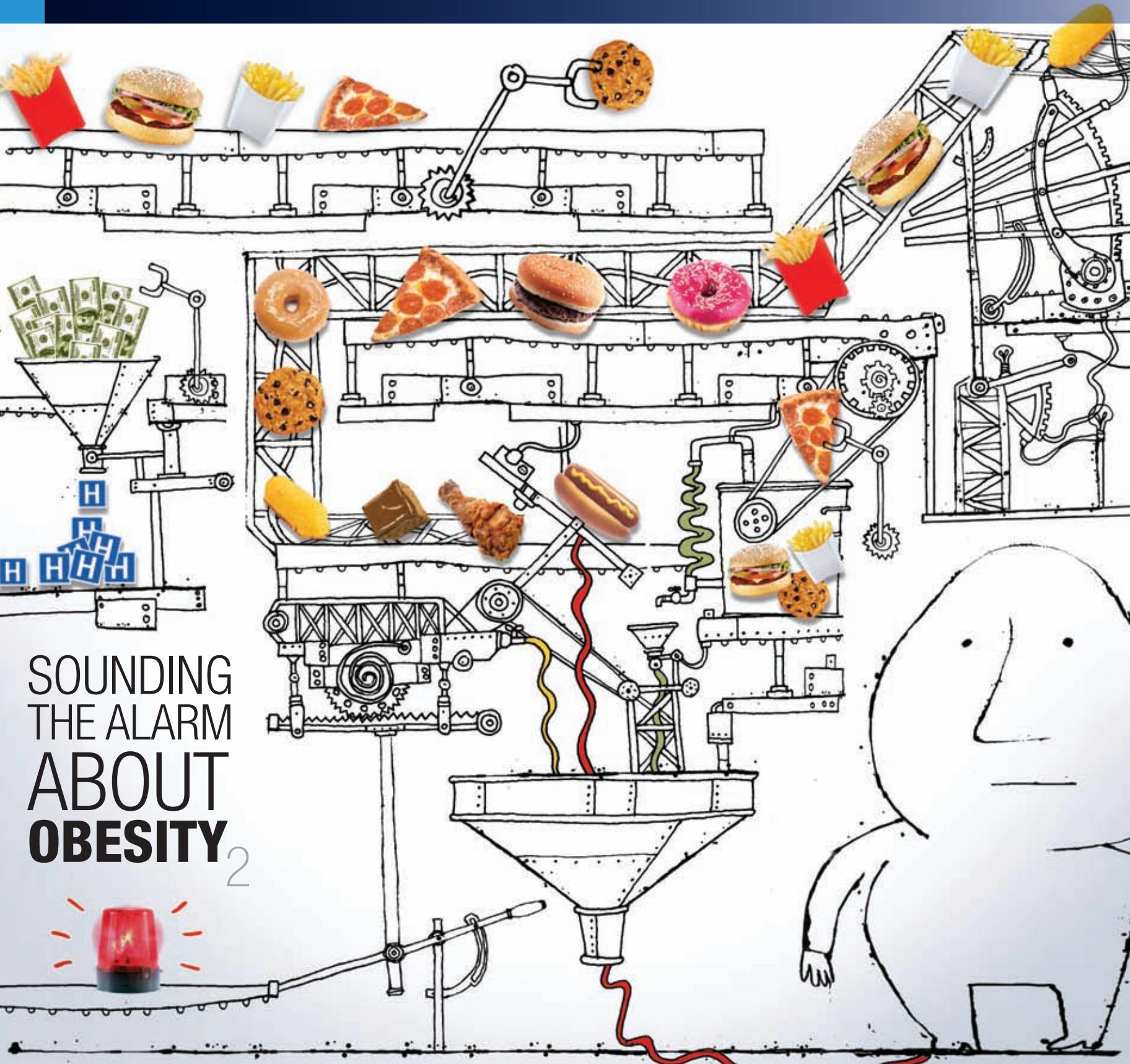


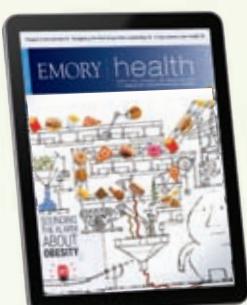
EMORY | health

PATIENT CARE, RESEARCH, AND EDUCATION FROM
THE WOODRUFF HEALTH SCIENCES CENTER



SOUNDING
THE ALARM
ABOUT
OBESITY²

FROM THE EXECUTIVE VP



Download our
iPad app.

Emory Health

Executive VP for Health Affairs
S. WRIGHT CAUGHMAN, MD

Editor
RHONDA MULLEN

Art Director
PETA WESTMAAS

Director of Photography
JACK KEARSE

Graphic Designer
LINDA DOBSON

Production Manager
CAROL PINTO

Web Specialist
WENDY DARLING

Advertising Manager
DAVID MCCLURKIN

Executive Director, Health Sciences Publications
KARON SCHINDLER

Associate VP, Health Sciences Communications
VINCENT DOLLARD



Emory Health is published quarterly for Emory neighbors and the community as well as faculty, staff, affiliates, and friends of the Woodruff Health Sciences Center of Emory University. Produced by the Health Sciences Communications Office, the magazine is made possible by support from the Robert W. Woodruff Health Sciences Center Fund.

Send all correspondence to **Emory Health**, 1440 Clifton Road, Suite 150M, Atlanta, GA 30322; call 404-727-8166; or email rhonda.mullen@emory.edu. To see extra multimedia features online, visit emoryhealthmagazine.emory.edu.



Working knowledge

AS THIS ISSUE OF *EMORY HEALTH* GOES TO PRESS, THE UNIVERSITY'S CAMPUS IS BUZZING WITH EXCITEMENT OVER THE IMPENDING 2012 COMMENCEMENT CEREMONY. As students from our schools of nursing, medicine, and public health prepare to celebrate this milestone, we in the Woodruff Health Sciences Center are enormously proud of their accomplishments, and we look forward to the impact they will each make on the future of health and healing.

We can be so confident of our students' success because we have prepared them to be more than "knowledge workers," experts in the generation, acquisition, organization, and application of knowledge. In addition to helping them build the specialized skills that they'll need in their professions, Emory also instills a highly developed sense of professionalism in our students. An important component of their education is the understanding that health professions are based on certain key values and principles and that true medical professionals don't just

care for the people they serve and for colleagues across the spectrum of health care; they care *about* them.

Our students benefit from cutting-edge curricula and world-class educators. They also have the advantage of being part of a stellar research and patient care enterprise and an outstanding university—a place where extraordinary, life-changing work is being done every day.

You'll find a wealth of examples in this issue of *Emory Health*. Students in our medical school are engaged in a social medicine course this spring, a real-world learning experience designed to help them understand the economic, cultural, and social factors that affect health in order to improve their patients' outcomes. Our scientists are working at the molecular level to help children with fragile X syndrome overcome social and communication challenges. And the Emory Clinic has developed a new primary care model focused on keeping patients well, rather than just treating them when they're sick.

Thanks, as always, to our faculty, staff, students, alumni, and community supporters for continued support of all the groundbreaking work being done here at Emory, and best wishes to the class of 2012. We know you will continue Emory's proud tradition of serving humanity by improving health.

Wright Caughman

Please share your feedback at evphafeedback@emory.edu.

EMORY | health

PATIENT CARE, RESEARCH, AND EDUCATION FROM
THE WOODRUFF HEALTH SCIENCES CENTER



2



8

Give us your opinion in the *Emory Health* reader survey, and you'll be eligible to win a Carlos Museum membership for two and more. See p. 23 for details, or to get started, go to svy.mk/emoryhealthsurvey.

IN THIS ISSUE

Sounding the alarm about obesity 2

Among the first to identify obesity as an epidemic, Emory researchers are now working to understand and prevent obesity's dire health consequences.

Boyhood, interrupted 8

Clinical trials at Emory may help boys and girls with fragile X syndrome overcome communication and social challenges.

The ABCs of DNA testing 12

Emory medical students are learning to navigate the delicate and rapidly changing field of genetics counseling.

Getting the real story on health 16

Young Emory doctors are going to jails, homeless shelters, community clinics, and nursing homes to better understand the health challenges of patients.

Feeling right at home 18

A new medical home model for primary care at Emory is changing how patients receive health care from the moment they walk in the front door.

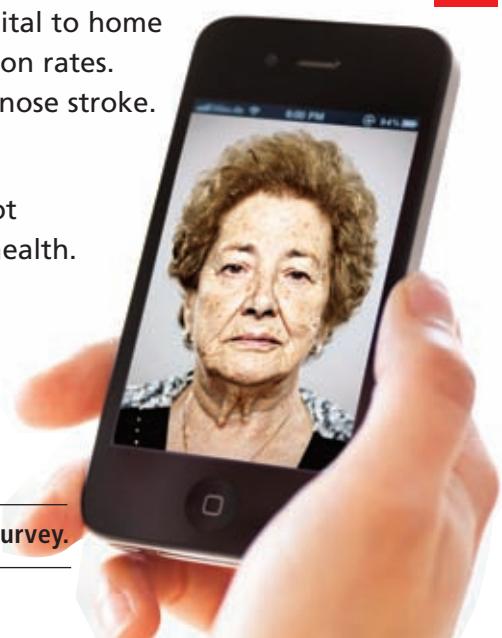
Clinical care 20

Restoring glucose levels for patients with type 1 diabetes. How transition managers are helping patients move from hospital to home and decreasing readmission rates. Using the iPhone to diagnose stroke.

