His shoes were right where he had left them. The left one on the floorboard. The right still on the Hyundai’s gas pedal, which had been mashed to the floor when he passed out—the result of a concussion suffered earlier in the evening in a supposedly minor collision.

In a scene reminiscent of what Lawrence “JR” Black Jr. calls “cartoon physics,” his 6-foot, 2-and-a-half-inch frame had been shot out of his shoes at over 100 miles per hour, ripping out the steering column as he exploded through the car’s windshield, his mangled body slamming back to Earth some 90 feet away from the obliterated vehicle. The brutal impact after a brief moment of flight shattered 30 bones, tore his femoral artery and lacerated nearly every internal organ.

It was 3 a.m. on February 7, 2009, along an obscure, frozen part of Maryland Route 32.

And 26-year-old JR Black lay dying.

When people who have suffered traumatic injuries arrive at a trauma center, surgeons focus exclusively on the myriad physical issues that can kill the patient within minutes.

When looked at from that binary “lived/died” perspective, trauma survivorship has improved exponentially through the years—thanks in part to the lessons of war. The information gleaned from treating devastating battlefield injuries as far back as the Civil War has filtered back to civilian surgeons. Advances in technique, equipment, transportation and coordination of care in trauma centers have combined to the point where less than 10 percent of trauma victims who make it to a hospital die from their injuries.

Numbers like that have some experts now viewing trauma more as a chronic disease than a fatal illness. Or, put another way, the question is moving from, “Can trauma patients survive?” to “Can they thrive post-trauma?” Experts point to cancer, where major clinical and research developments over the last 20 years forced clinicians to redefine what they considered to be “positive” outcomes beyond mortality. In the world of cancer care, quality-of-life issues such as linking up with support groups, finding effective pain management and dealing with psychosocial adjustments are now common clinical conversations, all aimed at helping patients to enjoy productive, fulfilling lives post-treatment.

That’s a discussion that many trauma surgeons didn’t even realize they needed to have, until a public health researcher and her team spoke up in a voice too familiar and well-informed to ignore.

The stars told the young soldier he was still alive.

Just moments before, Ryan Christian Major had, under the cover of Iraqi darkness to avoid snipers, been darting through narrow streets of sand and stone. His platoon’s objective on that November evening in 2006: to eradicate a cell of bomb builders nearby. A small intersection loomed. Major took two steps into it.

And suddenly he was staring up at the heavens.

The remotely triggered improvised explosive device tore Major’s right leg from his body, hurling the rest of him over a 6-foot wall and into someone’s yard. Motionless from the neck down, Major never lost consciousness, and even tried to say his goodbyes. “Tell my mother and brother that I love them,” Major implored one of his buddies, who reacted in a way Major would later say was perfectly appropriate.

The soldier slapped Major’s face.

“Don’t put that on me!” growled his comrade, exhorting the gravely wounded soldier to stay conscious… and alive. “Tell ‘em yourself!”

Some four weeks, three continents and several hospitals later, Major would do just that, when he awoke from a drug-induced coma at Walter Reed Army Medical Center. After 19 blood transfusions, he was
When you get out of the hospital, “you have a lot of time alone with your thoughts and your ‘new’ body, looking different, covered in scars.”

—JR BLACK
stabilized and transported stateside, where he soon lost his other leg to an infection. Later, as he became conscious of his surroundings in Ward 68, there came the moment when the neck brace was removed and he could finally lift his head off the pillow. What he witnessed shattered him. “It wasn’t the pain that affected me,” Major says. “But seeing the amputation was like a stab to the heart.”

His legs gone above the knees, he thought of the man he was and despaired over the man he might be. He had defined himself through his body—the challenges it could meet, the sports it could play, the movement in which he gloried. But now? “How will I do that without my legs?” wondered Major, his mind asking the same question that hovered, like a shadow, over all the soldiers in Walter Reed facing a similar fate.

And who, if anyone, could show him the way back?

It could be a bad pun or karmic poetry. Either way, Ellen MacKenzie, PhD, is the first to admit she discovered trauma research quite by accident.

As a student in the 1970s, MacKenzie, a biostatistician by trade, was studying Susan Baker’s work. Baker, MPH ’68, a professor of Health Policy and Management (HPM) at the School, had developed the Injury Severity Score, or ISS, which would become the standard measurement for predicting injury mortality. MacKenzie wondered if similar scales might predict non-mortality outcomes such as the ability to perform everyday activities. Her advisor, pioneering public health researcher Sam Shapiro, told MacKenzie, “I’m sure there’s a lot of research out there.”

There wasn’t.

Shapiro, an HPM professor, quickly helped her secure a Robert Wood Johnson grant. Of such efforts careers are born, and, in the case of MacKenzie and colleagues, clinical practice changed. MacKenzie spent much of the ’80s burrowing into the world of trauma treatment. Her work focused on quantifying all aspects of trauma care, from the cost of treatment to how pre-existing disease affected the length of hospitalization.

But those findings were the end product of something far more important and lasting. MacKenzie’s true genius was building research partnerships with frontline trauma surgeons and other trauma-oriented physicians—so much so that she spent a sabbatical in 1995 at University of Maryland’s Shock Trauma Center.

“Here I was doing a lot of work in trauma, yet I’m not a clinician, I’m not a survivor, I’m a biostatistician,” says MacKenzie in explaining her choice for the yearlong sabbatical. “And so I wanted to spend time with trauma surgeons to learn what they do, to be closer to them. I went on rounds with them every morning, I sat through surgeries … I really became part of that family and got access to a lot of information and got a better feel for their work.”

MacKenzie realized that the high-pressure, high-volume work of trauma surgeons left them little time for research. They understood the importance of outcomes research but needed a colleague who could find the grants and carry out the work.

It wasn’t easy—trauma, despite being the fifth leading cause of death, has never had a Lance Armstrong-like celebrity spokesperson to raise awareness and funds. But MacKenzie was motivated. She recognized that trauma surgeons had the power to move the needle, if she could spur them into action. Her opportunity was a study that she and her colleagues called LEAP, as in the Lower Extremity Assessment Project. LEAP was one of the first multicenter trauma studies, featuring 601 patients drawn from eight Level I (highest-level) trauma centers. With no existing national consortium for trauma research, MacKenzie needed plenty of charm and persistence to organize some of the country’s top orthopedic surgeons to design and carry out the study.

LEAP’s ostensible goal was determining whether leg amputation or limb salvage provided the best functional outcomes. But, as MacKenzie notes, “there’s no way you could ethically do a randomized control trial, where some people would get their leg cut off and some wouldn’t, so we had to convince ourselves and others that doing an observational study with trauma centers that handled a lot of both patients would answer the question.”

Working with Carolinas Medical Center trauma surgeon Michael Bosse and orthopedic surgeons from seven other major U.S. trauma centers—as well as her own
Ellen MacKenzie's team defined post-trauma care's problems. Then they found solutions.

The study, which included asking trauma patients to self-assess how they were faring since their injury, found that barely half returned to work after two years. Some of their explanations for poor outcomes—poor social support networks, low self-confidence to resume life activities, pain, lingering mental health issues including depression, anxiety and post-traumatic stress disorder (PTSD)—could well be addressed in the clinical setting, but had not been. The result: needless suffering for trauma victims.

