive treatment for it.

Now, the scientific community is more focused than ever on finding innovative methods to combat this chronic infectious disease. Together, a passionate, dedicated core of faculty in Columbia’s Department of Epidemiology are imagining new approaches to TB that span the spectrum of the challenges it presents. Their innovative research ranges from tracking the molecular messages that TB sends to better detect the disease, and telling the tale of transmission dynamics through the tubercule itself, to a more humane way of delivering what historically has been one of the more punitive population-level treatment protocols.

**TRACKING TRANSMISSION**

The majority of people who are infected with TB do not have the disease—the bacterium remains dormant in 90–95 percent of people, kept in check by their immune systems. Latent TB can turn into active disease years after a person is infected, which obscures transmission. From a clinical perspective, the “when,” “where” and “how” don’t necessarily matter: regardless of the means by which an individual becomes infected, treatment is much the same. Those seeking to control the spread of this infectious disease, however, must concern themselves with such details.

“People lie but bugs don’t”

From an epidemiological perspective, an epidemic demands a systemic—and systematic—approach: households, individuals and their respective contacts all need to be investigated, which requires tracing and verification. But memories are unreliable at times—especially given that infection may have occurred years ago and doesn’t even require direct physical contact (the bacterium that causes TB is airborne).
Understanding the pathogen through molecular genetics and mechanisms of characterization is essential to painting a bigger picture of TB transmission and consequentially, global epidemics.

What’s more, individuals may not want to share information because of stigma or social constraints. All of these factors hinder TB control because they make it difficult to paint a clear picture of how the bacterium is being spread using traditional epidemiological methods.

A pathogen-centric approach can lead to a much deeper understanding of TB transmission because while, with respect to their exposure, people might forget, or may even be compelled to lie, bugs simply don’t.

From microorganism to macro movements

Historically, the pathogen responsible for TB, the Mycobacterium tuberculosis bacterium, has been observed superficially: we started out by recognizing its shape, texture, and growth characteristics. In other words, basic microbiology relied on the phenotype of the organism for classification purposes. Modern methods are more granular, relying on genotyping, a laboratory-based method that analyzes and recognizes the genetic configuration of the organism, to detect outbreaks earlier and recognize unsuspected relationships.

Dr. Barun Mathema is an assistant professor of epidemiology at Columbia University’s Mailman School of Public Health. He uses a combination of molecular genotyping and epidemiological methods, such as surveillance, spatial analysis, and network analysis in order to understand the spread of TB epidemics. He says TB is fascinating because it has endured years of insults by the host’s immune system and constant attacks by a slew of antibiotics.

“The bug innately wants to survive—it’s a very well-adapted human pathogen, a product of hundreds of thousands of years of evolution, and fine-tuning. And in that process, it adapts, spreads and mutates,” says Dr. Mathema.

Dr. Mathema uses data to understand this evolution and to observe the natural changes that occur over time. “Over the years, the organism has gone through a Darwinian process of selection and adaptation such that the pathogen has learned to co-adapt and survive with us as a host,” he says.

Tracking the evolution of the bug is one way to control the epidemic because the specific changes and mutations that occurred during evolution can indicate possible targets that can be used to develop more effective drugs. Furthermore, analysis of the strains can demonstrate similarities and differences, and allow for early detection of mutations that may result in multi-drug-resistance.

All of this is vital to public health’s ongoing efforts to control the epidemic: the pathogen-centric lens leads to a more nuanced understanding of transmission. The pathogen doesn’t just tell us who gave TB to whom. It provides insight into specific mutations that affect the ease of transmissibility from one person to the next and drug resistance. Such examination is the key to identifying chinks on the microbe’s armor, which helps clinicians select appropriate treatment protocols and researchers to avoid wasting time on pharmaceutical dead-ends.

It should be noted that simply recognizing the pathogen is alone inadequate because transmission is complex and at times, perplexing. Distinctive strains may be observed within the same household, which suggests a non-linear method of transmission. A father, for example, may contract TB from someone at work, while his children pick up a different variant of the bacterium at school.

Tracking this non-linear transmission requires spatial and social network analysis. Understanding the pathogen through molecular genetics and mechanisms of characterization is essential to painting a bigger picture of TB transmission and consequentially, global epidemics.

Social medium

Indeed, poverty and TB are closely associated, where the poorest and most vulnerable communities are most at risk of developing the disease. In an ideal world, eradicating poverty and the discrepancies in the wider societal structures would eliminate TB. But until then, Dr. Mathema says, hotspot mapping, a visualization of high-density occurrences, is a valuable public health tool that can advance our understanding of the disproportionate prevalence and the population dynamics of TB.