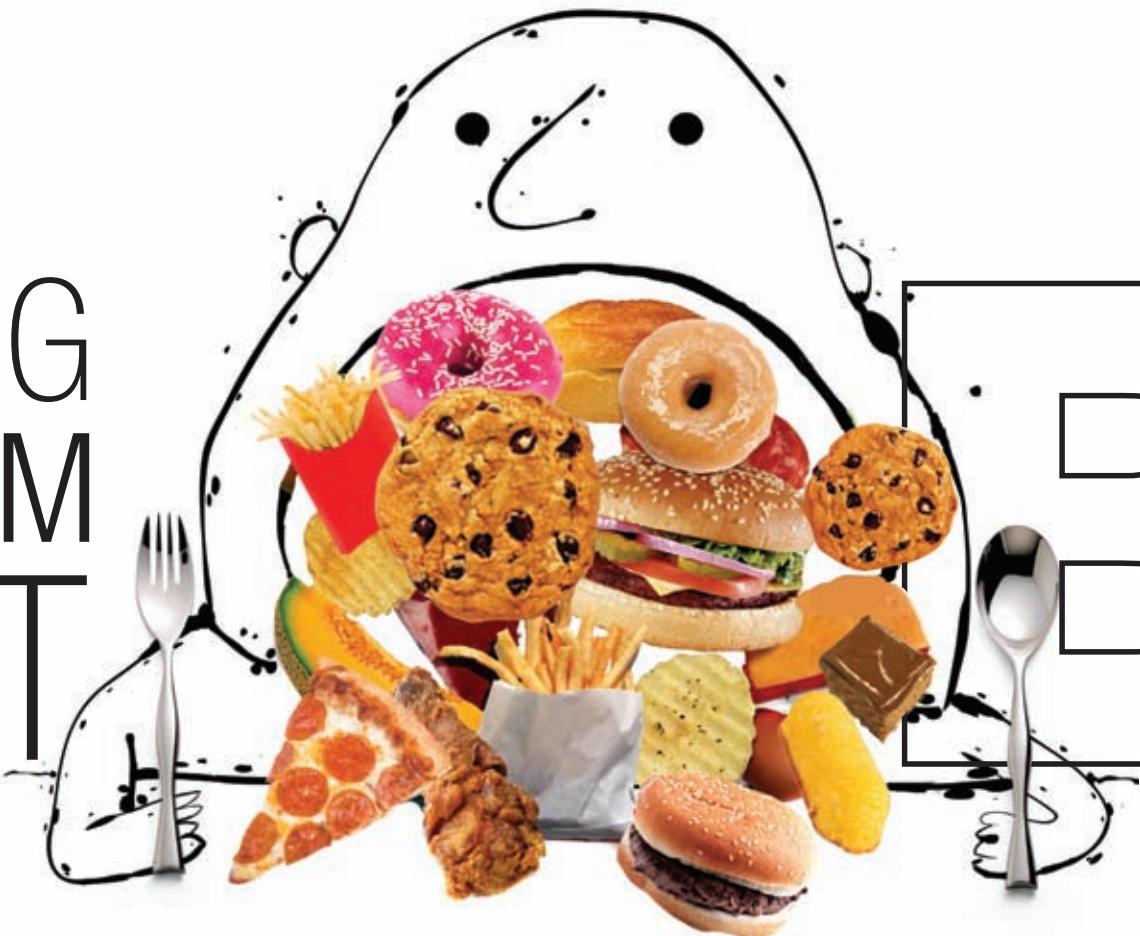
21

More news 22

Why dancing with a robot could be good for your health. Teaching medical French. Story time among the generations.

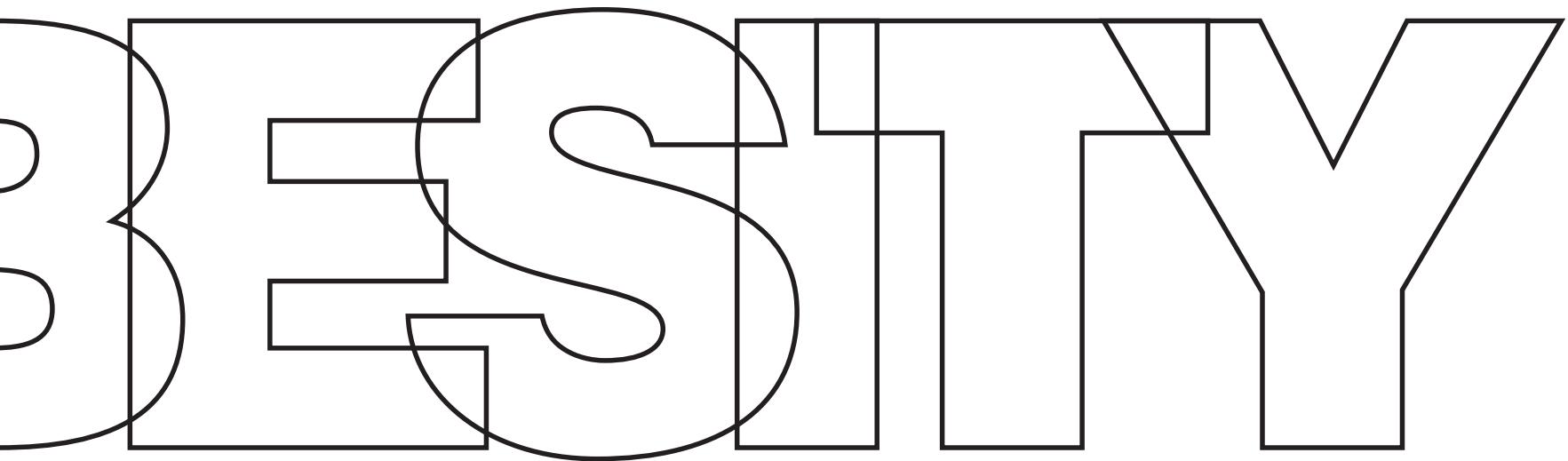


SOUNDING THE ALARM ABOUT



By SYLVIA WROBEL • Illustrations by MIGUEL DAVILLA

One Emory faculty member was among the first to identify obesity as an epidemic, and another was the first to calculate the epidemic's economic impact. Now others here are working to understand and prevent obesity's dire health consequences.



In 1999, in the *Journal of the American Medical Association*, Jeffrey Koplan and colleagues at the CDC rolled out national survey data showing an astonishingly rapid increase in obesity, male and female, across all ages, races, educational levels, and states. Whereas in 1991, 12% of adult Americans were obese, seven years later, the number had grown to 17.9%. Rarely, wrote the authors, do chronic conditions such as obesity spread with the speed and dispersion characteristics of a communicable disease epidemic.

As with most uncontained epidemics, the spread continued. By 2000, the team reported that roughly one in five adults was obese. In 1991, only four states had obesity rates of 15% or higher, but by 2000, only Colorado squeaked under the wire. From 2009 to 2010, more than a third of adult men (35.5%) and women (35.8%) were considered obese, and 56%—or “most” Americans, as Koplan put it—were overweight. His words vibrated with alarm because he knew what the numbers meant. Obesity is a major risk factor for

diabetes, coronary vascular disease, high blood pressure, gallstones, osteoarthritis, breathing problems, and certain cancers, among other conditions.

And children were not immune to the epidemic. From the 1970s to 2000, the percentage of preschool and adolescent obese youngsters doubled and that of obese 5- to 11-year olds tripled. Many already had early signs of health problems associated with obesity. Experts feared this generation might be the first to have a shorter life expectancy than their parents.

What was happening? For Koplan, the answer was and still is: We have created an environment in which the “energy in/energy expended” equation is tilting like an unbalanced seesaw. Energy in includes more high-energy foods, increased snacking, and more eating outside the home—especially in the growing fast food industry that offers increasingly bigger portions. On the other side of the seesaw, more TV time, less physical education in schools, increasingly



Jeffrey Koplan



Kenneth Thorpe

sedentary workplaces and households, and automobiles used for all but the shortest distances are decreasing energy expended.

In 2004, the Institute of Medicine asked Koplan, by then Emory's vice president for academic health affairs, to lead a panel to develop a plan that would decrease the number of obese children and youth. Among actions the panel recommended: nutritional standards for foods and beverages sold in schools, guidelines regarding advertising

and marketing to children, and expanded opportunities for healthy eating and physical activity, particularly in high-risk communities and populations. It also called for the food and beverage industry to do its part, developing healthier products and becoming more transparent about caloric and nutritional content. Two years later, a progress report, also headed by Koplan, found that government, industry, communities, schools, and families had developed many initiatives. However, most were fragmented, and few were evaluated, making it difficult to know what worked. Meanwhile, childhood obesity had increased again, from 16% to 17.1%. Fully a third of American children and youth were already obese or at risk of becoming obese.

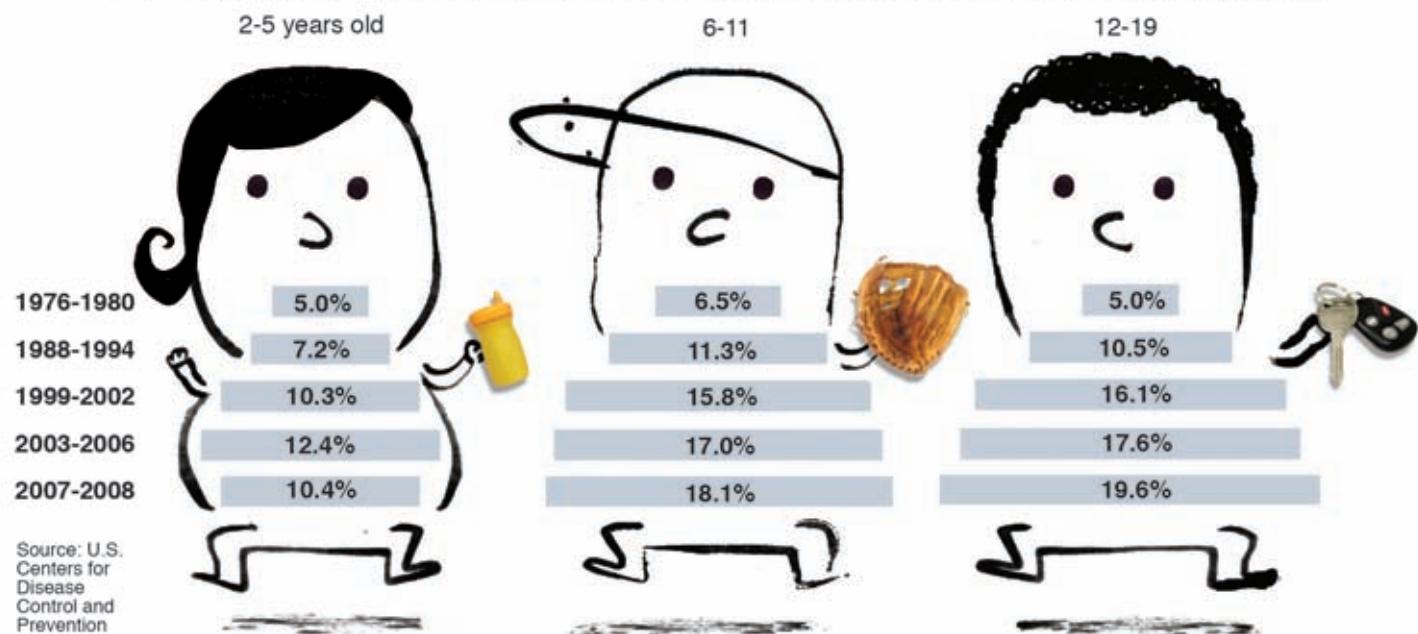
An economic epidemic

In 2004, Emory's Kenneth Thorpe began looking at obesity's impact on health care spending and the economy. It was a job made for Thorpe, Woodruff Chair of Health Policy and Management at the Rollins School of Public Health (RSPH), who was used to startling health cost statistics. But what he found surprised him.

