Birth Weight

The road to childhood obesity begins even before baby’s first meal, with mother’s health during pregnancy. In April, the Mailman School convened “A Smart Start,” a symposium on childhood obesity featuring the latest science on the myriad factors that can steer a child toward a healthy weight.

Andrew Rundle, DrPH ’00, an associate professor of Epidemiology and co-director of the School’s Obesity Prevention Initiative, discussed his findings that children born to women whose weight gain during pregnancy exceeds National Academy of Medicine (formerly the Institute of Medicine) recommendations—more than half of pregnant women in the United States—were three times more likely to be obese than children whose mothers hewed to the guidelines.

Other speakers—including academic researchers and New York City health policy professionals—touched on the power of breast-feeding to reduce a child’s lifetime risk of obesity, tactics to promote healthy eating among preschool children, and the strong links between outreach to parents and a child’s lifelong nutritional status.

Childhood obesity is a complex problem and requires many different solutions—some yet unknown, says Y. Claire Wang, MD, ScD, co-director of the Obesity Prevention Initiative and an associate professor of Health Policy and Management.

“We’re not just building an evidence base, we’re building a movement.”
Sea Change

In April, the White House convened an unprecedented meeting of scientists, government officials, and representatives from major universities and technology companies to shine a light on the incontrovertible link between climate and health.

“Climate change is having an impact on our public health,” said President Barack Obama. His remarks referenced, among other concerns, the migration of insect-borne diseases to new regions and the heightened asthma risk from a prolonged allergy season—both topics studied by scientists in the Mailman School’s Climate and Health Program, the first such academic program in the U.S. when it was founded in 2008.

Environmental Health Sciences professors Patrick Kinney, ScD, and Jeffrey Shaman, PhD ’03, were invited guests at the meeting. The majority of the science that the administration relies on in the field has been generated by schools of public health, says Kinney, led by pioneering work at the Mailman School that began more than a decade ago. “If schools of public health hadn’t taken a leadership role,” he says, “we wouldn’t be in the position we are in now to tackle the problem nationally, with improved health directing our energies.”

Passing the (Medicaid) Buck

This summer, Medicaid marked its 50th anniversary. A cornerstone of President Lyndon B. Johnson’s War on Poverty, the state-administered program has changed significantly since implementation of the Affordable Care Act. Among other things, the ACA offered means to expand Medicaid access for low-income people. Yet 21 states opted to contain the program, arguing that expansion would be too expensive. According to a National Bureau of Economic Research working paper authored by economists at the Mailman School and Northwestern University, state governments have merely passed the buck to local businesses. “In the end, the money that state governments save by not expanding Medicaid is roughly equal to the money their hospitals spend on the people who are uninsured as a result,” says Tal Gross, PhD, one of the paper’s authors and an assistant professor of Health Policy and Management. “Money that states save by deciding to not implement the Medicaid expansion achieves savings for government at the expense of local hospitals.”

Spoils of War

Using records from the Dutch Hunger Winter of 1944–45, L.H. Lumey, MPH ’85, MD, PhD ’88, an associate professor of Epidemiology, and colleagues in the Netherlands have demonstrated that nutritional conditions during prenatal and early childhood development affect DNA. At age 59, research subjects whose mothers experienced famine during the first 10 weeks of pregnancy exhibited changes in DNA methylation known to suppress genes involved in growth, development, and metabolism. Says Lumey: “The civilian starvation caused by the conditions of World War II offer a unique opportunity to study the possible fetal origins of common diseases, and the relationship of adult health to critical periods in gestation.”
An Excellent Value

In 2008, the state of Oregon randomly provided Medicaid coverage to approximately 10,000 people out of 30,000 selected from all Medicaid-eligible residents. Using high-performance computers and the resources of GRAPH, a Mailman School initiative dedicated to optimizing population health policy, a team led by Peter Muennig, MD, MPH ’98, an associate professor of Health Policy and Management, showed that Medicaid provided substantial financial protections, increased rates of preventive testing, reduced depression, and improved self-perceptions of health. Participants did not have significantly lower blood pressure, serum cholesterol, or blood glucose levels. Even so, the researchers showed that Medicaid is an excellent value—a cost of just $62,000 for the quality-adjusted life years gained.

The American Journal of Public Health published the report.

The U.S. Task Force on Clinical Preventive Services asserts that screening for disease saves lives. But because there is no scientific evidence backing the claim, these benefits were not included in the current analysis. “By excluding these potential benefits while including all of their costs,” says Muennig, “we can be even more certain that our estimate of $62,000 is conservative.”

Stress Response

Women with post-traumatic stress disorder have a 60 percent higher risk of heart attack or stroke than women who have never experienced a trauma, according to research by Jennifer Sumner, PhD, an Epidemiology Merit Fellow, with co-authors at Columbia and Harvard.

“This study raises awareness that the effects of PTSD don’t just stop in the head and that they have more holistic consequences for health,” says Sumner, whose findings were published in Circulation, the journal of the American Heart Association. “Our hope is that providers and people with PTSD can be aware of this link and monitor cardiovascular health and try to engage in prevention efforts.”