South African gold miners, for instance, have an extremely high TB prevalence. We now know that this is a consequence of their exposure to silica dust in the mines. But it was through spatial analysis and genotype analysis of the strains prevalent in that population that led public health scientists to conclude that TB emerged from the gold mines. Recognizing the strain-specific catalysts of TB transmission, mapping the
highly prevalent locations and finally, prioritizing interventions tailored towards these highly dense areas is key for TB control.

Merging the fields of public health and biomedicine can lead to a better understanding of the complexities of TB transmission for the prevention and control of the disease. This way, a more targeted implementation of public health strategies can occur, kick-started by a thorough understanding of the pathogen and its transmission.

According to Dr. Mathema, “Transmission is a real Achilles heel of TB—we really need to knock down the incidence. And the best way for us to do that is to understand the pathogen and then concentrate on hotspots.”

THE BIOCHEMICAL ILLUMINATI

For a disease as ancient as TB, we have shockingly few tools with which to fight it. Most people who have attended college have had the tuberculin skin test, which measures a patient’s antibody levels to determine if they’ve been exposed to TB bacteria. While relatively cheap and easy, the skin test has a high false positive rate. The Interferon-Gamma Release Assay, or IGRA, is more reliable but far too expensive for resource-poor settings. These are the two most common diagnostic tests for TB.

The tests available for assessing treatment outcomes are even more inadequate. The “gold standard” for drug trials is merely determining whether subjects are still infected with TB after two years.

The emphasis now is on a worldwide hunt for biomarkers of TB that can be used to precisely determine disease status, and therefore improve the diagnosis and prognosis of TB patients. Dr. Max O’Donnell, an assistant professor in the Division of Pulmonary, Allergy, and Critical Care Medicine and the Department of Epidemiology at Columbia, described his search for new methods of assessing and optimizing treatment outcomes through the use of biomarkers.

Disease signals

The term “biomarker” is reminiscent of other buzzwords like “synergy” and “empowerment”—trendy, catchall terms with many meanings. This is because “biomarkers” aren’t just one thing; they comprise a vast array of molecular signals. When a person is infected with TB, these molecular messages sound off.

According to Dr. O’Donnell, “A biomarker is a surrogate that’s close to the disease process and reflects disease activity.” These surrogates are biochemical signals that are given off by either the bacterium itself or the human host, and can be quantified in order to determine disease status and progression.

Host-derived biomarkers are often antibodies that the immune system creates to fight the infection. These antibodies are an attractive target because of our knowledge of the human immune system, but may provide an imperfect measure of disease activity. Instead of monitoring the bacteria,
the results are filtered through the immune response of the host.

Dr. O’Donnell’s research focuses on biomarkers derived from the TB bacterium itself. His lab has created a virus that feeds on TB. It releases a fluorescent green protein when it finds a snack.

Researchers collect a sputum sample from the patient and add the modified virus. If the sample glows green under a fluorescent microscope, TB bacteria are present. If the sample glows in a well when antibiotics are added, the TB is drug resistant.

The virus created by Dr. O’Donnell’s team only infects TB bacteria, making it more accurate than the traditional tests, and it can detect extremely small concentrations of bacteria. When the procedure was tested in a clinic in South Africa, it was found to be more sensitive but less specific for detection of TB—meaning it was better at detecting true cases of TB than it was weeding out the non-cases—than an expensive, sophisticated PCR machine. It did not make a difference if the patient also had HIV, which is critical in the developing world, where co-infection is extremely common.

Predicting resistance

The uses for this modified virus are virtually limitless. One of Dr. O’Donnell’s priorities is examining whether treatments are likely to generate drug-resistant strains of TB.

“Almost all of our data on rates of mutation come from a petri dish. How frequently the bug mutates is based on in vitro data, and it may be that some of the second-line drugs we’re giving have mutagenic potential. Because they interfere with…enzymes that are involved in DNA replication, it’s totally plausible that the rates of mutation are quite different. We’re trying to use deep sequencing and this phage, this modified virus, to detect subpopulations that are drug resistant as they emerge,” says Dr. O’Donnell.

PRIORITIZING PATIENTS

For individuals, a diagnosis of TB is unlike any other. Quarantine is common. Treatment is laced with mistrust, precisely because of concerns regarding transmission and treatment resistance. Often, health care workers must witness patients taking their medications, because treatment non-adherence is expected. And patients not completing their six-month regimens are labeled defaulters. Never mind the toxic side effects.