Using surveys of health care spending for the U.S. population and calculating the body mass index (BMI) of respondents based on self-reports of height and weight, Thorpe found that rising obesity rates and treatment intensity accounted for 27% of the growth in inflation-adjusted per capita health care spending between 1987 and 2001. The growth was attributable to the rise in both prevalence and treatment

Ground zero for obesity research

Childhood obesity rates have been on the rise in the U.S. since the 1970s. Percent by age range:



costs for obesity-related diabetes, hyperlipidemia, hypertension, and heart disease. In 1987, based on 2001 dollars, obese people spent 15.2% more per capita on health care than normal weight people. By 2001, it was 37% more.

Thorpe believed putting such numbers out there would be half the battle in persuading government, policy makers, and business leaders to take up the battle against obesity. The researchers themselves funded a follow-up study, which found that between 1987 and 2002, the cost to private health insurance of treating conditions linked to obesity had increased tenfold, from \$3.6 billion to \$36.5 billion, a direct reflection of the rising number of obese patients, not of rising treatment costs per patient.

Thorpe's 2007 study, a first of its kind, showed that Americans ages 50 and older were more likely than their European counterparts to be diagnosed with heart disease, high blood pressure, high cholesterol, stroke/cerebrovascular disease, diabetes, chronic lung disease, asthma, arthritis, osteoporosis, and cancer. Although the research team noted possible explanations, such as more aggressive diagnosis and treatment, they ultimately concluded that the United States was spending more because its citizens were less healthy. And they were less healthy, in large part, because they were obese at nearly twice the rate of Europeans. "If the U.S. could bring its obesity rates more in line with Europe's," wrote Thorpe, "it could save \$100 to \$150 billion per year, a reduction of 12.7% to 18.7% of the total budget for personal health care spending among those ages 50 and older."

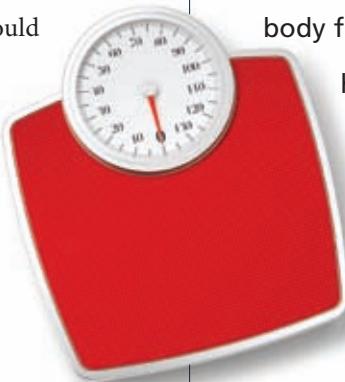
New data compiled by Thorpe's team as part of the 2009 America's Health Rankings was the first to estimate obesity prevalence and costs at the state and national level for the next decade. The news was not good. If current trends continue, it said, by 2018 more than 43% of the U.S. adult population will be obese, and obesity costs will quadruple. In Georgia, direct health care costs related to obesity would rise from \$2.5 billion a year in 2008 to nearly \$11 billion by 2018.

"Current approaches to controlling health care costs are not working," says Thorpe, "because they ignore the true drivers of those costs. If Congress, insurers, and employers are serious about reigning in health care spending, then obesity prevention needs to be at the top of their agenda."

Diabetes: the other epidemic

When researchers and policymakers speak of the health and economic impact of obesity, whether in Atlanta or worldwide, increasingly their focus lands on type 2 diabetes, for which obesity is a strong risk factor.

In 2011, 25.8 million Americans had diabetes. Another



Body Mass Index (BMI) is determined by weight and height and correlates, in most adults, with body fat. A BMI of 18.5 to 24.9 is considered healthy, 25 to 29.9 overweight, and 30 or higher, obese. By this calculation, a 5'9" adult is healthy at 125 to 168 pounds; overweight at 169 to 202 pounds; and obese at 203 pounds or higher. See cdc.gov/obesity/defining.html.

79 million are considered pre-diabetic based on blood glucose levels, putting them at risk to develop diabetes within five to 10 years. That comes to roughly a third of the U.S. population. One in five health care dollars goes to treating diabetes, as does 25% of Medicare's annual budget. No longer just a rich-country disease, diabetes is on the rise in every country in the world. Of the 366 million people with diabetes worldwide, 80% live in low- and middle-income countries, with a spread across urban and rural areas.

K. M. Venkat Narayan, Ruth and O. C. Hubert Chair of Global Health and Epidemiology at the RSPH and a professor of medicine in Emory's medical school, and his colleagues are building a worldwide coalition to find a global solution to this epidemic. They are beginning with shared research and training programs between Emory and various organizations in India, where type 2 diabetes has increased 72.3% over the past 14 years in cities like Chennai.

The population and individual differences that Narayan sees have convinced him that "the causes of obesity are a lot more complex than the first law of thermodynamics, not simply a matter of energy-in and energy-out. We need more research into causation of obesity and diabetes," he says, "but we also need to work with what we already know."

His partnership does both: studies of 12,000 people in India and Pakistan investigate causes of type 2 diabetes, especially in cases that occur at lower BMI and/or at younger ages, as well as diabetes's close cousin, cardiovascular disease. More than 600 people with prediabetes are involved in a clinical trial aimed at preventing type 2 diabetes, and another 1,200 participants with diabetes are participating in a study designed to improve care and prevent complications.





Venkat Narayan



Omar Lattouf

Lowering statewide cancer risk

Obesity is a risk factor for some cancers, especially postmenopausal breast cancer and colon cancer. Michelle Kegler—director of the Emory Cancer Prevention Research Center, an expert in community participatory research, and a behavioral scientist at the RSPH—is working with the Cancer Coalition of South Georgia and three community health centers near Albany and Valdosta to test an intervention to prevent weight gain in women ages 35 to 65. Local residents trained as coaches meet regularly with the women over five months, helping them make their homes more supportive of healthy eating and physical activity. The 500-household study has just begun, but an earlier pilot suggested that the intervention was successful in increasing the number of fruits and vegetables in the house, lowering dietary fat, reducing hours spent eating in front of the television, increasing exercise time, and lowering weight.

If the randomized control trial works as well, the team plans to expand it widely.

Reducing pediatric liver disease

Seventeen percent of all U.S. children and one in three of overweight children have nonalcoholic fatty liver disease (NAFLD), a rise in prevalence that mirrors the rise in childhood obesity. Most are 12 years or older, but in the liver disease clinic at Emory-Children's Center, pediatrician Miriam Vos sees patients as young as seven. Based on longer-term studies in adults, she worries that these youngsters' conditions will progress to cirrhosis, liver cancer, liver failure, or 20 years from now early strokes or heart attacks. Vos suspects childhood NAFLD is tied to a diet high in sugar or fructose, such as that in sweetened beverages and processed grains. In 2008, using data from a national nutrition study,

Vos found that sugar and/or fructose accounted for 12% of calories consumed by children. Subsequent research shows glimmers of hope: sugar consumption has declined somewhat, perhaps because of increased public awareness and more nutritional labeling. This matters. Children's liver enzymes improve when sugar consumption goes down and physical exercise goes up. While continuing behavioral research, Vos and her colleagues also are enrolling obese children with severe NAFLD in an NIH clinical trial that tests a new medication.

Changing outlooks

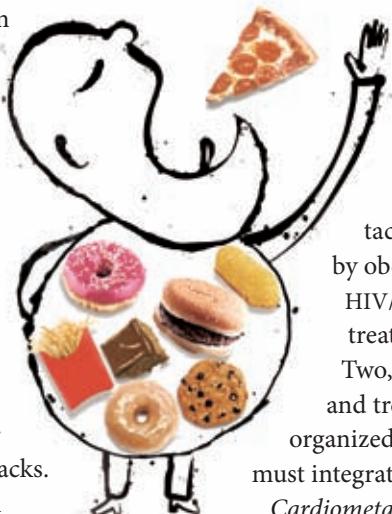
Realizing the true scope of the obesity epidemic and its impact on population health and the economy seems to ignite a crusading instinct. Koplan has continued to lobby the government to ensure public access to nutritional information and the food and beverage industry to market healthier products, at home and globally. He has joined the board of the Robert Wood Johnson Foundation, which has invested \$500 million to fund literally hundreds of childhood obesity intervention projects and studies on providing access to affordable healthy foods and increasing opportunities for physical activity in schools and communities.

In 2007, Thorpe helped form the Partnership to Fight Chronic Disease to position obesity and related chronic illnesses as a top health care priority in the upcoming presidential election. He serves as executive director of the partnership, a coalition of patient, provider, business, labor, and other groups.

Evaluate first, says Thorpe. Then fund programs that work. That makes common economic sense. For example, he calculates that it would take \$80 million to put a proven 16-week lifestyle intervention program in every YMCA in the country, enrolling every overweight and prediabetic person between 60 and 69. Program funding would come from existing federal dollars in the Prevention and Public Health Fund, with Medicare saving between \$20 and \$30 billion over the lifetime of those individuals.