“We learned that there were elements of the patient’s assessment of the outcome that we weren’t really appreciating well as orthopedic surgeons,” says Andrew Pollak, MD, professor of Orthopaedics at the University of Maryland School of Medicine and chief of Orthopaedics at the R Adams Cowley Shock Trauma Center. “[We’ve] looked for years at whether the fracture healed as the primary outcome measure. There’s no question it has to heal, otherwise everything else fails. But there’s a lot about patient satisfaction that’s driven by something else”—notably treatment of psychosocial concerns.

Stephen Wegener, a psychologist in Johns Hopkins’ Physical Medicine and Rehabilitation Department, says LEAP was a case of the right messenger with the right message. He says trauma surgeons might have been less responsive to calls from mental health professionals to ramp up psychological services for trauma victims. Having that missive come instead from a recognized public health researcher deeply familiar with the demands and realities of trauma orthopedics proved far more effective.

Wegener, who began collaborating on several projects with MacKenzie post-LEAP, likens LEAP’s findings to identifying an infectious disease for which an effective treatment already exists. “The results of the study came at a critical time; the Institute of Medicine had just issued its report [“Crossing the Quality Chasm”] calling for patient-centered care focusing on the psychosocial needs of patients and families,” he says. “The psychological community had developed cognitive behavioral interventions that have potential benefit for the problems identified in LEAP. And there are interventions on the psychopharmacology side to work with PTSD, depression and pain.”

Ellen MacKenzie and her team had defined the problem. Now they had to deliver solutions.

**J.R. Black is healing, and he’s not alone.**

In the still room, his voice fills the air with a tale of pain and perspective. And ultimately, hope.

Seated around the conference table deep in a corner of University of Maryland’s downtown medical campus are five other trauma survivors. Their faces register recognition, and appreciation as well, as Black discusses his physical travails—the day and a half of surgery after he was helicoptered to Shock Trauma, the fog of the medically induced coma, the shocking realization that every one of his extremities had been broken, the exhausting physical therapy that took his right knee from a virtually useless 28-degree range of motion to a nearly normal 123 degrees. His terrible thirst, unquenched for days because ventilators and liquids simply don’t mix. As he shares his story, heads bob emphatically around the table. They’ve all been there, done that.

“I was ready to jump the guy watering the plants,” recalls one of Black’s young tablemates, whose body was decimated in a motorcycle crash. The line elicits a huge laugh from everyone including Black, but the room quickly turns somber again as he hits upon a universal truth for the assembled.

“I had some dark times after I got out of the hospital,” Black tells his fellow survivors. “They don’t tell you the easy part is when you’re in the hospital. When I got out and was home, you have a lot of time alone with your thoughts and your ‘new’ body, looking different, covered in scars. There’s something that plays on your mind. It’s hard to have open wounds for such a long time. You feel like a leper.”

For Black and the others around the table, sharing and overcoming those feelings is part of what the Trauma Survivors Network (TSN), which organized the meeting, is all about. MacKenzie’s team helped the American Trauma Society (ATS) develop
Doctors told her she might not make it, but Nicole Lawrence was in class eight weeks later.
and launch TSN in 2006. From 2006 to 2009, MacKenzie was ATS president.

A CDC grant is allowing MacKenzie to evaluate TSN’s implementation at the Shock Trauma Center. At its core, TSN connects survivors and their families with those who’ve suffered similar fates, providing support along with resources so trauma victims can rebuild their lives.

A vital aspect of TSN is called “NextSteps.” The self-management program grew from a similar amputee-targeted program called PALS (“Promoting Amputee Life Skills”) that MacKenzie developed with Wegener. The programs share a belief that patients are the central players in their recovery, which can be enhanced by learning self-management skills. LEAP found that greater self-confidence is a major predictor of good outcomes; PALS and NextSteps are designed to teach participants how to take charge of their lives and their recovery.

A randomized trial showed that the eight-week PALS self-management program—which educates patients about their condition and allows them to track their symptoms and progress—reduced depression and improved function and outlook for those who received the training, with an important caveat: timing. “We found that patients who were less than a year out from losing their limb did significantly better than those who started the program much later,” says MacKenzie’s PhD student, Anna Bradford, who, along with his stepdaughter and fiancée, was severely injured in a head-on crash in June 2009. His injuries required more than 15 surgeries.

“I was at enough of a level of consciousness when I was there that it would have been extremely helpful,” says Mutchler. “I’d go so far as to say I wouldn’t even make it an option; I’d require that a psychiatrist come down to talk with a patient, even if it’s just for five minutes, to determine what type of help you might need. Because everyone who goes through this needs something.”

The Trauma Survivors Network may be that first step. MacKenzie’s team is now studying its impact on outcomes, especially TSN’s use of support groups, self-management programs and peer counseling. MacKenzie’s research assistant, Anna Bradford, says those data are vital. As a social worker, Bradford established and ran a trauma support and peer visitation group at Inova Fairfax Hospital for 15 years. Called “Rebuild,” it was a TSN-like precursor, and part of Bradford’s efforts included selling other area hospitals on incorporating the program.

“My gut said everything I saw was making a difference, but I didn’t have any data at all,” says Bradford. “So I’d go around to these various hospitals, tell them about the support work, and they’d say, ‘Oh, what a cool program. Tell me a little bit more about the research.’ And I’d go, ‘Excuse me?’ That’s why I went back to school, and that’s where Ellen comes in.”

Bradford is hoping the data will bear out what survivors like JR Black already know—that the opportunity to join with others in the trauma community will further healing. At the very least, says Black, such support could keep others from making the same seat-of-the-pants mistakes he made during his recovery—such as suddenly stopping his narcotic pain meds because of the side effects.

“I had been home a few months, and I decided I was going to stop ‘cold turkey’ and not tell anybody. Just sticking the medications in a tissue and hiding it in the recliner. I was in because I couldn’t sleep in a bed then,” says Black, who was recovering at his parents’ Hagerstown home. “That was the worst month and a half of my life. It was July, 90 degrees out, and I was sweating, then freezing, and depressed, constant mood changes, no one to talk to. It was nighttime and I couldn’t sleep, and the nerve pain was tingling so bad it kept me awake, screaming in the middle of the night.”

Despite the agony, Black, unaware that he was suffering from PTSD, did not seek support from any outside source. He did begin to seek help—taking a step he calls “smart” for its time—his wife and parents, a friend who worked as a social worker, and his own stateajar family, and through them to friends and neighbors from whom he learned of the TSN’s existence.

“Rebuild” may be the first of its kind of a trauma support program but it was such support could keep others from making the same seat-of-the-pants mistakes he made during his recovery—such as suddenly stopping his narcotic pain meds because of the side effects.

Experiences like these gave Black, a longtime professional musician, the desire to become a volunteer recovery coach, someone who could reach out and counsel newly injured trauma victims. That’s a desire shared by everyone sitting around the table with Black. They’re all taking part in TSN’s volunteer peer-to-peer training, their freshly minted ID badges a symbol that Shock Trauma values the input these survivors will soon be giving to its patients.

Black has already sensed the good that can come out of sharing something so awful.

Sitting across from him is 19-year-old Nicole Lawrence, a Penn State University student who nearly lost her life last November when the car she was riding in with four
other students was struck by a speeding vehicle near campus. The accident ejected one young woman from the car; Lawrence was pinned in the car for nearly a half hour, all the time tending to her unconscious friend who lay at her side. That friend would later die, and Lawrence struggles to this day over why she somehow survived, despite being seated directly at the point of impact. Black visited Lawrence while she was in Shock Trauma.