The treatment for TB is arduous, lengthy, and unaided by its impersonal, rather punitive nature.

A perfect storm for paternalism

TB is something of a perfect storm for paternalistic public health interventions. The disease is airborne, so it is spread simply by breathing; there’s no deliberate action required on the part of the exposed. There aren’t any corporate stakeholders to push back against TB control, like tobacco companies do with smoking. Those infected are usually of lower socioeconomic status and, in the United States, are often foreign-born, limiting their ability to access services and complete treatment.

The standards for TB treatments were developed originally with sound reasoning and no intent to demean patients. Directly observed therapy, or DOT, for TB treatment is not an inherently bad idea, just an outdated
one. As medicine and public health become more technologically advanced and the biology of disease is better understood, the importance of humanity—human factors, humane engagement—is starting to emerge.

From punitive to patient-centered

Dr. Yael Hirsch-Moverman, an assistant professor of epidemiology at Columbia, focuses on a holistic, empowering approach to TB treatment known as patient-centered care, which is gaining traction worldwide.

According to Dr. Hirsch-Moverman, patient-centered care is “Basically the way it sounds, which is putting the patient at the center of the treatment.” In patient-centered care, providers consider the barriers that prevent patients from seeking and completing treatment, including social, educational, psychological, and structural factors.

This approach isn’t new, though. It has long roots in patient advocacy—activists for diseases like HIV/AIDS have been championing patients’ rights for years. However, patient-centered care only recently made its way into TB treatment. The WHO just adopted patient-centered care as one of the three pillars of the End TB strategy for 2015-2030.

This shifting mentality is due in part to the relative failure of current TB control methods. Though TB deaths have decreased markedly since 1990, there were still 1.5 million TB deaths worldwide in 2014. Dr. Hirsch-Moverman says, “That’s unacceptable. It’s a preventable, curable disease. We’re not doing well, and we need to fix it.”

There are myriad reasons for these gaps in TB management, including absence of funding, lack of visibility, and the latent nature of the disease. Dr. Hirsch-Moverman and many others hope that patient-centered care for TB will not only empower patients but also improve their ultimate outcomes, all while being cost effective.

Packaged for patients

In a trial that Dr. Hirsch-Moverman is working on in Lesotho with the Columbia University organization ICAP, a patient-centered approach means combining multiple interventions that have been shown to be effective into a comprehensive package. This package includes reimbursement for transportation to the clinic, educational programs to improve patients’ understanding of their treatment, job aides for nurses, and an SMS reminder system for appointments.

Each of the interventions is extremely inexpensive, and together they stand to improve treatment completion and survival rates. The team is doing a similar study in Ethiopia, but with the goal of enabling HIV positive patients to complete preventive treatment regimens for TB. The packages are tailored to the region in which they’re used. For example, in Ethiopia literacy rates are lower than in Lesotho, so the SMS text reminders are replaced by automated voice reminders.

Scaling up these culturally and locally specific interventions presents a grand challenge. However, Dr. Hirsch-Moverman is confident that it can be done in a cost effective manner. “We designed these interventions to be sustainable. Not too expensive, nothing super fancy, because at the end of the day we’re going to have to depend on the local ministries of health to deliver these things,” she says.

The high level of acceptance and buy-in achieved in the communities will usher
Scaling up these culturally and locally specific interventions presents a grand challenge.

the process along. Although the research team won’t know the final results for a few months, the trials have already had a significant effect on the patients that participated.

“What’s been really interesting is to see them feeling like somebody cares about them,” Dr. Hirsch-Moverman says. “Through the messages, they feel cared for. They feel that someone in the clinic is thinking about them. It’s automated, but to them it’s not necessarily.” Emphasizing the humanity of this approach, Dr. Hirsch-Moverman adds, “It’s beautiful.”

**Precision medicine**

Indeed, the human touch is a focal point for patient-centered care. However, with his work on biomarkers, Dr. O’Donnell is interested in yet another dimension of individualized treatment for TB. He’s striving to foster a shift towards the use of precision medicine for the disease. The current drug regimens for TB are highly standardized, and often don’t detect when patients have drug-resistant strains until several treatment programs have failed. Dr. O’Donnell’s work with the TB-detecting virus his lab developed, as well as biomarker research in general, has the potential to change those outcomes.