In a perspective article in the *New England Journal of Medicine* last fall, several Emory public health experts, including Narayan and Koplan, again cited the need for a collective global effort to tackle noncommunicable diseases such as those caused by obesity. They drew parallels to lessons learned in the HIV/AIDS epidemic. One, that research, prevention, and treatment efforts must be global rather than national. Two, that prevention must be linked to early diagnosis and treatment, connecting community resources with organized health care systems. And three, prevention efforts must integrate both behavioral and biomedical approaches.

Cardiometabolic disease—Clinicians also have taken up the fight. Over 30 years, Emory heart surgery professor Omar Lattouf has operated on more than 10,000 patients. Three years ago, reviewing



data on these patients, he could clearly see a constellation of problems that make up cardiometabolic syndrome: obesity, especially abdominal obesity; elevated blood pressure, triglycerides, cholesterol, blood glucose, and inflammation; and insulin resistance. Each factor aggravates the other. Having several risk factors markedly raises a person's risk for heart disease and diabetes. Lattouf's study went further. He found that the syndrome played "real havoc" with his surgical patients, making those with more factors more likely to require longer postsurgical hospital stays, spend more time on a ventilator, need blood transfusions, and experience more postsurgical complications. At an eight-year follow-up, there was an 11% negative difference in survival in patients meeting the World Health Organization criteria for metabolic syndrome, which include diabetes plus any two of the following risk factors: high blood pressure, obesity, or abnormal blood lipids.

Lattouf continues to investigate (he is now looking at all heart patients at Emory, not just surgical patients). But like Koplan, Thorpe, and frequent co-investigator Narayan, Lattouf also wants to bring more attention to this condition that now affects more than 300 million people worldwide, including 25% of Americans—numbers likely to rise as the population ages. His reach is wide. He heads the Global Coalition to Combat Cardiometabolic Syndrome, which holds scientific meetings and designs curricula to prevent obesity in schoolchildren.

This year the American College of Cardiology selected Lattouf's proposal for a multinational collaboration to study the impact of cardiometabolic syndrome on health care and economics, announcing the launch of the "Save a Million Hearts Campaign" in March.

Childhood obesity—Children's Healthcare of Atlanta's investment in reducing and preventing childhood obesity in Georgia has been nothing short of amazing, says Stephanie Walsh, the Emory pediatrician who serves as medical director of Child Wellness at Children's. She believes that Children's new Strong4Life movement is powerful on multiple levels, from specialized treatment programs to year-long programs for families struggling with weight issues, from summer camps and training programs to materials to help Georgia clinicians who perform well-child exams talk more easily about weight, nutrition, and exercise. The campaign also is building a continually growing number of partnerships with schools, day

care centers, and community organizations like the YMCA, Boys & Girls clubs, Head Start, and the federal WIC grant to states for supplemental food program. Strong4Life's mantra is: It took 30 years to get us all talking about childhood obesity. Now let's work together to solve the crisis.

Another strength, adds Emory pediatrician Vos, director of research for child wellness, is Strong4Life's research-based programs. Forty percent of Georgia's children may be overweight, more than in any state except Mississippi, but Children's research found that some Georgia parents did not see their child's obesity as a problem. That's why Strong4Life began with a controversial wake-up call: hard-hitting TV spots and billboards that feature overweight children with taglines such as "Chubby isn't cute if it leads to type 2 diabetes." Ongoing programs respond to research showing parents need more information on prioritizing efforts to help their overweight children. Its programs offer clear "baby steps" such as decreasing sugar drinks and increasing consumption of water, vegetables, and fruits, along with less TV and more physical activity.



Next steps

According to National Health and Nutrition Examination Surveys, the rate of increase in obesity appears to have slowed during the past decade and may be reaching a plateau. However, with a prevalence of 35.5% among adult men, 35.8% among women, 18.6 % among boys, and 15% among girls, these numbers are still a long, long way from the Healthy People 2010 goals of 15% adult obesity and 5% child obesity in the population.

So where does that leave us? In Georgia, the Department of Public Health has made tackling the state's high obesity rate a top priority. It is working to implement the Georgia SHAPE (Student Health and Physical Education) Act, a public-private partnership to promote childhood fitness and build a culture of wellness. And each year, with funding from the CDC, it collects health information, including height and weight, in a state-based phone survey of more than 400,000 adults to identify obesity prevalence.

At Emory, faculty are continuing their efforts to confront the challenge head-on. Researchers are trying to identify contributing factors, such as intestinal bacteria, hormones, genes, cellular changes, specific diets, and psychosocial factors. Clinicians, economists, and public health researchers are searching for key findings to identify which interventions work. Together they are looking to turn around a costly obesity epidemic that spans genders, ages, races, educational levels, and countries. ■■■



Boyhood,

interrupted

By QUINN EASTMAN

Clinical trials at Emory may help boys like Samuel McKinnon and others with fragile X syndrome overcome communication and social challenges.

In some ways, Samuel is like many other little boys. He likes swimming, riding in his grandfather's boat, and playing games on the family's Wii. His face lights up when he sees an image of Lightning McQueen from the movie *Cars*.

However, learning to talk has been slow for him. Now six years old, Samuel learned to count before he could say "Mommy." His parents noticed something was different early in his development.

"He still learns and grows. He just does those things differently," says Samuel's father, John McKinnon.

For one thing, Samuel tends to flap his arms when excited—one reason that his pediatrician first suspected he might have a type of autism spectrum disorder. In 2008, Samuel was diagnosed with fragile X syndrome, the most common inherited form of intellectual disability and also the most common single-gene cause of autism.

His parents threw themselves into supporting him. They taught him sign language to help his communication skills. His mother, Wendy McKinnon, puts many miles on her car getting him to appointments with several therapists—speech, physical, and occupational as well as a specialist in applied behavior analysis.

Now, Samuel is one of the youngest participants in a clinical study testing arbaclofen, a drug that scientists think could compensate for the changes in the brain caused by fragile X syndrome. His parents say they are keeping their expectations in check.

Targeting molecules

The majority of children with fragile X syndrome have some kind of developmental delay, and their behavior varies widely. Behavior problems can include hyperactivity, inattentiveness,



aggression, or social withdrawal. The average age of diagnosis is approximately 3-1/2 years.

In 1991, a team led by Stephen Warren, Emory's chair of human genetics, discovered the gene whose inactivation is responsible for fragile X. Two decades later, a potential strategy for treating fragile X based on Warren's landmark work is reaching a critical phase in human clinical trials. Three pharmaceutical companies—Seaside Therapeutics, Hoffmann-LaRoche, and Novartis—are sponsoring multi-center studies of drug therapies that take the same biochemical approach, and Emory is participating in all three.

While some children with fragile X syndrome take antidepressants or attention-focusing stimulants, the medications in these studies are the first treatments that scientists think can specifically target the molecular changes caused by fragile X

inactivation. Previously tested with promising results in adults with fragile X syndrome, the drugs are now being tested in children and teens with the disorder—some as young as five. Clinicians expect these studies to answer important questions about whether learning and behavior deficits can improve with the medications.

"It's exciting that the research has got-

ten to this point," says Jeannie Visootsak, principal investigator for the fragile X clinical trials at Emory. "Childhood is when the behavioral problems typically start, so earlier intervention could potentially make more of a difference."

Small steps of progress

In the fall of 2011, Samuel's study was in the



Calming the overexuberant protein

While clinical research on treatments for fragile X proceeds at Emory, research exploring a different approach to treating fragile X is taking off in the laboratory.

Cell biologist Gary Bassell and colleagues have found a way to tamp down the runaway protein production seen in brain cells of people with fragile X syndrome. A class of drugs they identified could be complementary or alternative to those now moving through clinical trials.

Working with Bassell, postdoc Christina Gross has found that the enzyme PI3 kinase is regulated by FMRP and is more active in its absence.

The "overexuberant" protein production in fragile X neurons leads to structural changes in the brain, including a hyper-abundance of dendritic spines (small protrusions that transmit electrical signals to adjacent cells). Gross showed that reducing PI3 kinase activity with drugs in cells from fragile X mice can restore normal levels of both protein production and dendritic spine density.

PI3 kinase inhibitors are already under investigation for their anti-cancer properties, and some drugs of this type can be toxic to normal cells. Bassell says that newer drugs that preferentially inhibit the type of PI3 kinase found only in neurons hold greater promise as a new therapy than those inhibiting PI3 kinase indiscriminately. He and Gross are working with pharmaceutical companies to test the inhibitors in animal models of fragile X.

Bassell says the study is "an important first step toward a new therapeutic strategy for fragile X syndrome that treats the underlying molecular defect. We are excited about the possibility that it may be more broadly applicable to other forms of autism."

Recent research shows that mutations in other genes that can lead to autism also disturb PI3 kinase activity. This connection suggests that PI3 kinase inhibitors might be viable for treating autism spectrum disorders beyond fragile X, Bassell says.

Gross and Bassell already have observed that PI3 kinase levels in the blood cells of children with fragile X are measurably different from normal cells, a finding that opens the door to biochemical tests for other disorders. They recently received a "Trailblazer Award" from the charity organization, Autism Speaks, to support their continued exploration of PI3 kinase inhibitors.

"blind" phase, with neither parents nor doctors knowing who was getting the active drug and who was receiving placebo. There was a one-in-four chance of getting the placebo. An open-label (meaning the mystery is over) phase of the study started in January 2012 to monitor how well children tolerate the medication over longer periods.

"Our family and our therapists are telling us the same thing—not to put too much hope in the trial," says Wendy McKinnon. "We're trying hard not to read too much into it if he says a new word or plays more with other kids."

Being able to judge whether the various drugs are working is complicated, Visootsak says. In Samuel's study, parents regularly fill out a questionnaire about the child's behavior, self-help skills, and sleep patterns, and the child undergoes cognitive tests and receives a comprehensive exam by a physician.

Previous behavioral studies with arbaclofen suggested that the drug's strongest impact came in helping people with fragile X engage socially. So children in this study are being scored on an "aberrant behavior check-



list" with an emphasis on the social withdrawal domain.

Varying responses

Samuel's parents describe him as trusting, flexible, and easygoing, and they recall how he climbed into Visootsak's lap the first time they met.