Looking her in the eye now, he tells the room, “I did go see Nicole in November. I remember you had a really good attitude. I remember thinking when I saw her, she’s going to be fine. She was really upbeat when I saw her. You can tell the people that are going to be fine within a couple of minutes of talking to them.”

He was right: Despite her ongoing struggles with PTSD and reconstructive surgeries, Lawrence returned to Penn State in just over two months. “Here were doctors telling me eight weeks before that I might not make it, and here I was eight weeks later in class,” she tells Black and the others with tears in her eyes. “That was a miracle.”

It’s those little miracles that have given Black faith—both in himself and others. In the 18 months since his wreck, he’s worked his way from wheelchair, to walker, to cane, to a 28-year-old’s familiar “What, me worry?” gait. Along the way, supportive medical professionals changed his world view. “When you go through trauma, so many people have to help you to get you back to where you are. Countless numbers,” he tells the group. “Before this happened to me, I was doing music, maybe it was the type of people you deal with in the entertainment business, but you get so cynical and bitter that everyone’s in it for themselves. I had no faith in people. But after this, I saw there really were good people, all the doctors and nurses and therapists. I wanted to be like that.”

In the TSN peer program that MacKenzie helped develop, Black has found his outlet, a way to bond with others and take fear out of an incredibly frightful journey. While music will always be a part of his life—he continues as a songwriter, even
I’m a young guy with a lot to live for.”

“I chose to push forward with my life. And through is often missing in civilian treatment is MacKenzie’s team. That close follow-through is often missing in civilian treatment, where patients move quickly from highly structured acute care facilities to the home setting, frequently without getting proper physical and psychosocial rehabilitation. MacKenzie’s team will examine the effectiveness of rehabilitation in both the civilian and military settings as part of a new cooperative agreement with the Department of Defense (DoD).

Last September, they received an $18.4 million grant from DoD to establish the Major Extremity Trauma Research Consortium (METRC) and address pressing issues in the initial care of patients with serious limb injuries. An additional $43.5 million award has been recommended for funding this fall. It will be used to expand METRC and address other priority topics in acute care and rehabilitation of trauma patients injured at home or in combat.

METRC will conduct research at more than 24 civilian trauma centers, as well as the four military treatment centers caring for the majority of service members injured in the line of duty, says MacKenzie. The data will be coordinated through and analyzed by MacKenzie’s group, which is also helping to design the clinical studies.

“The initial studies include randomized control trials looking at promoting fracture healing and preventing major complications like deep infection and compartment syndrome [severe muscle swelling],” she says. “We will also be looking at long-term rehab issues. We’re proposing a trauma collaborative care intervention, a multimodal approach that addresses the needs of trauma patients as they transition back to the home and community. The intervention combines the TSN’s services, including NextSteps, adds training providers to promote TSN use, and makes available a ‘recovery coach’ who advocates for the patient and links them to services after they leave the trauma center.”

MacKenzie’s colleague from the LEAP study, Michael Bosse, chairs the consortium. A retired U.S. Navy captain, Bosse, the director of Orthopedic Clinical Research at Charlotte’s Carolinas Medical Center, notes that the cost of the research is high, but small compared to the economic loss from severe trauma injuries.

“Look at the disability rates; you take a guy in his 20s who gets a severe leg fracture. You don’t achieve maximum outcome because you don’t know what the gaps are, psychosocially or physiologically. So for the next 40 or 50 years the patient is disabled and on the public’s payroll because we failed to do as much as we could up front,” says the veteran trauma surgeon. “Those are the tremendous opportunities here regarding care of these patients.”

“It’s a very exciting moment for this field,” agrees Renan Castillo, PhD ’08, MS, an HPM assistant professor and MacKenzie’s deputy director on the project. “These studies are going to, hopefully, answer big questions. It’s not unreasonable to speculate that the METRC studies, like the LEAP study, that was designed to answer one question but ended up providing data for a number of other questions, will lay the foundation for additional studies. Ellen has shown she can bring the clinicians together, and has already successfully built networks like METRC. When you think of Ellen, you think of someone who can get it done.”

That’s the kind of mindset a soldier like Ryan Major can appreciate. One day removed from his first kayaking expedition on the Potomac, he’s a man in motion. The knowledge and care of his clinicians and therapists have him in a new pair of short prostheses without knee joints (“stubbies,” he laughs), and if he adjusts well to them, the next step is... a real step, in full-length prosthetic legs.

Mentally, he says he’s already adjusted. When asked if he’s in a good mindset, his youthful voice is strong and unwavering. “Most definitely. I chose to push forward and get on with my life. I’m a young guy with a lot to live for—family, friends and things I dream of doing...”
Turn on the television. There it is—voluptuously plump, dripping with juice, beckoning you to take a bite.

Walk through the mall. There it is again, this time in a different incarnation: Aromas of sweet and savory waft your way, caress your olfactory receptors and lure you toward their source.

Drive through town. It appears yet again, now in the form of fast-food restaurants that promise you a quick fix to your hunger, thirst or boredom.

“It” is everywhere—at the mall, in the workplace, on TV and the Internet. We’re surrounded by an intoxicating surfeit of food that is cheap, calorie-laden and easy to prepare or obtain. Our “obesogenic environment” promotes a single theme: Eat. Drink. Consume.

The effects are obvious: Two-thirds of American adults are overweight or obese. Obesity among American children has more than tripled in the past 30 years. And chronic diseases associated with obesity are rising.

In response to this health crisis, Bloomberg School researchers are pursuing a broad range of strategies aimed at changing our social, cultural and physical landscape. Their goal: Paint a new canvas that encourages healthy eating and physical activity.
Change the food system
Try this: Walk into a grocery store with $20. With half your money, purchase packaged foods and snacks (macaroni and cheese in a box, cookies, chips). With the other half, buy fruits and vegetables. Then calculate the calories in each set of purchases.

Chances are, your processed food dollars will buy you many times more calories, and far more of them will come in the form of fat and sugar, says Robert Lawrence, who credits Hopkins anthropologist Sid Mintz for the idea behind this thought experiment.

Our agriculture system makes producing fat and sugar relatively inexpensive, notes Lawrence, MD, director of the School’s Center for a Livable Future (CLF). “We have a food industry that is scientifically designed to addict us to a combination of fat, sugar and sodium as high as it can be in calories,” he says.

The solution: Change the system. Admittedly no small task, says Lawrence, the Center for a Livable Future Professor. He says he’d start with the Farm Bill. Many of his colleagues in health policy and nutrition agree.

The omnibus bill governing much of the nation’s agriculture and food policy is currently at $284 billion, and large portions of that funding support select agriculture sectors. In 2009, corn producers received $3.9 billion, soybean producers $1.7 billion, and wheat producers $2.2 billion.

Such funding may indirectly fuel the obesity epidemic, says Roni Neff, CLF research and policy director. Corn, for example, is cheap to produce, and therefore so is high-fructose corn syrup, the sweetener in most sodas. And increased soda consumption is a leading suspect in the search for culprits fueling the obesity epidemic.

In addition, farm policy encourages overproduction, notes Neff, PhD ’06, MSc. American farmers produce almost 4,000 calories per person per day. “So there are profits to be made from convincing us to eat as much as possible of this surfeit,” she says.