“It’s a way of detecting way early if [the patient] has two populations of bacteria, one’s antibiotic resistant and one’s susceptible. As you get antibiotics that kill down the drug-susceptible, the drug resistant will emerge. As it’s emerging, we want to detect it at say, one part in 100,000 rather than waiting until it’s 50-50.”

**COMING FULL CIRCLE**

If we have half a chance of fighting this disease that causes so much morbidity and mortality globally, it’s going to take the complimentary, coordinated efforts of researchers represented by this Columbia thought collective. This group’s unique set of perspectives, which encompasses the micro and the macro, the local and the global, offers fresh hope for one day adequately addressing this ages-old killer.
The vaccine conundrum
Are immunization programs victims of their own successes?

When vaccines work, nothing happens. To some extent vaccines have become victims of their own successes, explained Paul Offit, a pediatrician and infectious disease expert, at a recent symposium on vaccines hosted by the Mailman School Department of Epidemiology.

Unlike 60 years ago when diseases like measles and polio were commonplace and the discovery of vaccines celebrated, Dr. Offit said, vaccines today are essentially a “matter of faith.”

This situation has led some parents to skip inoculations for their children, leading to outbreaks. Earlier this year, a case of measles at Disneyland spread across six states and infected 147 people. In the aftermath, Dr. Offit said, even some doctors who had been vocal about purported risks of vaccines were now giving more measles vaccines than ever before “because parents were scared of measles.”

Vaccines date back to the 1790s when English physician Edward Jenner successfully immunized people against smallpox by injecting them with pus from a cow infected with a similar disease. As Dr. Stephen Morse, professor of epidemiology, noted, the word “vaccine” derives from the Latin vaccinus, meaning “from cows.”

Smallpox was responsible for an estimated 300-500 million deaths in the 20th Century alone. But, after a vigorous inoculation campaign, the disease was finally eliminated in 1980. As Dr. Morse noted, smallpox remains the only infectious disease to be completely eliminated through human intervention. Inoculation programs have also brought rates of rubella, polio, and diphtheria infection down to negligible levels in most countries.

The fight against global infectious disease, however, is not over. Bird flu, Middle East Respiratory Syndrome Coronavirus (MERS) and, most notably, Ebola have emerged or flared up in the last decade or so. Combating these diseases relies on scientific ingenuity to develop vaccines and a society that embraces vaccination. “With microbes, it’s our wits versus their genes,” Dr. Morse said.

Fear of vaccines is nearly as old as vaccines themselves. A British political cartoon published in 1802, for example, shows recipients of smallpox inoculation morphing into cows. One hundred year later, the Anti-Vaccination Society of America published flyers and actively recruited followers. Some of the earliest anti-vaxxers were ministers who warned that God sends illness as a punishment for sin and any interference by humans borders on blasphemy: diseases, they maintained, should be allowed to run their course.

The latest iteration of anti-vaccine rhetoric isn’t rooted in fire-and-brimstone, but may be just as difficult to uproot. The 1998 vaccine-autism connection, based on one poorly designed (now retracted) study in The Lancet, is persistent.

“There aren’t two sides to this story,” Dr. Offit assured the audience. “Vaccines simply don’t cause autism.”

Media coverage of outspoken celebrities’ opinions on the matter, most notably, a focus on Jenny McCarthy’s misdirected outrage over her son’s health problems, has pushed the anti-vaccine movement into the popular consciousness in recent years, Dr. Offit said. Unfortunately, in the interest of balanced journalism, or perhaps higher ratings, the news media has highlighted anecdotes and given science rather short shrift, he said.
“Vaccine inventors were once celebrated with ticker-tape parades. Now they get hate mail.”

“Media’s job is to entertain,” Dr. Offit said. “As long as people enjoy ‘vaccines cause autism stories,’ we’ll have them.”

Whether and to what extent vaccines are compulsory is worthy of serious consideration. In the view of Dr. Ronald Bayer, “a very small number of people should be allowed to forgo vaccines,” including those with weakened immune systems.

Vaccinating children not only protects them, but the kids they interact with at school every day. “The unvaccinated are free-riders, which [also] violates justice,” Dr. Bayer said.

Dr. Offit, who co-invented the lifesaving RotaTeq vaccine that protects against rotavirus, maintains that vaccines are vastly underappreciated considering how many lives they’ve saved.