Just as Samuel is different in some ways from other boys with fragile X, it follows that not all patients with fragile X syndrome will benefit from the same drug, says Visootsak. Small-scale studies have already shown that patients with fragile X vary in their responses to one of the drugs being tested by Novartis, called AFQ056. It also is possible that a single drug may be unable to address all fragile X-related symptoms, she says.

To understand why, it helps to look at what the inactivated gene in fragile X normally does. It produces a protein called FMRP that regulates a host of genes. As a result of FMRP's absence, fragile X neurons turn those genes on more easily—and indiscriminately—than typical neurons.

"Our family and our therapists are telling us the same thing—not to put too much hope in the trial," says Wendy McKinnon. "We're trying hard not to read too much into it if Samuel says a new word or plays more with other kids."

Several years ago, in collaboration with Mark Bear from MIT, Emory's Steve Warren identified a type of drug (glutamate receptor antagonists) with the potential to calm one type of hyperactive signal in the brain caused by a lack of FMRP. Even so, drugs can't exactly replace FMRP. They can only push back against some of the changes generated by its loss.

If the ar-baclofen or glutamate drugs are successful, Visootsak says, such drug treatment still cannot be considered a "cure." She says the medications could potentially make learning and social adjustment easier, and they might improve some behavior problems.

"Individuals with fragile X are still going to need educational support and ongoing therapies, including speech and physical

therapy," Visootsak says. "With these medications, the goal is to help them adapt better in social situations and ultimately enhance academic performance and independence."

For the McKinnons, that's a welcome start. "Some people we talk to think it will be a magic bullet and will 'fix' him," says Samuel's mom. "But I think if we can find something that maybe helps him adjust better or communicate more, we have to try it out—for his sake." EH



WEB CONNECTION Erica Johnson was an adult before she ever received her diagnosis of fragile X syndrome. Now at 33, she is participating in a clinical trial for fragile X at Emory. Her parents believe that the medication she is receiving is helping her communicate better and hold down a job. To hear the Johnsons and McKinnons discuss their experiences with fragile X, visit bit.ly/McKinnonfragileX and bit.ly/JohnsonfragileX.

The image is a collage of several photographs and graphic elements. In the upper right, a woman with long dark hair is seen from behind, wearing a red and green patterned dress. In the lower center, a baby in a pink onesie is sitting and looking towards the camera. To the left of the baby, there is a graphic of a DNA double helix. The background is a textured yellow surface with faint, large, semi-transparent white text that reads: "romosomal abnormalities, fragile X, making sense of NA, gene sequencing, cancer, sequencing, statistical validity, sequencing, DNA, statistical risk, chromosomal abnormalities, bad news, statistical risk, DNA, gene, clinical genetics, co-morbidity, sequence, q".

The ABCs of DNA testing

By QUINN EASTMAN



Emory medical students are learning to navigate the delicate and rapidly changing field of genetics counseling.

A 37-year-old woman, pregnant for the first time, is meeting with her doctor and is concerned about her baby's risk of having Down syndrome (DS). What kinds of tests should the doctor offer her?

A group of first-year medical students at Emory is pondering the question in a class led by Cecelia Bellcross. The genetics counselor has seen a scenario play out repeatedly, in which women with a positive screening result are told that their baby has DS. In fact, Bellcross tells the students, most women who receive positive results under current screening tests will not have babies with chromosomal abnormalities. Plus, according to the NIH, most babies with chromosomal abnormalities such as DS are born to women younger than 35.

Why the disconnect between reality and what women are told? Originally, screening tests were designed to guide women on decisions about whether to undergo amniocentesis, based on the low—but real—risk of miscarriage from that procedure. The screening tests are indirect, measuring levels of proteins in the mother's blood rather than changes in the fetal DNA. Bellcross

says that doctors should make their patients aware of the odds—a difficult task given that statistics is a confusing topic for many people—while being careful not to over-emphasize the risk.



The students pepper her with questions. Whose responsibility is it to deliver bad news? When should a genetics counselor get involved? How should statistical risk be presented to patients?

Near the end of the session, Bellcross throws the students yet another curve to consider. "This whole field may be turned upside down in a couple of years, based on news that came out last week," she says. A biotechnology company has developed a noninvasive method for prenatal diagnosis, she says. The test can detect chromosomal abnormalities by analyzing the fetal DNA present in the mother's blood. It potentially could reduce the number of amniocentesis procedures, but it's unclear about how it will fit into current practice.

The end-of-class twist highlights a challenge facing medical educators: how and what to teach medical students about genetic testing when technology is changing so fast?

Ethical dilemmas

More than 1,600 genetic tests are now available commercially. Consumer-oriented genomics companies offer a person scans of more than a million points in the genome with just one "spit in a cup." In a few years, next-generation sequencing technology is expected to push the price of reading all 3 billion base pairs of someone's entire genome to below \$1,000. By the time today's first-year students enter medical practice, what's now considered routine is bound to change even more.

For years, medical students typically have learned about genetics in a semester-long course that runs through a catalog of genetic disorders. But recently, Emory and other medical schools have changed how young doctors approach genetics lessons by emphasizing the ethics behind genetics. That approach in turn is influencing treatment and diagnosis in many fields, from oncology to neurology to cardiology.

"We want to underline how genetics is becoming integrated into many parts of medicine," says Kathryn Garber, director of education for Emory's Department of Human Genetics. "After all, everyone has DNA that somehow affects their health, not only people with rare disorders."

Basic principles

Emory's medical school offers a two-week genetics module for

first-year students, which emphasizes a number of principles: among them, how to approach testing and diagnosis and how to talk with patients about difficult topics.

"It all comes back to basics," Bellcross says. "We have to give people the framework and the tools so that they'll be able to evaluate the latest test."

She describes the concepts of clinical validity (a test's consistency and accuracy in predicting whether a patient will develop a particular disease) and clinical utility (whether that prediction can improve someone's life). Doctors need to learn not only how to gauge a test's validity and utility but also be able to distinguish between them, she says.

The results of a test for a gene that causes an incurable neurodegenerative disorder may leave the patient with little to do besides dread the future. On the other end of the spectrum, other tests have limited, practical consequences. They might predict, for example, how well someone will respond to a specific blood pressure medication.

"I think it's good to focus on these genetic questions now because the principles will still be the same later," says medical student Ken Buchanan. "During the module, I kept thinking, if you do all the tests, when does it really change what you would do for the patient?"

One message that Bellcross especially wants students to learn is knowing their own limits. Navigating the complexity of genetic tests can be easier by using a team approach, she says, with genetic counselors and specialists collaborating.

The hard part: interpretation

Geneticists at Emory recently sequenced a patient's entire genome in an effort to determine whether her children could inherit the kidney disease that she had. Mike Rossi, director of Emory's cancer genomics shared resource facility, and his team found that anomalies in the patient's standard DNA—which they thought were causing disease—were present also in the patient's healthy relatives.

"Obtaining vast amounts of information is the relatively easy part," Rossi says. "The hard part is interpreting it."

In a recent Emory class, genetics counselors Dan Wiesman and Dawn Laney engaged in a mock interview to get that very point across to 140 first-year students. Laney played the role of

a woman who was planning a family and might be a carrier for a developmental disorder such as fragile X syndrome. In her role, she described her brother and her uncle as “slow.” Her grandfather had “the shakes,” but she didn’t know much about her fiancé’s family history.

The exercise illustrates a scenario that the students will may face one day. Their future patients won’t necessarily know their complete medical histories or their relevant genetic information. Therefore, these students will need to be able to explain technical issues in ways that patients will understand. They also will need to recognize that knowledge gained from a genetic test will affect the entire family, not just the person being tested.

Sharing results

Plan with patients in advance for delivery of the findings from genetic tests, Wiesman advises. Give them a chance for an exit. If you’re conveying information to them on the phone, make sure they’re not driving or in a supermarket.

“Even before you order the test, have a game plan,” says one genetics counselor. “Don’t just leave patients hanging.”

Talking with patients about their families’ history of disease, albeit awkward at times, is also important, the counselors advise. In many cases, knowing someone’s family history may provide more relevant information about the risk of disease than a limited scan of the genome, they say.

During a class discussion led by Emory pediatric neurologist Nick Krawiecki, the medical students encountered just such a case: a woman who decided to have a bilateral mastectomy to prevent breast cancer, even though her genetic test results failed to point definitively to an increased risk of disease.

One student shared her own personal experience. A friend with a family history of breast and ovarian cancer received test results that indicated she was not at risk. However, the tests only covered two genes, and her friend eventually developed ovarian cancer. “My first question would be, how many genes is the test looking at?” she said.

Krawiecki points out that patients may feel compelled to act even if the test results turn out to be ambiguous. Patients need to have a degree of choice, he says. ■■■

WEB CONNECTION To read more about genetic testing and the new genetic counseling program at Emory, visit genetics.emory.edu/gc_training/.



Mastering genetic counseling

To expand the number and availability of genetics counselors to help clinicians address the complexities of genetic testing, Emory’s medical school will launch a master’s program in human genetics and genetic counseling with 10 students in the summer of 2012. Accredited by the American Board of Genetic Counseling, the program will offer a focused internship. Each student will have an opportunity for intensive training in one of four areas: public health genetics, expanded clinical practice, clinical genetics research, or laboratory genetic counseling.

Getting the real story



Emory fourth-year medical student Alexis Ritvo is a go-getter with an impressive resume. She earned a bachelor's degree from Harvard and a public health degree from Emory's Rollins School of Public Health. In between, she spent time researching schizophrenia. But on a recent weekday, the future psychiatrist sat in the Grady Memorial Hospital pharmacy waiting for her number to be called. It's the place where many of Ritvo's Grady patients go to have their prescriptions filled. She arrived at 8 a.m., waited for three hours, and left empty-handed.

"I failed to get a prescription," Ritvo says. "I was 10 away from having my number called when I had to go to my next lecture." Her go-getting ability had run up against the realities of a complicated and often under-resourced public health system.