She and Lawrence say they’d like to shift that balance, so that more financial incentives go toward producing a healthy food...
is expected to come up for a vote in 2012. “There is more public health interest in the Farm Bill than ever before,” says Neff.

Adds Lawrence, “We are starting to demonstrate a connection between a universal health problem and our food supply.”

Share the power to change

On a steamy hot August afternoon, several thirsty teenagers walk into a West Baltimore corner store and head to the refrigerators, where cold soda, juice drink and water await. As they open the refrigerator doors, they may—or may not—notice the fluorescent sign above: DID YOU KNOW THAT WORKING OFF A BOTTLE OF SODA OR FRUIT JUICE TAKES 50 MINUTES OF RUNNING?

Many people apparently do not know, says Sara Bleich, an assistant professor in Health Policy and Management. But she is testing the idea that such nutritional information can persuade consumers, specifically teenagers, to cut down on the number of empty calories they consume.

Bleich, PhD, admits that changing people’s behavior is a huge challenge, one made especially difficult given the marketing competition. Of the many billions of dollars spent on food advertising, almost 70 percent goes toward promoting convenience foods, candy, snacks, soft drinks, alcoholic beverages and desserts, according to one assessment, while ads for fruits and vegetables, grains or beans account for only 2 percent. Plus, in corner stores a can of soda costs as little as 60 cents, while a bottle of water is usually a dollar or more.

Studies examining the persuasive power of information on food choices have shown mixed results. For instance, a report on a two-year-old New York City law requiring that franchise restaurants post calorie counts of their foods concluded that the law had no effect on the number of calories consumers purchased. A second study, however, showed that calories purchased did decline at one specific category of restaurants: coffee shops.

In her study, Bleich and graduate student Desmond Flagg are targeting teenagers in a largely African-American neighborhood. Obesity among African-American teens is 25 percent. The success of her information campaign could depend upon the type of information conveyed. In their study, Bleich and Flagg are comparing different messages about sweetened drinks.

In addition to the poster about running, other signs point out how many calories a bottle of soda or fruit juice has or what percentage of one’s daily recommended calories it contains. Flagg, a C. Sylvia and Eddie C. Brown Community Health Scholar, posts a sign and then records the beverages that teenagers purchase. At the end of the study, he and Bleich will compare the results for the different signs.

Targeting sweet drinks is a tactical choice, says Bleich. These beverages are laden with sugar and calories. A 12-ounce bottle of cola, for instance, contains the equivalent of about 10 teaspoons of sugar. And sweetened drinks (mainly soda) make up 16 percent of the calories teens consume, says Bleich. “So if you can pull that out of the diet, it can have a big impact.”

Look outside the U.S. for models of success

It’s lunchtime in a Barcelona school. Instead of pulling sandwiches and chips from paper lunch bags, these children are cooking lunch themselves (under a teacher’s supervision), using fresh vegetables they just selected during a trip to the market.

Once they’ve finished their preparations, the children will be able to savor their lunches. In Barcelona, as in much of Europe, children have 90 minutes to eat. Contrast that with many U.S. schools, where the first lunch wave may roll into the cafeteria at 10:30 a.m., and students have only 20 minutes to bolt their meal.

“In 20 minutes, you can’t even find out what you ate. You need time to enjoy the flavors and to recognize what you’re eating,” says Benjamin Caballero, professor of International Health and founder of the School’s Center for Human Nutrition. When kids can eat at a more leisurely pace, and if they can also help select and prepare their food, he says, “they appreciate it more and they care more about it”—which might translate into healthier eating.

supply, including support for farms that grow a mix of foods, such as grains, fruits and vegetables. Farm policies might also address the overproduction issue by promoting conservation and assuring farmers a more stable living, thus reducing their need to maximize production.

Neff and others at the CLF are dissecting the different streams of funding in the Farm Bill to see where each goes—toward fruit and vegetable production, meat production, sustainable agriculture, etc. They are also developing a set of policy briefs describing how various parts of the bill affect public health and are working to develop farm policies that would better support public health. Preliminary hearings have begun on the current round of the Farm Bill, which
Caballero, MD, PhD, has visited Barcelona schools during lunchtime and observed child chefs preparing their meals. While the government-sponsored program does not specifically target obesity, it is one example of an initiative abroad that might hold lessons for the U.S. in battling its own obesity epidemic, he says.

Another program, Agita Sao Paulo, was introduced in that city in 1996 to encourage Sao Paulo’s then-10 million residents to engage in 30 minutes of physical activity every day. Promoting movement in all sorts of venues, from city squares to bus stops, the program espouses the idea that even moderate exercise benefits health. As studies demonstrated Agita’s dramatic success, cities throughout Brazil adopted the plan, and now the WHO has launched its own “Move for Health” program.

And in China, Bloomberg School nutritional epidemiologist Youfa Wang, MD, PhD, MS, is developing an intervention that will use the Internet and cell phones to transmit messages about healthy eating. The project, still in the early planning stages, will involve about 200 middle school students and their parents.

Clearly, not every strategy tried elsewhere will work in the U.S., and for a program to succeed, its designers must understand the constraints, such as tight budgets. American schools, for example, are stretched for funds and time, but Caballero says they might consolidate various health-related curricula and make nutrition education an important component. “We need to prioritize health,” he says. “What is the long-term legacy of school? It’s not just passing tests.”

Work it out in the workplace

Boxes of doughnuts on the counter. Pastries and chips in the vending machines. Bacon, eggs and soda in the refrigerator. That’s the “food environment” Stephan Cox typically finds when he walks through the Bel Air, Maryland, firehouse where he’s volunteered since 1968.

For Cox, whose day job is serving as regional fire chief for the Navy Mid-Atlantic Region, it was a recipe for obesity and poor health. As of last fall, he was significantly overweight, on medication for high blood pressure and elevated cholesterol, and was borderline diabetic. So when he heard about a Bloomberg School project aimed at reducing cardiac risk factors among volunteer firefighters, he was keenly interested.

Heart attacks are the number one cause of on-duty deaths among firefighters, says Keshia Pollack, PhD ’06, MPH, an assistant professor of Health Policy and Management who is directing the study. The three-year project, conducted in collaboration with the National Volunteer Fire Council, is sponsored by an Assistance to Firefighters Grant through the Federal Emergency Management Agency.

Dozens of other interventions and studies aimed at reducing obesity have been tested in various workplaces, says Pollack, and some have shown promising results. “It is important for a person to learn how to be healthy while at work since we spend so many of our waking hours at work,” says Pollack. Her ideal workplace would have vending machines that sell water and healthy snacks, bike racks, on-site gyms and opportunities for employees to take breaks for short walks.

Pollack is currently exploring several strategies for improving the food environment at the firehouses in her study. One is a Farms-to-Firehouses program, in which vegetable farms located near the firehouses would deliver fresh produce directly to the stations. As part of the plan, Pollack envisions nutrition and cooking classes to help participants learn how to prepare healthy dishes with the produce they receive.

She and Lawrence Cheskin, MD, director of the Johns Hopkins Weight Management Center, and two other co-investigators have also recruited volunteers among the firefighter leadership to serve as role models. Cox was their first recruit. Under Cheskin’s guidance, he’s improved his diet and increased his daily exercise routine. The changes weren’t radical, notes Cox, but they were enough to make a difference. One year in, he’s 40 pounds lighter and no longer needs medication for his blood pressure or cholesterol. He hopes his story will inspire others.