While more research is needed, the authors say PTSD may disrupt physiological stress systems such as the hypothalamic-pituitary-adrenal axis and the autonomic nervous system, in addition to leading to various unhealthy behaviors that may increase risk of heart attack and stroke.

“PTSD is twice as common in women as in men. Approximately one in ten women will develop PTSD in their lifetime,” says Sumner. “Research has begun to suggest that rates of cardiovascular disease are higher in people with PTSD. However, almost all research has been done in men.”

A second study by the same team, published in Jama Psychiatry, provides the strongest evidence to date of a causal relationship between PTSD and Type 2 diabetes. “PTSD is generally considered a psychological problem, but it also has a profound impact on physical health, especially cardiovascular risk,” says Sumner. “Ultimately, integration of mental and physical health care is key.”
Prenatal Peril

Prenatal exposure to pollution reduces children’s IQ, negatively alters their brain structure, and boosts their risk of developing attention deficit hyperactivity disorder, according to a trio of studies from Frederica Perera, MPH ’76, DrPH ’82, PhD ’12, founding director of the Columbia Center for Children’s Environmental Health. Perera, a professor of Environmental Health Sciences, followed a cohort of 233 nonsmoking pregnant women and their children for a decade, tracking prenatal exposure to the class of air pollutants known as polycyclic aromatic hydrocarbons and the children’s subsequent health. “Our findings support policy interventions to reduce air pollution exposure in urban areas,” says Perera, “as well as programs to screen women early in pregnancy to identify those in need of psychological or material support.”

A Biological Basis for Chronic Fatigue

Researchers at the Center for Infection and Immunity (CII) have identified distinct immune changes in people with chronic fatigue syndrome, known medically as myalgic encephalomyelitis or, more recently, systemic exertion intolerance disease. The findings, published in *Science Advances*, could help improve diagnosis and identify treatment options for the disabling disorder, in which symptoms range from extreme fatigue and difficulty concentrating to headaches and muscle pain.

In a separate paper, published in *Molecular Psychiatry*, the team identified a unique pattern of immune molecules in the cerebrospinal fluid of people with chronic fatigue that provides insights into the basis for cognitive dysfunction—frequently described by patients as “brain fog.” “We now have evidence confirming what millions of people with this disease already know—their condition isn’t psychological,” says Mady Hornig, MD, director of translational research at CII and an associate professor of Epidemiology, who was lead author for both papers.

“Our results should accelerate the process of establishing the diagnosis after individuals first fall ill, as well as discovery of new treatment strategies focusing on these early blood markers.”

Perks of Seniority

Older workers can help solve many of New York City’s pervasive staffing challenges, according to interviews by a team of investigators including Ruth Finkelstein, ScD, director of the Age Smart program and an associate professor in the Mailman School’s Robert N. Butler Columbia Aging Center. “Our research into New York’s small-business community confirms that older employees bring more than an economic edge to the workplace,” says Finkelstein. “They have advanced technical skills and can serve as mentors to younger employees just gaining familiarity with workplace culture.” The interview results are integrated into peer-to-peer guides released by the Age Smart Employer Awards, an initiative of the Columbia Aging Center and the New York Academy of Medicine funded by the Sloan Foundation.
Health for Hard-to-Reach Communities

Assigning female community-health extension workers to a remote rural community in northern Nigeria led to major and sustained increases in the use of services, including prenatal care and facility-based deliveries, according to research reported by Alastair Ager, PhD, a professor of Population and Family Health, in Global Health: Science and Practice. The research, which spanned seven years, also showed that providing a rural residence allowance in addition to a standard salary helped recruit and retain female workers.

Other vital components of the program’s success were posting workers in pairs to avoid isolation, facilitating home visits, and allowing workers to deliver babies. Following deployment of the workers, health post visits increased by more than 500 percent. “Our pilot study led to major improvements in health,” says Ager. “The grassroots operations undertaken in this environment and described here were key to the progress we are seeing to date.”

Unconventional Cancer Care

Assistant Professor of Epidemiology Heather Greenlee, ND, MPH, PhD ’08, has developed a set of clinical practice guidelines for oncologists whose patients seek such integrative healthcare treatments as yoga, meditation, and nutrition counseling. “When patients are diagnosed with cancer, they want to know what they can do in addition to receiving the best possible standard of oncology care,” says Greenlee, who presented her findings in October 2014 at the meeting of the Society for Integrative Oncology. “They want to know what they can be doing to improve their prognosis and quality of life and manage symptoms and side effects of conventional cancer treatment.”

Greenlee and her coauthors developed the new guidelines based on a review of nearly 5,000 articles published between 1990 and 2013 and an analysis of 203 separate randomized control trials of the interventions. Based on the strength of available evidence, the researchers graded each therapy. Those earning a grade of A or B had a high certainty of patient benefit and are recommended for use. Those earning a grade of D or H—for harmful—are discouraged in the guidelines. Says Greenlee: “We need to figure out what works and doesn’t, what’s safe and what’s not.”