The assignment Ritvo was trying to complete by filling a prescription came about as a result of an emerging focus in Emory's medical school on social medicine. Social medicine looks at how economic, social, and cultural conditions affect health, so that health care providers can better understand and work with their patients to improve health outcomes. In the case of the Grady pharmacy, Ritvo says the lesson was clear. "I

thought, gosh, if I'm having trouble, and I'm about to graduate with a medical degree, I can only imagine how some of these patients feel." She understood more clearly that cost is by no means the only barrier keeping patients from taking their medications. "We want people to be working and holding down jobs," she says, "but then they're going to have to take an entire day to get their prescriptions filled."

Lessons on the ground

In a month-long social medicine elective this spring, Ritvo and a group of medical students and residents gained firsthand exposure to many of the social determinants of health that their patients encounter. Following individualized schedules, they toured one low-income community on the west side of Atlanta with a 97% unemployment rate, miles away from the nearest grocery store. They also visited homeless shelters, jails, nursing homes, patients' homes, and HIV and tuberculosis clinics. Some spent time shadowing Grady's chief of staff and chief medical officer to get a grasp of how Grady looks from the top-down. The elective also included weekly lectures on social medicine as well as lessons about legislation and lobbying efforts that affect health care. In addition to the elective, funded this year by Emory's Office of University and Community Partnerships, medical school faculty members have been integrating the

on health

Young doctors in Emory's medical school are going to jails, homeless shelters, community clinics, and nursing homes to better understand the health challenges of their patients.

By DANA GOLDMAN



lessons of social medicine into the rest of the curriculum as well as faculty development.

Grady internist and the elective's course director, Maura George, says these efforts to understand patients' health literacy and lifestyle pay off in the long run. "These factors are things we don't think about very much because they seem outside true science and the typical courses we take in medical school," she says. "But if a patient doesn't buy into what you're saying or has poor health literacy, you're not going to be effective at all."

Take the recent patient with high sodium levels who asked, "Do cheeseburgers have a lot of salt? I eat those every other day." George showed the patient how to read nutrition labels, with the hope that a simple, quick lesson might do more for the patient's health than increasing medication dosages.

The social side of medicine

For Emory medical resident Roger Alvarez, the spotlight on social medicine has helped him better understand his patients' backgrounds and how he can be helpful to them. Take, for instance, the high number of patients he treats who come to Grady straight from jail. "We got to tour the DeKalb County jail, meet with the doctor who sees the patients there and refers them to us, and see what our patients' experiences are on that side of things," Alvarez says. The result? "I know more about what we

need to do to ensure continuity of care."

Both Roger Alvarez and Alexis Ritvo say learning about social medicine and social services for patients has already affected their work in significant ways. "In a practical way, I'll be able to give patients some specific guidance about resources and what to do next," says Alvarez. "I'll also be able to better understand where they're coming from."

For Ritvo, the lessons on lobbying and legislation stand out. Before this elective, she says, "I'd never set foot in the state Capitol or seen a committee hearing." Now, she's been three times and understands how social policy—for example, legislation requiring drug testing for welfare recipients—may impact her patients. "It was interesting to see where I may be able to get involved as a physician in the future," she says. After completing the elective, she says, "I won't have to get up as much nerve to introduce myself to my state senator and get involved in legislation."

The social medicine lessons the students have learned also are impacting George. "It's taught me to listen a lot more than I talk," she says. Asking questions about a patient's life and lifestyle is about more than just good bedside manner. In the long run, it saves you time," she says. "You get the real story from the patient."

And that makes all the difference. **EM**



Feeling right at home

By MIKE KING

Ron Whitten's quest to find the right physician was pretty simple, despite somewhat complicated health care needs.

Whitten must be followed for evidence of hypertension, high blood cholesterol, and weight control. His wife, Nancy, battles chronic osteoarthritis. As they approached their Medicare years, they'd both seen their share of the inside of a doctor's exam rooms.

"We feel that primary care should be just that—primary, not secondary. We want to be the focus of a team approach that helps us to stay healthy and coordinates care across the spectrum of providers that we use," says Whitten, a retired clinical social worker and faculty member of Emory's medical school.

So last year the Whittens decided to enroll in a patient-centered primary care (PCPC) practice that had just opened up to Emory employees through the Emory Clinic and the university's health insurance plan. It's part of a new wave of delivering medicine in so-called "accountable care organizations," or medical "homes," where physician and hospitals are paid for keeping patients well instead of being paid only when patients are sick.

For the Whittens it was a perfect match.

"From the moment you step through the door, the whole culture of the place is dramatically different from what most of us are used to," Nancy Whitten says about the clinic, located on the second floor of the 1525 Clifton building on Emory's Druid Hills campus.

In the waiting room, there's no wall separating patients from the staff. There's no sign-in on arrival. The two physicians who see patients sit at desks in the same room with the rest of the staff. "They greet you by name. They know why you are there," Whitten says. "They are there for you."

Concerned connectedness

Even more important than the feel of the place, Whitten discovered, is the role that patients play in formulating their own health plan.

The practice has a secure web portal (similar to those for online banking) for patients to see and write notes about their medical records and test results. There are nurses, medical assistants, behavioral health specialists, and other providers available on the phone, in person, or via email. The whole team can help design an individual health plan. Patients can check in as often as they want to report on success in controlling blood pressure, blood sugar levels, and other conditions that can be measured with tests at home.

When specialty care is needed, the team doesn't just make a referral. It sets up the appointment and makes arrangements to

share the patient's records. And if a new drug doesn't seem to be working or is causing unpleasant side effects, the patient doesn't have to wait six months until the next appointment to deal with it.

"There's what I would call a 'concerned connectedness' with the whole staff to take care of everything from the small-time crisis to long-term health planning," Whitten says.

Jennifer Zreloff, one of the two physicians who staff the clinic, is quick to emphasize that the medical home concept "isn't trying to re-invent medicine. But we are re-inventing the system for support of how we practice," she says.

By sharing patient-monitoring duties with nurses and specially trained staff members, physicians spend more quality time with each patient—meaning longer appointments and

"This changes the whole paradigm."

Rather than a fee-for-service basis, the Aetna-administered Emory health plan pays the practice a fee for the full range of services it provides to enrolled patients, including encounters where they don't come into the office or see a physician. The goal, Lesesne says, is to improve patient care and control costs by cutting down on the need for crisis or acute-care interventions.

Expanding the practice

Emory's PCPC clinic, established in July 2011, has attracted more than 1,800 patients thus far and could expand to as many as 3,500 over the next year, according to Lesesne. For now, access is limited to Emory employees, retirees, and their dependents, as well as patients enrolling through Aetna's Medicare

Advantage program. But it could easily expand, Lesesne says, given the overwhelmingly positive feedback the clinic is getting from patients and as evidence mounts that this approach is managing patient care better than traditional practice models.

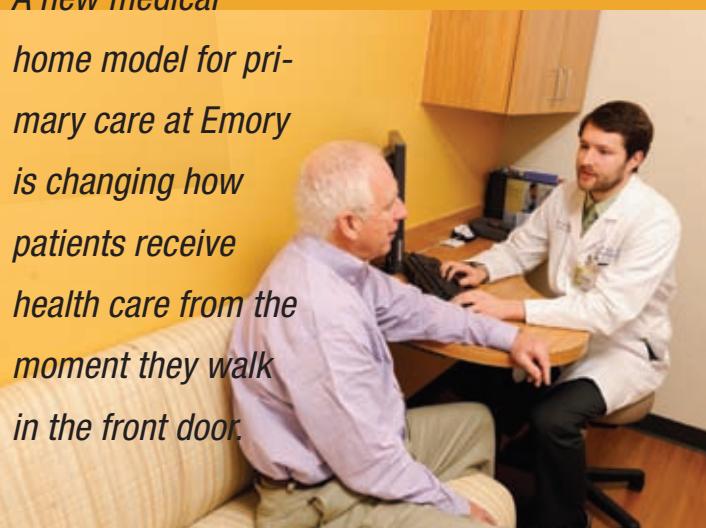
On industry-standard, patient-satisfaction surveys, Lesesne says, the medical home clinic is scoring in the 99th percentile—compared with most doctors' practices, including those at Emory, that routinely score in the 70s or 80s.

The initial success of the clinic helped Emory decide to set up a workplace practice at Delta Airlines' headquarters near

Atlanta's Hartsfield-Jackson International Airport. Delta employees had access to a walk-in clinic there for several years, but now an Emory physician will be available on site to provide a range of primary care services under a similar medical home model.

Ron Whitten understands why the PCPC is getting such high marks from patients. "I'm close to ecstatic about it," he says. "It is exactly what we were looking for." ■■

A new medical home model for primary care at Emory is changing how patients receive health care from the moment they walk in the front door.



more face-to-face time discussing lab results, tests, and patient concerns, Zreloff says.

"That sounds like something that should be relatively easy to set up, but with the payment mechanisms in place in most medical settings, we are constantly pushed for volume—to see as many patients as possible—so we can maximize reimbursement," says Jeff Lesesne, chief of internal medicine services at the Emory Clinic and a major promoter of the accountable care concept.

"A little bit of normalcy" for those with diabetes

JULIE ALLRED, A PEDIATRIC NURSE FROM NORTH CAROLINA, WANTED TO STAY AWAKE. No matter that she was about to undergo an experimental procedure to provide her with insulin-producing cells from an organ donor. No matter that the lifelong diabetic had driven the four hours from her home to Emory on a moment's notice. No matter that she had spent the past two days in a hospital bed receiving medications to suppress her immune system.

Emory transplant surgeon Nicole Turgeon asked Allred why she wanted to undergo this procedure. The answer was simple, she explained. "I said, 'You're about to change my life. Not everyone has this opportunity. I want to see this.'"

After all, for Allred, then 42, the islet transplant was a chance at a life in which her blood sugar didn't drop precipitously low as a result of type 1 diabetes and cause her to lose consciousness. In the years preceding the transplant, those low blood sugar levels had significantly affected Allred's moods, relationships, and ability to think clearly. She remembers becoming combative when someone tried to check her blood sugar. "Somebody had to watch me constantly."