Already, says Cox, people seem to be listening. “It’s not all that uncommon that I’ll walk into a fire station, and someone will say, ‘Hey, chief, you’re slimming down really good.’ And that feels good.”

Ease the nutrition transition

This past July, a large barge set sail from the Brazilian town of Belem carrying a cargo of candy, ice cream, juices and other products bearing the Nestlé brand. The barge—or “floating supermarket,” as Nestlé termed it—was scheduled to travel to 18 small cities to market Nestlé products to 800,000 new customers who previously had no access to such items.

In a press release, Nestlé Brazil CEO Ivan Zurita called the venture “a service to the population of the Amazon, who has streets and avenues in the form of rivers.”

But as a nutritionist, Benjamin Caballero calls the plan a disservice. “It’s predatory capitalism,” says the professor of International Health. Since the people in the region...
have not been exposed to the packaged foods that characterize the Western diet, he notes, Nestlé’s outreach could contribute to obesity and instigate the first stage of a pattern called the “nutrition transition.”

The nutrition transition is a shift in a population’s eating patterns and lifestyle that occurs as countries become more prosperous. Industrialization and economic growth generally usher in Westernized foods and habits—more fat, sugar and processed foods, and a more sedentary lifestyle.

All of these changes fuel obesity, says Caballero, who co-edited a book with Barry Popkin called *The Nutrition Transition, Diet and Disease in the Developing World*. Doctors and public health officials are concerned because as obesity climbs, so do its companion chronic diseases, such as high blood pressure, diabetes, stroke and heart disease.

In some countries experiencing rapid development, the impact is especially severe. Eight of the 10 countries with the fastest rising obesity rates are developing nations or newly industrialized, notes Caballero. For example, in China, Mexico, Thailand, Brazil and Morocco, obesity is increasing more rapidly than it is in the U.S. Paradoxically, several countries, such as Bangladesh, still struggling with high rates of malnutrition, are at the same time experiencing rising rates of obesity and chronic diseases associated with an unhealthy diet and inactive lifestyle. Worldwide, 60 percent of deaths are now attributed to chronic diseases (such as heart disease, diabetes and cancer) associated with obesity and lack of physical activity.

What can be done?

For one thing, Caballero would like to see companies such as Nestlé take a step back and assess what people in remote regions truly need. Perhaps it’s housing or education rather than candy. A scholarship with the Nestlé imprimatur would benefit local people while still promoting the company’s name, he notes.

Caballero would also like governments to get behind international efforts to promote a healthy diet and physical activity, such as a WHO endeavor called the Global Strategy on Diet, Physical Activity and Health. The strategy calls for nations and the private sector to support food and agriculture policies, marketing plans and education campaigns that encourage healthy eating and promote physical activity. It supports limiting sugar, fat and salt in the diet, and increasing the consumption of fruits, vegetables, whole grains and nuts.

There is a glimmer of good news: Some of the nations now struggling with a relatively new obesity epidemic are starting to address the problem, notes Caballero. Mexico, for example, has implemented a comprehensive program that combines efforts to attack poverty and curtail obesity.

**Zone for health**

In theory, it makes perfect sense: If people live in a place where it is safe to walk, jog or skateboard; if they have parks and playgrounds nearby, they’ll be more active. Plus, if they live far from clusters of fast food restaurants and close to fully stocked grocery stores and farmers markets, they’ll eat a healthier diet. Overall, their “built environment” will be more conducive to health.

Some communities have embraced that philosophy, and are starting to adjust zoning regulations with public health in mind. However, there’s little data to show precisely what type of zoning would most effectively promote health, notes Brian Schwartz, MD, MS, professor of Environmental Health Sciences and co-director of the Program on Global Sustainability and Health.

To find some answers, Schwartz is conducting an exhaustive epidemiological study of the built environment and its impact on health. Working with the Geisinger Health 
System, he gathered a trove of data about the built and social environments in a large swath of central and northeastern Pennsylvania—data that include detailed information on food, physical activity, land use and social environments.

He then “geo-coded” about 50,000 children enrolled in the Geisinger Health System—that is, mapped each child to a specific latitude/longitude location, and then overlaid information about the children’s health status (specifically, their body mass index, or BMI) on top of the environmental data. The study is ongoing, notes Schwartz. But his preliminary results suggest that the built environment does influence BMI, and that effect appears to vary depending on age.

For instance, living in densely populated neighborhoods is associated with a lower BMI in teenagers—but not in elementary and middle schoolers. Schwartz’s interpretation? “Population density is a surrogate for compact development,” he says. In such a community, schools, shops, recreation centers are more accessible and within walking distance for teens. But younger children are often not allowed the same freedom to traverse their neighborhoods. Other factors were associated with lower BMIs in this age group. For example, middle school children in neighborhoods that had a higher diversity of physical activity options had lower BMIs, Schwartz notes.

Meanwhile, in a separate project, researcher Keshia Pollack is focusing on one specific element of the built environment—the route to school. She has been documenting in detail the environment children encounter as they walk from their homes to six elementary schools in different parts of Baltimore. Walking to school affords a child a chance to exercise and burn calories. Research shows that young walkers are more physically active than those who travel to school by car. That route also reflects the safety of a child’s neighborhood overall. If streets, parks and playgrounds aren’t safe, then parents want to keep their kids indoors, and those children will be less physically active. Unfortunately, says Pollack, “some of these children are walking to school in the most hazardous neighborhoods.”

Pollack is quantifying those risks. She is gathering data on various parameters that may affect children’s safety as they walk to school—such as the number of abandoned homes along the route, and statistics on crimes committed in the vicinity, particularly near playgrounds.

Her findings, says Pollack, “are an opportunity to introduce some science into zoning decisions.” Baltimore City, for example, is currently revising its zoning code. Some proposed changes, such as additional speed bumps, sidewalks and pedestrian signals—or even police patrols at strategic locations—could make the path to school safer and encourage kids to walk more.

If there is a common theme voiced by scientists seeking ways to curb obesity, it’s that there is no single strategy for fixing our obesogenic environment. Change will require strategies on multiple fronts.

There is at least one sign that such efforts are starting to succeed: National survey data show that childhood obesity rates have started to level off in the U.S. and some other countries. It’s not yet time to claim victory, however, says International Health associate professor Youfa Wang. He’s taken a closer look at the U.S. data and has a more nuanced interpretation of what they reveal. “The decline is really mainly among young children, ages 2 to 5,” says Wang.

If the decline is real, it’s encouraging news. But the experts are unanimous that vigorous efforts are still urgently needed to inspire healthy eating and exercise habits.
Assault on the System

Decades of meticulous science proved that a low-sodium diet could reduce your blood pressure.

Now comes the tricky part: extracting salt from the food supply.
Decades of meticulous science proved that a low-sodium diet could reduce your blood pressure. Now comes the tricky part: extracting salt from the food supply.
**Blood Pressure Basics**

Blood pressure is measured in millimeters of mercury (mm Hg). A blood pressure reading of “120 over 80”—considered normal—means that the pressure peak when the heart beats (systolic) is 120 mm Hg, and the pressure trough (diastolic) is 80 mm Hg. Hypertension is defined as 140/90 or above, but any reading above 120/80 is believed to bring an added risk of cardiovascular disease, stroke and kidney disease.

—JS

**Danger in a World of Plenty**

In 1990, Chinese-born physician Jiang He approached Johns Hopkins’ School of Public Health with a remarkable story.