“Vaccine inventors were once celebrated with ticker-tape parades,” he lamented. “Now they get hate mail.”
It’s estimated that nearly 76,000 unaccompanied children and adolescents from Central America and Mexico have illegally entered the U.S. in the last two years, and about 15 percent have arrived in the New York tri-state area.

During that same time period, Mexican and American immigration officials apprehended perhaps twice that number of unaccompanied migrant children before they crossed over the Southwest U.S. border.

What is causing children ages 10 and even younger to leave their homes and families in Guatemala, Honduras, and El Salvador and make a treacherous journey of 2,000 miles or more to the United States?

To answer this question and formulate plans to effectively address these children’s needs, migration experts convened at Barnard College on October 15 at a conference titled “The Surge: Politics, violence, and children in Central America and Mexico.” The conference, which attracted over 200 students, faculty, legal and social service professionals, and community service providers, was organized by Dr. Manuela Orjuela, assistant professor of epidemiology at Columbia’s Mailman School of Public Health and Jairo Guzman, President at
the Mexican Coalition for the Empowerment of Youth and Families, Inc.—a community based organization serving Latino immigrant families.

Barnard’s Forum on Migration hosted the event and the department of epidemiology, the Center for Mexican Studies, and the Institute of Latin American Studies cosponsored it in an unprecedented cross-campus collaboration motivated by the importance of this issue and the need to understand its causes using a multidisciplinary approach.

Expert panelists included faculty from the fields of epidemiology, government, history, and population and family health, along with members of the clergy, the media, and community based organizations.

Panelists agreed that while the reasons for migration vary greatly, economic hardship is a driving factor in most young people’s decisions to leave their homes, especially in Guatemala. The desire to escape gang violence is one of the primary motivations for fleeing Honduras and El Salvador.

Along the perilous journey across Mexico, children face the risk of robbery or attack, although some will also encounter help in the form of citizen volunteer and relief organizations that provide them with much-needed food, shelter, and medical care.

Some of the “fortunate” unaccompanied minors who complete the journey will be discovered by the U.S. Office of Refugee Resettlement (ORR) and placed with sponsors. The ORR was established in 1980 to help refugees seeking safe haven within the United States, including victims of human trafficking, those seeking asylum from persecution, survivors of torture and war, and unaccompanied alien children.

However, after children are handed off to sponsor families, the government has no process in place to monitor their safety or well-being, and sponsors are not given any training to prepare them for integrating these kids into their (often impoverished) families.

The conference continued the following morning at Barnard’s Millbank Hall with “The great migration of Central American Youth and Families to New York City: Why here, why now, and how can our community support them?” a working group meeting in which the panelists from the previous evening joined with some 40 invited stakeholders representing leadership of agencies serving migrant children, including the social service agencies working with those in detention, child protection, city agencies, legal and health care providers, and the consulates of El Salvador, Honduras, Guatemala, and Mexico.

A pilot study to examine what happens to the minors placed in sponsor families is in development at Columbia. Led by Dr. Orjuela, together with Shakira Suglia, assistant professor of epidemiology, and Helena Duch, assistant professor of population and family health, this longitudinal study will be supported by seed funding from the Institute of Latin American Studies.

“What is causing children ages 10 and even younger to leave their homes and families in Guatemala, Honduras, and El Salvador and make a treacherous journey of 2,000 miles or more to the United States?”
An experimental gel containing Tenofovir, the antiretroviral shown to reduce HIV transmission, has been found by Dr. Salim Abdool Karim, professor of epidemiology, and Dr. Quarraisha Abdool Karim, associate professor of epidemiology, to cut the acquisition of genital herpes by 51 percent. Read more on Reuters. » reut.rs/1M6KGdi

In a story about data privacy and security, The Economist notes that Dr. Daniel Barth-Jones, assistant professor of epidemiology, has suggested the need for laws that criminalize attempts to re-identify individuals in anonymous data-sets. Read more on The Economist. » econ.st/1TvK2vK

When a study found that colon cancer patients who drank large amounts of coffee experienced lower cancer recurrence rates, Dr. Alfred Neugut, Myron M Studner Professor of Cancer Research and professor of epidemiology, warned the public about jumping to conclusions: Coffee drinkers might simply engage other behaviors that ward off cancer. Read more on The New York Times. » nyti.ms/1KsdicF

in the news

Vaginal gel for HIV prevention also works on herpes

Anonymous data not so anonymous

Correlation ≠ causation and coffee may not prevent colon cancer
Trees seem to have the ability to trap pollution and absorb it, Dr. Gina Lovasi, assistant professor of epidemiology, told The Wall Street Journal when commenting on a network of parks, pedestrian paths, and streetscapes planned for South Bronx—a project on which she is a consultant. Read more on The Wall Street Journal. › on.wsj.com/1Ku1ml5