Now all that's changed. In July 2011—and again on leap day in 2012—Allred stayed awake as Emory interventional radiologist Kevin Kim accessed a vein in her liver through which Turgeon transplanted pancreatic

islet cells. As part of a multi-year national research study on the procedure, insulin-producing cells (islets) are harvested from an organ donor's pancreas and inserted into the recipient's liver. Those transplanted cells then produce insulin, reducing or eliminating the

need for insulin shots (at least temporarily) and helping the body regain the ability to maintain steady, healthy blood sugar levels.

Soon after the first islet transplant, the episodes of life-threatening low blood sugar levels stopped for Allred. "I didn't know how bad I felt until I felt better," she says. "It's made me aware of a lot of things that you take for granted each day."

Allred doesn't, however, take for granted that she's one of just 18 patients who have undergone the islet transplant procedure at Emory, the only such transplant center in Georgia. "If I get six months or a year more—and that's one of the unknowns—I'm so lucky to be one of those few people to have that little bit of normalcy for my life and family," she says.

Turgeon, who has spearheaded Emory's participation in the nationwide study, says that Allred's experience is similar to that of other study participants. "These patients are the most grateful patients I have worked with," she says. "Most of them say they can't remember the last time they felt so good and didn't have to worry about high or low blood sugars. They often say it is life-changing."

Her hope is that the study will pave the way for more islet transplants and a better quality of life for those living with diabetes. That's a hope that her patient shares. "A cure is closer than it's ever been," Allred says. —Dana Goldman

The transplanted cells produce insulin, reducing or eliminating the need for insulin shots (at least temporarily) and helping the body regain the ability to maintain steady, healthy blood sugar levels.



Hospital to home

"I KNOW MORE NOW ABOUT MY CONDITION THAN I EVER DID BEFORE, AND I'VE BEEN LIVING WITH IT FOR YEARS," THE PATIENT TOLD ROSALYNN COMER, AS SHE FINISHED REVIEWING A BOOKLET ON HEART FAILURE WITH HIM. It wasn't the first time they had met. As soon as this patient was admitted, Comer saw that

his condition and risk factors made him an ideal candidate for her to follow.

A transition manager, she is one of a cadre of 11 advanced practice nurses at Emory who work with patients from admission up to 30 days after discharge. Like her colleagues, Comer follows patients with certain conditions and risk factors that make them likely to have another hospital admission. Preventing readmissions is good for both patients and hospitals, which face reimbursement penalties from Medicare and Medicaid when patients with certain conditions are readmitted within 30 days.

At Emory, transition managers step in to provide a link between patients and health care providers. Because they are all nurse practitioners, they can order tests, interpret results, write prescriptions to adjust medication dosages, and discharge patients. That makes Emory's model different from other hospital systems that use registered nurses or social workers to coach patients, says Naph'tali Edge, Emory's director of transition management.

Emory patients can call transition managers' cell phones with questions. Comer has even had patients call her while they were shopping for groceries with questions about diet.

The work of Emory transition managers with heart patients is proving especially successful, with readmission rates for those with advanced heart failure down 33% at Emory University Hospital Midtown. The readmission among general medicine patients at Emory University Hospital also is down 10%. —Kay Torrance



Edge and Comer help patients transition from hospital to home and reduce readmissions.

iStroke

When a person is experiencing a stroke, every second counts. Of the nearly 800,000 Americans who have a stroke each year, however, many do not have quick access to acute stroke care.

With that in mind, third-year Emory neurology resident Eric Anderson set out to find a quick and economical way to diagnose and determine the severity of a stroke from a distance. In a study recently published in the *Journal of Stroke and Cerebrovascular Diseases*, Anderson and colleagues tested the effectiveness of the Apple iPhone 4 with FaceTime software to do so.

The study included 20 patients who were admitted to Grady Memorial Hospital for acute stroke. For each patient, a physician performed an assessment at the patient's bedside while transmitting it over an iPhone using FaceTime software to a second physician participating in the examination remotely. Both physicians assessed the patient using the NIH Stroke Scale (NIHSS), a 15-step tool that provides a quantitative measure of stroke-related neurologic deficit. Neither physician had information on the patient's condition prior to examination, and both were blinded to each other's scores. The average NIHSS scores for each patient were strikingly similar between the bedside and remote physicians.

"In 10 out of the 15 measures on the NIHSS, there was very little difference between the scores given at the bedside and those given remotely."

through iPhone technology," says Anderson. "More important, this shows an important technology for patients who do not have quick access to a vascular neurologist and stroke team."

Although other forms of telemedicine have been available for stroke assessment and care for more than a decade, the start-up costs have proved to be too burdensome for smaller or more rural hospitals, which are the places that need telemedicine options the most.

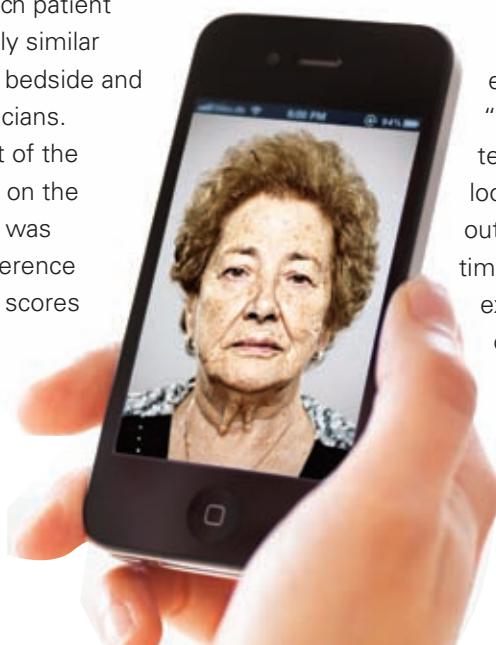
"In the past, a lot of telemedicine systems have included mobile robot units, entire computer systems, and professional cameras," says Anderson. "The start-up costs for these types of things are enormous. This study certainly shows that we don't need expensive or complicated systems. We can do this with a cell phone that is readily available and entirely portable. Overall, this approach drops the bottom line for everyone and allows patients to have access to care that is affordable."

Anderson said the next step is to move his research beyond proof of concept to looking at outcomes and how this technology can help end the delay that often comes when patients are miles away from needed specialists.

"We're certainly continuing down the road of expansion," Anderson says.

"Now that we've shown the technology works, we can look at how it affects patient outcomes. Looking at the time to treatment and time to examination can be a real clincher, especially with a disease where time is such an important factor."

—Kerry Ludlam



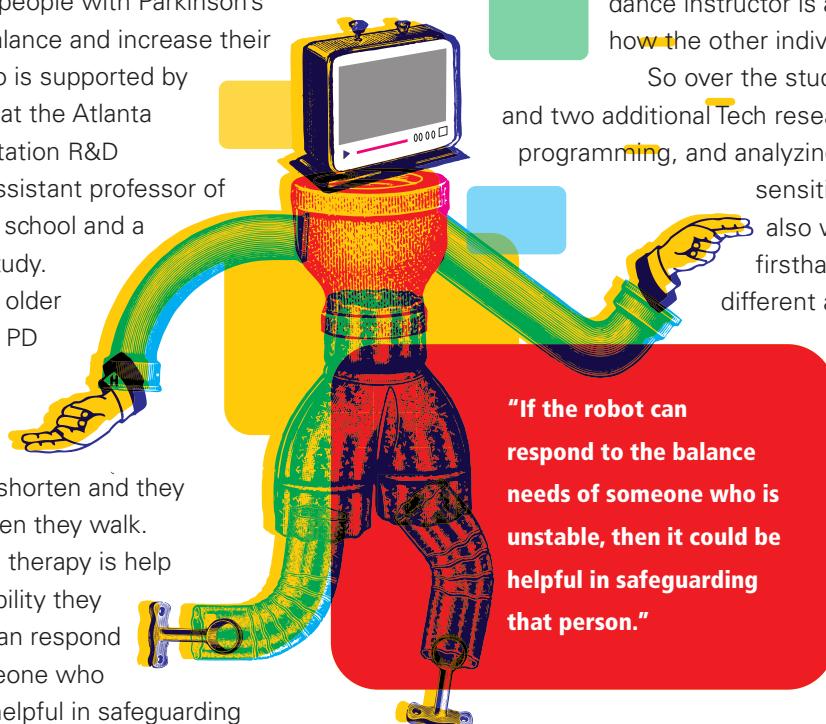
Letting the robot lead

People who struggle with mobility might eventually head to the dance floor—with a robot partner. A new \$2 million dollar grant from the National Science Foundation is helping Emory and Georgia Tech scientists fine-tune a therapeutic robot named Cody, enabling it to dance with a human with the same sensitivity to touch and pressure as an expert dance teacher.

The study builds on previous research by Emory researcher Madeleine Hackney, showing that partner dance is an effective way to help older adults and people with Parkinson's disease (PD) improve their balance and increase their walking speed. Hackney, who is supported by a career development award at the Atlanta VA Medical Center's Rehabilitation R&D Center of Excellence, is an assistant professor of geriatrics in Emory's medical school and a co-investigator on the new study.

"What happens in a lot of older folks and some of those with PD is that they have decreased ability to shift their weight effectively," she says. "Over time, their stride length may shorten and they may stop lifting their toes when they walk. What we want to do with the therapy is help them regain some of the mobility they had in the past. If the robot can respond to the balance needs of someone who is unstable, then it could be helpful in safeguarding that person." And since robots don't exhibit the idiosyncrasies of humans—for example, getting distracted by other dancers or flustered when forgetting a step—they may provide more consistent monitoring of balance instability than a human partner.

But teaching Cody the robot to dance expertly with a partner,



especially one who has an unstable posture, is an ambitious goal, says principal investigator Lena Ting of the biomedical engineering department jointly administered between Emory and Georgia Tech. It requires interdisciplinary expertise in the mechanics of dance, sensory motor theory, robotics, and engineering. In addition, Ting says, "Normally with industrial robots you don't want to touch them—they're strong and dangerous. They don't feel their environment, and they don't know you're there. But a

dance instructor is aware and constantly adapting to how the other individual is dancing."