For several years, he had been traveling to the remote mountains of southwestern China to study the Yi people, an ethnic minority for whom hypertension—very common elsewhere—was almost unknown. “The mean blood pressure for Yi farmers in their 60s was close to the mean for Yi farmers in their 20s,” He remembers. The young researcher was invited to the School to complete his PhD, and produced a series of papers on the Yi, with epidemiologist Paul Whelton, MD, MSc, and then junior faculty member Michael J. Klag, MD, MPH ’87.

The Yi were one of the extended tribes that in effect had been chased into the mountains 2,000 years before by the dominant Han ethnic group. In modern times, they had continued to live their traditional lifestyle, and as He had found, their diet was very low in sodium. He and his colleagues at Johns Hopkins subsequently compared the Yi farmers’ blood pressures and sodium intakes—measured by collecting urine from subjects for a sample 24-hour period—with those of Yi migrants to lowland cities. It turned out that the Yi migrants, after exposure to a more modern, urban lifestyle, had begun to consume sodium and develop hypertension at rates like those seen for other Chinese.

“This Yi migrant study influenced my career,” says Klag, now dean of the Bloomberg School. “It strongly suggested that our high rates of hypertension come from a real mismatch between how we evolved and how we live today.”

For nearly all of the period in which modern humans evolved, sodium intake had been a small fraction—on the order of 100 mg daily—of what it now averages in modern diets. Only in the past few hundred generations (or past few generations, for some) had salt been used as a flavor enhancer and preservative. As for so many other things in modern life, a strong pleasure-sense that had evolved to steer us toward a scarce necessity modern life, a strong pleasure-sense that had evolved to steer us toward a scarce necessity evolved to steer us toward a scarce necessity.
Convincing Evidence
Sodium is one of the essential elements used by cells, and its concentration in the human bloodstream is meant to be kept within a narrow range. When excess dietary salt enters the blood, more water is drawn into the bloodstream to compensate—which is why a salty meal is apt to make us thirsty. This increase in blood volume tends to raise blood pressure, especially for those whose blood vessels are less flexible. The kidneys can push blood pressure down again by filtering excess sodium from the bloodstream and excreting it via urine, but kidney function also tends to decline with age—and with hypertension—so that a chronic salt overload may trigger a vicious cycle of declining kidney function leading to rising blood pressure and further declines in kidney function.

Hundreds of experiments in humans and lab animals have confirmed that excess sodium intake is apt to raise blood pressure. Studies of pre-modern cultures such as the Yi have shown that low-sodium diets tend to be associated with low rates of hypertension. Studies of modern populations and patients also have concluded that hypertension is a major risk factor for cardiovascular disease, strokes and kidney disease—three leading causes of death in the Western world. Epidemiologists have estimated that even a slight downward shift in Americans’ blood pressures, especially for those near or above the hypertension limit, would reduce these disease risks enough to prevent at least tens of thousands of deaths annually.

Why, then, has it taken so long for policymakers to consider restricting sodium’s presence in the food supply?

One reason is that the medical profession hasn’t always approached it as a public health problem. “Early on, there was more of an emphasis on treating people who have heart disease, for example, and then there was the idea of treating people who have risk factors for heart disease, such as hypertension,” says Appel. “Only recently have we started to think in terms of preventing hypertension in the first place, using population-wide public health strategies.”

And only recently has there been the convincing evidence needed to justify a pub-
lic health approach. Population-comparison studies, for example, showed an association between a low sodium intake and a low rate of hypertension, but they couldn’t untangle the effects of other dietary and lifestyle factors. To justify a strong sodium-lowering public health campaign, large-scale clinical trials of sodium reduction were needed. The three most prominent of these trials were all conducted from the late 1980s to the early 2000s.

The first was set up by Whelton with NIH funding in 1986, and included Klag and Appel, then a postdoctoral fellow. It was known as TOHP (for “Trials of Hypertension Prevention”) and among other things, it indicated that for a group of people with moderately high blood pressure, even a slight reduction in their average pressure, via a reduced sodium intake, could markedly reduce the number of cases of hypertension.

A second study, known as TONE (“Trial of Nonpharmacologic interventions in the Elderly”), was set up by Whelton in the early 1990s, and included a sodium-reduction study designed by Whelton and Appel. It found that in several hundred elderly people, a one-third reduction in normal salt intake per day lowered blood pressure readings by 4-5 millimeters of mercury on average, compared to a control group. The improvement was sustained over 30 months and included a sizable drop in the relative occurrence of bad outcomes, such as cardiovascular problems or having to resume medication.

Then in the late 1990s came the “DASH-Sodium Trial” (“Dietary Approaches to Stop Hypertension-Sodium Trial”). Appel served as one of its lead investigators. The study showed clearly that for people with higher-than-normal blood pressure or outright hypertension, moderate or strong reductions in sodium intake brought about correspondingly moderate or strong reductions in blood pressure—whether their diet emphasized fruits and vegetables or the meatier and fattier offerings typically found on America’s tables.

“That turned out to be one of the most persuasive studies of sodium and blood pressure,” says Appel, “because it showed a clear dose-response effect in which greater sodium reduction led to greater blood pressure reduction.”

“The DASH diet studies that Larry Appel and others conducted were really the tipping point for a lot of people, in terms of justifying a more aggressive public policy on this issue,” says Daniel Jones, MD, a prominent hypertension researcher who is now chancellor of the University of Mississippi.

From Science to Policy

More recent studies have continued to highlight the threat posed by too much salt in our diets, and the need for a strong preventive approach. “The evidence now suggests that if your blood pressure goes up, you’ve already started to incur organ damage,” says Anderson. “If you wait till age 50 or 60 to get treatment, irreversible damage may have set in.”

Skeptics have expressed concerns that a steep and sudden reduction in sodium in the food supply could end up having adverse effects. But even the ambitious 20 percent reduction targeted by NSRI would be gradual and would take us back to the still-excessive levels of the 1970s. “The idea that harm would come from this level of sodium reduction is a myth,” says Appel.

“As far as I and many other public health officials are concerned, the necessary science on this has been done,” says Sonia Angell, MD, a New York City Health Department official who helped set up NSRI, and also sat on the recent IOM sodium-reduction panel. “The World Health Organization, the American Medical Association, the American Heart Association and the U.S. government in their Dietary Guidelines for Americans all have concluded that there’s too much salt in the diet. So I think the challenge that we face now is how to move it out of our food supply.”

Small-scale studies have shown that the sodium content of many processed foods can be reduced gradually without making diners reach for their saltshakers. And a number of countries, including Finland and the UK, have already found that sodium-reduction programs can work at the population level.

The UK’s effort began in 2003 and includes progressively tightened targets for sodium reductions by the UK food and restaurant industry. The initiative is voluntary but is clearly backed by the possibility of formal regulations. Its overall goal is to reduce the UK population’s average daily sodium intake to 2,400 mg. Dozens of UK food companies are on board, the average sodium content in many food categories has dropped sharply, and the average UK intake has fallen by 10 percent from 2001.
“The UK’s model in particular demonstrated to us that there was an effective way to approach this,” says Angell.

As of this April, NSRI had obtained sodium-reduction pledges from 16 U.S.-based food and restaurant companies, including Heinz, Goya, Subway, Starbucks and Kraft. Like the UK initiative, NSRI specifies maximum average sodium levels for different categories of processed foods and restaurant foods. There is an initial set of targets to be met by 2012, and a tighter set for 2014. Kraft, for example, has pledged to meet the specified 2012 targets in half of NSRI categories that cover its foods, including a 17 percent reduction in sodium for its Oscar Mayer bologna.