“I’m not sure we’ve learned enough from the last incident to better prepare for the next one,” said Dr. Wafaa El-Sadr, when asked about the country’s ability to handle infectious disease outbreaks one year after doctors diagnosed the first Ebola patient in the USA. Read more on USA Today. › usat.ly/1iwDcoV

It’s not science fiction. Dr. W. Ian Lipkin and Dr. Thomas Briese, associate professor of epidemiology, have developed a diagnostic tool that can identify all known human viruses in your blood. Read more about VirCapSeq-VERT on The Atlantic. › theatlnc.tc/1iKHRnZ

Dr. W. Ian Lipkin discovered a new virus that can be transmitted through blood transfusions. The existence of human hepegivirus-1 (HHpgV-1) shouldn’t cause alarm, however. “I’m not really worried about this particular virus,” he told NBC News “This is not SARS. This is not MERS. This is not HIV.” Read more on NBC News. › huff.to/1Gz8Rw6

A Fox News story titled “10 products you think are healthy, but aren’t,” cites a double-blind randomized clinical study by Dr. Elaine Larson, Anna C. Maxwell Professor of Nursing Research and professor of epidemiology, which found that antibacterial soaps are no better at preventing illness than regular soaps. Given the FDA’s concern that antibacterial soaps may contribute to the rise of drug resistant bacteria, you should probably leave them on the shelf. Read more on Fox News. › fxn.ws/1WPOR2i
Genetic test for Alzheimer’s (currently) a bad idea

“You only screen somebody [for a disease] if you have a means of intervening” Dr. Richard Mayeux, Gertrude H. Sergievsky Professor of Neurology, Psychiatry and Epidemiology, told The Washington Post. Because the only way to stave off cognitive decline is to engage in physical activity, focus on that instead. Read more on The Washington Post. › wapo.st/1EAiAAW

Mediterranean diet to prevent brain shrinkage

Eschewing meat and dairy in favor of vegetables, legumes, cereals, fish, and olive oil, may significantly slow age-related brain atrophy, according to research by Dr. Jose Luchsinger, associate professor of medicine and epidemiology; Dr. Nicole Schupf, professor of epidemiology; and Dr. Richard Mayeux. The Mediterranean diet appears to prevent brain shrinkage equivalent to about five years of aging. Read more on the Los Angeles Times › lat.ms/1Gjygig and The Guardian. › bit.ly/1RWL2V7

No link found between celiac disease and dementia

Dr. Benjamin Lebwohl, assistant professor of medicine and epidemiology, rejects the idea that gluten has toxic effects on the brain, and his latest population-based study found no evidence that celiac disease increases the risk of Alzheimer’s. The “brain fog,” that some patient experience is not a sign of dementia, he told U.S. News & World Report. › bit.ly/1MfuYiC
America loves guns

“We are a country so different from the rest of the world,” Dr. Bindu Kalesan, adjunct assistant professor of epidemiology, told The Huffington Post when asked to comment about gun attitudes in the U.S. compared to other countries. “We have a lot of entrenched social gun culture.” Her research shows the typical American gun owner is a high-income, white male, over the age of 55. Read more on The Huffington Post. 

Mass incarceration in the United States

It’s time to apply prevention science to America’s mass incarceration epidemic, according to Dr. Linda P. Fried, Mailman Dean and Delamar Professor of Public Health. “The United States has the highest rate of incarceration in the world,” she wrote in a blog entry for The Huffington Post. “Serious efforts to change this require a focus on more than just the criminal justice system.” Read the article on The Huffington Post. 

Adult marijuana use doubles; disorders rise

Marijuana use among American adults more than doubled from 4.1 percent in 2001-2002 to 9.5 percent in 2012-2013, which brought a proportional rise in marijuana disorders, found Dr. Deborah Hasin. “Clearly not everyone is at risk for those problems,” she told Newsweek “but this risk is there.” Read more on Newsweek, The Wall Street Journal, and The Washington Post.


22. PubMed PMID: 26203088; PubMed Central PMCID: PMC4569092.


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Trends in relative survival. THE INSTITUTE OF MED.

Patient Income Level E (APOE) and self-reported sleep

PMC4521063.

Dement Geriatr Cogn Dis Extra. 2015 Jul