So over the study's duration, Ting, Hackney, and two additional Tech researchers will not just be coding, programming, and analyzing the movements and tactile sensitivity of Cody. They and others also will be dancing with Cody to see firsthand how the robot responds to different abilities and movement styles.

In four years when the grant concludes, they hope that Cody will be able to adapt to the skill level of its partner while doing a box-step—all through a simple connection between the person's hand and Cody's mechanical arm.

Ting says this study is a first step in building robots that can partner with humans not just on the dance floor but also in rehabilitative environments. "The big-picture goal is to be able to demonstrate that it's possible to have robots interact fluidly with humans in a very physical way." —Dana Goldman

Inhibiting inflammation Emory scientists have identified a new group of compounds that may protect brain cells from inflammation linked to seizures and neurodegenerative diseases. The compounds block signals from EP2, one of four receptors for prostaglandin E2, which is a hormone involved in fever, childbirth, digestion, and blood pressure regulation. Previously chemicals that could selectively block EP2 were unavailable, but the newly discovered blockers were able to markedly reduce injury to the brain after a prolonged seizure in animals. "Anywhere that inflammation is playing a role via EP2, this class of compounds could be useful," says Emory pharmacology chair Ray Dingledine. That includes epilepsy, stroke, and neurodegenerative disease. Also outside the brain, EP2 blockers could be useful in other diseases with a prominent inflammatory component, such as cancer and inflammatory bowel disease.

Parlez-vous “doctor”?

When Anthony Gal was a pre-med student at the University of Virginia, he wanted to apply his knowledge of French to his studies, but the chairman of the French Department there saw no need for that. “We are here to teach you poetry and critical literature analysis,” he was told. “If you want to speak French, go to France.”

But more than 30 years later, Gal, with appointments in pathology and medicine in the Emory School of Medicine, has found a way to pursue that dream. He teaches a 10-week elective in medical French to second-year medical students at Emory. Since French is spoken on nearly every continent in the world, he believes it is an important language for health care providers.

The impetus for his return to the language came in 2008, when he studied tumors of the pleura with a colleague in Normandy, France. While there, he went searching for a book to help him brush up on medical French for English speakers but found only books in French on learning medical English. Nothing was available for the non-French



speaker to learn the “language of medicine.”

Gal began his course in medical French at Emory soon after, complete with audio assignments and in-class discussions on current articles, medical terminology, and anatomy. In the four years since, he has emphasized the practicalities of how to take a patient history and do a physical in French.

He finds natural parallels between learning to “speak doctor” and a foreign language. “In medical school, we build a vocabulary, starting with simple terms that get more complex and layered as we go along,” he says. “It’s like any foreign language class where you first learn basic vocabulary, throw in a verb, then learn basic conjugation.”

Gal wants to prepare his students—many of whom want to pursue careers in public health—to work with patients in Haiti or French-speaking countries in Africa. The materials covered in his course are aimed to help them master both languages, that of medicine and French. —Rhonda Mullen

Grow your right brain for a full year In five minutes.

How? Take the *Emory Health* reader survey and **win a chance for a year's membership for two at the Carlos Museum**, one of the Southeast's premier ancient art museums.

Two prizes will be awarded and include complimentary membership for two, discounts at the Museum Bookshop, invitation to member preview days of special exhibitions, and advance notice of popular children's programs. The grand prize winner will also receive a private tour of the Carlos Museum collections.

Your feedback on our brief survey not only will immerse you in a world-class art collection but also guide us in tailoring a magazine to meet your health needs.



© Michael C. Carlos Museum
Tiberius: Roman, ca. 14 AD

Go to svy.mk/emoryhealthsurvey to participate.

Book buddies

The pre-school and kindergartners from the Glenn Children's School in Atlanta learn to count to 100 by twos, fives, and tens. So when they participated in a book buddies program at Emory's Wesley Woods Towers this spring, they were delighted that one of the ladies listening to the stories is more than 100.

Each quarter, these four- and five-year-olds get together with the residents, many in their 90s, who live on the assisted-living floor of the Towers. The children bring paintings and drawings—and this past February, valentines—to share. And the residents in turn share books with them. The readers take their job seriously,

always requesting a copy of the selected book ahead of time to prepare for their presentation.

Julia Oliver (*bottom, left*), a popular reader to the group, says, "I don't read the story. I tell it to them." A retired third-grade teacher, she often embellishes the action or throws in a question to engage her young listeners. "How many of you can whistle?" she recently asked when showing a book that featured a boy who was learning to whistle. She was surprised that two of the children could indeed already whistle, which they demonstrated, but she had to admit that she couldn't do it as well at 93 as she used to.

An initiative of the Emory Center for Health in Aging, Book Buddies promotes intergenerational learning. Harriet Holland,

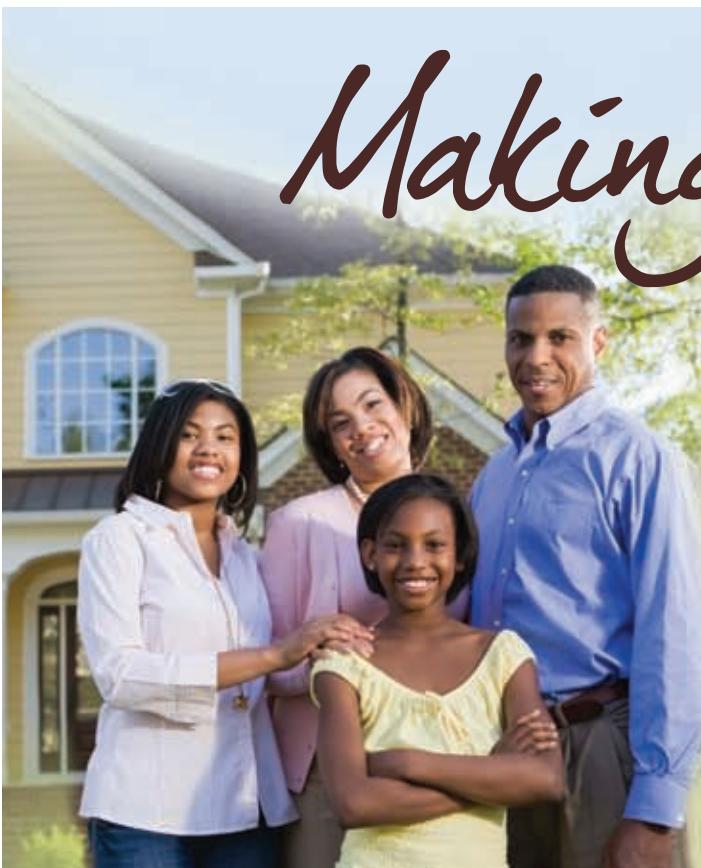
director of the Glenn School, says the children always look forward to the visit, where they learn from those who have had long lifetimes and many lessons to share. And the ladies on the second floor, who aren't as mobile or spry as they once were, enjoy the interactions too. They always learn something from the children, they say.

"I love to work with children," says Oliver. "That's my weakness."

Then she adds: "If God has let me live this long, he expects me to do something as long as I have my mind."

As for the children, "they liked the way the lady told the stories," says Holland. Their next question: when can we go back?
—Rhonda Mullen





Making Life Better

with Affordable Mortgages

Ask about discounted closing costs* for Emory employees.

Contact Adrian Farris today for details – call 404.486.4317 or go to afarris@emoryacu.com.

*Discount applied to origination fee.

 Federally insured by NCUA.



Editorial Advisory Board

Chair

RAY DINGLEDINE, MD

Professor and Chair of Pharmacology and Executive Associate Dean for Research

Ex officio chair

ROBERT GODDARD III, Chairman and CEO, Goddard Investment Group

Membership

KELLY CHASTEEEN, Administrative Nursing Supervisor, Budd Terrace, Wesley Woods Center

CHARLES CRAIG, President, Georgia Bio

LAURA HURT, RN, Director of Nursing Operations, Emory University Hospital Midtown

LUCKY JAIN, MD, Professor of Pediatrics, Emory

CLAIRE PERDUE JAMES, Philanthropist

MICHAEL M.E. JOHNS, Chancellor and Emeritus Executive VP for Health Affairs, Emory

JEFF KOPLAN, MD, MPH, Vice President, Global Health, and Director, Global Health Institute, Emory

SANDRA MACKEY, Executive Director, Marketing Strategy & Support, Emory Healthcare

KIMBERLY MANNING, Assistant Professor of Medicine, Emory

PAUL PENDERGRASS, Independent communications consultant, Typing Inc.

JULIE RALSTON, Director of Communications, Atlanta Regional Commission

WALKER RAY, MD, retired pediatrician, former president of the Emory Alumni Association, member of Campaign Emory School of Medicine Committee

BILL TODD, Executive Director for Health Care Initiatives, College of Management, Georgia Institute of Technology

To see your business here, advertise in *Emory Health*



If you have a business, service, or opportunity that you'd like to promote, an ad in *Emory Health* will enable you to reach an educated and affluent audience of 56,000 readers (including Emory donors and friends, visitors to our hospitals and clinics, community neighbors, the 18,000 employees of the Woodruff Health Sciences Center, and Emory health sciences alumni).

For more information and rates, visit whsc.emory.edu/advertising, or e-mail david.mcclurkin@emory.edu.



EMORY
UNIVERSITY

Emory University
Woodruff Health Sciences Center
1440 Clifton Road, 1st floor, 150M
Atlanta, Georgia 30322

Address Service Requested



NONPROFIT ORG
U.S. POSTAGE
PAID
EMORY
UNIVERSITY



Have a **plan.**



BETTY MARIE STEWART 52BSN marvels at the changes that have taken place since graduating from Emory's School of Nursing.

"Hardly a day goes by that I am not grateful for my nursing education at Emory. I consider including the Nell Hodgson Woodruff School of Nursing in my will an investment both in my alma mater and in the future of health care for all," she says.

"Nurses are assuming ever more expanding responsibilities today—leadership roles in clinical care, research, and teaching and, at Emory, always with the basic tenet that the patient is a person."

Learn how you can include Emory in your will. Call the Office of Gift Planning at 404.727.8875 or visit www.emory.edu/giftplanning.

Plan to invest in the future.



EMORY