NSRI aims for an overall 25 percent cut in sodium in America’s processed and restaurant foods by 2014, which, if achieved, should cut Americans’ overall sodium intake by about 20 percent. But for many products, meaningful sodium reductions will reduce palatability and/or shelf life, which could make it hard for companies to comply voluntarily. While the IOM panel encouraged voluntary-based initiatives such as NSRI, its primary recommendation was that “the FDA should expeditiously initiate a process to set mandatory national standards for the sodium content of foods.”

FDA action could be years away, but the prospect of formal regulation, plus the scientific evidence that now links excess sodium to tens of thousands of excess annual deaths, has gotten the attention of the food industry. Most of the companies that signed up for NSRI had already been gradually and quietly reducing the sodium in their products.

That’s also the case for companies that haven’t joined NSRI. Campbell’s Soup Company, for example, claims to have reduced the sodium load in its original V8 juice by a third since 2002. During the IOM panel’s deliberations, says Anderson, “a representative of one of the fast-food chains gave a talk, and said that on their own they’d already cut the salt by about 70 percent in one of their menu items—and no one even noticed.”

“Some in the food industry have dug in their heels on this, but most have been moving in the right direction,” says Appel. “They want to stay ahead of the curve.”
Last year, 128 infants died in Baltimore City. Those deaths translate to a 2009 mortality rate of 13.5 deaths per 1,000 live births—a rate more commonly seen in a developing nation, not a city that’s home to Johns Hopkins Hospital and almost a dozen other major medical facilities.

Baltimore’s tragic deaths reflect faltering national efforts to continue reducing infant mortality, particularly in disadvantaged communities. “From ages 1 to 5, our mortality rate really isn’t very different from other countries,” says Bernard Guyer, the Zanvyl Krieger Professor of Children’s Health. “Our big problem is that, compared to [other] developed countries, the United States has a lot of very small babies, and a very high rate of preterm births.”

The percentage of preterm births in the U.S. has increased by 36 percent since 1984, according to the National Center for Health Statistics (NCHS). Those high-risk births increase the risk of death within a year (infant mortalities are those that occur before one year of age). Between 1960 and 2005, the U.S. infant mortality ranking in the world fell dramatically, from 12th to 30th, NCHS reported last year. Though the U.S. has reduced its infant mortality rate from 26 deaths per 1,000 live births in 1960 to 6.9 in 2005, other countries’ rates have fallen faster. In fact, the U.S. infant mortality rate did not decline significantly from 2000 to 2005.

The news isn’t all bad on the domestic front. In Maryland, for instance, the overall infant mortality rate actually fell between 2008 and 2009, from 8 to 7.2 deaths per 1,000. While much of the state has a low rate, several areas of very high infant mortality increase the statewide numbers. Two areas—Prince George’s County and Baltimore City—account for more than 40 percent of the state’s infant deaths. That’s largely because many of their communities are beset by poverty and a lack of connections to good prenatal health care.

But the unveiling of a new campaign that launched in Baltimore this August may just turn the tide on those disturbing infant mortality rates—and serve as a model for urban areas across the nation. The program has public health workers like Guyer, a veteran child health researcher and advocate, optimistic. “I’m really enthusiastic about what’s going on,” he says. “We’ve just put up with this for too long.”

The three-year B’more for Healthy Babies program is an intriguing mix of proven strategies, new approaches and focused communication programs. It targets the communities of Patterson Park North and East, Upton/Druid Heights and Greenmount East, some of the places where infant mortality strikes hardest, and most of which are predominantly African American; 95 percent of the city’s 128 infant deaths in 2009 were in African-American families.

The $7.5 million program involves a formidable collaboration of agencies and resources, notes Guyer, MD, MPH. Partnering organizations include the Baltimore City Health Department, the Family League of Baltimore City and CareFirst BlueCross BlueShield (which donated $3 million). Bloomberg School faculty and staff have been involved from the early stages, and are now contributing to the program’s implementation.

“After 20 years,” says Guyer, “this is the biggest political commitment to these issues I’ve seen.”

**COLLABORATION IS KEY**

In 2008, then Baltimore City Health Commissioner Joshua Sharfstein (now principal deputy commissioner of the FDA) laid the groundwork for B’More for Healthy Babies with an evaluation of the services that could have the biggest impact on children and mothers—and a look at where in the city the help was most needed.

The Bloomberg School’s Donna Strobino, PhD, got involved soon thereafter—in part because she had a graduate student, Meredith Matone, who was particularly interested in infant mortality. Together with a second student, they worked with staff at the city on a strategy to improve infant mortality.

“We really wanted to focus on a community population-based strategy, not an individual client strategy,” says Strobino, deputy chair of infant and child health in the Department of Population, Family and Reproductive Health. “We wanted to pull together all the [community] resources related to services for women in general, and pregnant women in particular, and their newborns.”

**Turning the Tide**

Can a new campaign that emphasizes collaboration and communication save infants’ lives in Baltimore?

story by geoff brown
illustrations by alicia buelow
That meant getting disparate city agencies, health care providers, community organizations and nonprofits to work together—not an easy task. “In Baltimore, like a lot of other urban areas, there are a lot of politics and concerns about funding among community agencies, especially in a difficult economy,” says Strobino. “Who provides the services? Who collaborates with whom? We need to be able to get the community to develop its own strategy and increase cooperation between agencies for that strategy to work.”

“Baltimore has the problem of being terribly underfunded and too decentralized,” agrees Guyer. “There are too many independent agencies and nonprofits and neighborhood organizations each trying to get their cut of the resources.”

Collaboration obviously would be key to the success of B’more for Healthy Babies, says Avril Houston, MD, MPH, the Baltimore City Health Department’s assistant commissioner for maternal and child health. “What’s different about this initiative is that the resources are being aligned to provide a service to a population,” she says. “We’re trying to get all the social programs coordinated to empower the communities.”

The other critical part of the campaign involved education and getting the message out into the communities. The health department ultimately selected the School’s Center for Communication Programs (CCP), which specializes in delivering strategic health communication and knowledge management programs to populations—albeit most often in developing nations across Africa and Asia.

Though CCP would be working much closer to home than usual, its strategy would be the same, says Cathy Church-Balin, CCP’s business development director. “No matter if it’s Baltimore or Bangladesh, we can use the same framework and ideas,” she says.

THAT COULD BE MY BABY

The program’s first efforts are focused on reducing unsafe sleep environment-related deaths like those due to sudden infant death syndrome (SIDS), which claimed the lives of 27 Baltimore infants in 2009. SIDS is used to explain the deaths of babies where no visible cause of death is found, and there’s no apparent reason for the infant to have died. Asphyxiation is suspected in many cases, caused by an infant not getting enough oxygen while sleeping.

Efforts in the U.S. over the past two decades—particularly the medical community’s advice that babies be placed on their backs to sleep—have reduced the SIDS rate nationally. But SIDS remains a problem in underserved urban communities. In Baltimore, it is the second leading cause of infant deaths, behind low birth weight.

“Eight percent of infant deaths in the U.S. are by SIDS,” says Church-Balin. “In Baltimore, it’s 21 percent. Twenty-seven deaths [last year] were preventable because they were linked to unsafe sleeping practices—putting infants in places where they can suffocate. It’s not acceptable. It can’t be.”

With SIDS as the most easily avoidable cause of death, the project’s leaders decided to focus on that syndrome, and push the message that “Safe Sleep” is critical: The baby must sleep alone (without siblings or parents), on his or her back, and in an approved crib.

But before the CCP team—including research and evaluation deputy director Doug Storey—could get that message out, they followed the same procedure they use overseas: they listened to the people they were trying to reach.

“We did focus groups with moms, dads and caregivers,” Church-Balin says, “to find out what people know and do when they put infants to sleep. They knew the message of safe sleep. But there was...
a big disconnect: Babies were sleeping in parents’ beds, in siblings’ beds, on couches.”

Storey and Church-Balin asked the focus groups about that discrepancy. “And they told us, ‘You have to hit us over the head really hard with this message. You have to get in our faces.’”

That led the CCP team to a simple conclusion. “We [had] to cut through social and cultural barriers and get through on an emotional level,” says Church-Balin. “We needed these parents to think, ‘That could be my baby.’”

To achieve that, the campaign recruited three Baltimore City mothers who had lost children because of unsafe sleeping environments. Through posters, videos and advertisements, these mothers will be the faces of the campaign.

The “Safe Sleep” message is one that wasn’t made clear to Dearea Matthews, age 25. She is the mother of two young children, both of whom had spent time in the family bed as infants, with no issues. On December 29, 2009, her third child, 1-month-old Charlie Jordan Matthews, was asleep in bed beside her and husband Derrick. Dearea awoke and found little Charlie motionless and not breathing; despite efforts to revive him at Johns Hopkins Hospital, he died. The baby’s cause of death was ruled to be SIDS.

When the B’More for Healthy Babies campaign approached Matthews in June about sharing her experiences, “at first I said no,” Matthews says today. “But my husband and I started to talk about it, and I called a minister at my church. She said, ‘If you can help another mother, you need to do it.’”

Of her decision to join the campaign, Matthews says, “I remember thinking, ‘No other mother should have to go through this.’ And then I told myself, ‘OK, now I can do it.’”

**CHANGING BEHAVIOR**

This campaign is about changing behavior, says Church-Balin. “We learned from focus groups that people will listen to their health care providers and their relatives who have raised children,” she says. “We have to give the provider the tools to reinforce the message. We want hospitals to show the video [of the mothers] to new parents.”

The second planned phase of B’more for Healthy Babies will aim at achieving healthy pregnancies. “We want to start by focusing on three areas: smoking cessation, early and consistent prenatal care, and getting mothers to support groups and services and family planning to delay the next birth,” says Church-Balin. The third phase would go even further and attempt to create a “healthy Baltimore”—improving overall community health by creating safer places and environments for families to interact with each other.

Can Baltimore pull it off? It’s possible, says Guyer. “Baltimore is a great example of a city that dramatically improved immunization coverage,” he notes, referring to the city’s 2006 success in boosting its child immunization rate through a strong public relations and schools-based campaign that linked data sources into an immunization registry. In just three months, the city’s rate of immunized school-age children rose from 62 to 99 percent.

Connecting mothers and prenatal care services could improve birth outcomes in the same way. “We are finally hearing federal and state officials linking early health, nutrition, child development, parenting, safe environments and readiness for school,” says Guyer. “What we really need is to link these concerns in a way that builds the capacities of families and communities to give their young children the best start.”
Metro City Hospital is dying a slow death. Admissions are down, emergency room congestion is up, and the obstetrics department has an average vacancy rate of 70 percent. Medical testing equipment is outdated, marks for patient safety are low, and the hospital has posted seven straight years of losses.

Bottom line: Without major changes, Metro City Hospital (MCH) is on a path to bankruptcy. In an effort to avert financial collapse, the hospital has hired a consulting group to come up with a turnaround strategy.

That’s the scenario put before teams of first-year students in the School’s Master of Health Administration (MHA) Program’s Case Competition in April, an assignment that challenges MHA students to combine academic knowledge with teamwork and persuasive communication skills. The annual competition gives the students—many of whom envision a career in health care consulting—a glimpse of post-graduation challenges. It’s also a warm-up for the first-year MHA students about to start their residencies in health care-related businesses. Split into six “consulting firms” by MHA faculty, the students are charged with devising a strategy to save the fictitious Metro City Hospital. The firms will present their proposals to “MCH executives”—in reality, actual executives from Maryland hospitals who serve as judges.

“If they’re going to be in a consulting job or work for a health services organization, this is the work they’re going to do,” says Ann-Michele Gundlach, EdD, MS, associate director of the MHA Program.

Johns Hopkins Public Health writer Jackie Powder followed one team, 2 Consulting Group—Megan Bowes, Saira Chaudary, Umang Desai and team leader Jennie Newcomb. During the process, group members will pore over MCH financial documents, argue the finer points of logo designs, plot strategy and deliver their final presentation before judges Jay Blackman, executive vice president and chief operating officer of Howard County General Hospital, and Ken Lewis, MD, president and chief executive officer of Union Hospital.

Photo above (from left): Jennie Newcomb, Saira Chaudary, Megan Bowes and Umang Desai

Photography by Christopher Myers
April 13: 10 a.m.
The group gathers in an empty classroom to finalize plans for saving Metro City Hospital. They settle on a strategy that calls for a renovation and expansion of the emergency room, installing an interim leadership team and replacing outdated medical equipment.

April 14: 11:30 a.m.
Hunched over their laptops, team members pore over MCH's finances and decide how to best illustrate the hospital's death spiral. Pie charts, bar graphs, trend lines? “Does this prove our point?” Newcomb asks of a graphic to illustrate decreasing hospital revenues.

April 16: 11:30 a.m.
While being videotaped, each group member runs through his or her presentation, followed by self-critiques. “Oh my God, I need to stop playing with my hair,” says Bowes. Desai worries his sweeping hand gestures make him look like a TV weatherman.

April 22: 2 p.m.
With one day to go, Chaudary and the team try to anticipate the judges’ post-presentation questions. A possibility: What other new equipment should we buy? They will mention the CyberKnife and da Vinci robot but will say market share data must support the purchases.

April 23: 8 a.m.
The morning of the competition, 2 Consulting Group gathers with the other contestants for team pictures. Jeans and sweatshirts have been replaced by black power suits. The group focuses on keeping the anxiety at bay.

April 23: 9:25 a.m.
MHA assistant director Teresa Schwartz greets the team, asks them to make sure their PowerPoint slides are ready to go, and informs the group that she will give a two-minute warning when it’s time to wrap up the 20-minute presentation.

April 23: 9:30-9:50 a.m.
With a few stumbles and at times visibly nervous, the group members present their ideas for saving the hospital. The judges are positive: “A very thorough analysis.” And they offer constructive criticism: “I do see more of an opportunity for cuts in programs and services.”

April 23: 1:15 p.m.
2 Consulting Group learns that they did not make it to the final round of the competition. Desai is pragmatic: “It’s been a good process to synthesize all the courses we’ve taken over the year and apply the lessons to a real-life situation.”

April 23: 9 a.m.
Sitting at a table in The Daily Grind, team members are quiet, silently reading note cards or whispering their part. Someone’s iPhone sits on the table, with its alarm counting down to go time. “I’ll say a little Hail Mary, and I’ll be fine,” Newcomb says before heading to the presentation.