Stanford University is well known as the heart of Silicon Valley innovation and entrepreneurship, where companies like Google, Cisco Systems, eBay, Hewlett-Packard, Yahoo and Netflix—to name a few—have marked their beginnings. For Stanford Medicine, this reciprocal relationship has been key to our goal to lead the biomedical revolution in Precision Health. In research, innovation, patient care and philanthropy, Silicon Valley has been a wide-ranging collaborator, helping to advance technology that connects patients with caregivers, improve the basic understanding of disease and use the tools of big data analysis to help predict and prevent disease and deliver care that is more personalized and precise.

Most recently, we partnered with Apple on two “mHealth” projects, which use data voluntarily provided from mobile devices to advance medical practice and public health. In one project, doctors at Stanford Children’s Health are utilizing Apple’s HealthKit to remotely assess continuous glucose monitoring data from patients with type 1 diabetes between clinic visits. The blood glucose readings move passively from a family’s mobile device to the patient’s electronic health record via HealthKit, and that data is automatically assessed for any trends that may call for intervention.

In another project, researchers at Stanford University School of Medicine, using Apple’s HealthKit to remotely assess continuous glucose monitoring data from patients with type 1 diabetes between clinic visits. The blood glucose readings move passively from a family’s mobile device to the patient’s electronic health record via HealthKit, and that data is automatically assessed for any trends that may call for intervention.

“The next morning, she fights to stay awake in her first-period class, unable to focus on what’s being taught. "You feel tired and exhausted, but you think you just need to get through the day so you can go home and sleep,” said the Palo Alto teen.

Walworth is among a generation of teens growing up chronically sleep deprived. According to a 2006 National Sleep Foundation poll, more than 87 percent of U.S. high school students get far less than the recommended eight to 10 hours—a serious threat to their health, safety and academic success. Sleep deprivation increases the likelihood that teens will suffer myriad negative consequences, including an inability to concentrate, poor grades, driving incidents, anxiety, depression, thoughts of suicide and even suicide attempts.

“I think high school is the real danger spot in terms of sleep depriv-
**Sudden impact**
New center looks to define concussion

Paige Fisher was pedaling along a narrow path on her way to a yoga class last January when she crashed head-on into another bicyclist. When she came to, she was bleeding profusely and surrounded by worried bystanders. Despite a visit to the student health clinic, a scan at the emergency room and appointments with her primary care physician, she continued to feel dizzy, sleepy and sensitive to light weeks after her wounds had healed. “I was told I had a concussion and to just rest,” said the 22-year-old Stanford graduate. But the lack of activity made her feel lethargic and depressed. “I was not getting better. I felt out of it and not like myself at all,” she said.

Fisher was referred to the Stanford Concussion and Brain Performance Center, where she underwent a series of tests to track her response rate and attention span. She was put on a regimen of treadmill training and vestibular rehabilitation therapy, an exercise program that retrains the brain to regain balance control and minimize dizziness.

“The center used metrics, measurements and data to track my progress, so it wasn’t just that I felt better—I could see the measurements of my improvement. I had been feeling like it was all in my head, so that was a real morale booster,” Fisher said.

**A growing concern**

The Stanford Concussion and Brain Performance Center was established last year to define objective criteria for diagnosis for concussion and to treat adults and children based on the physical response of the brain.

“Concussion remains the most underreported, underdiagnosed and underestimated head injury. It affects how we think, even though physical function may be intact,” said Jamshid Ghajar, MD, PhD, clinical professor of neurosurgery and director of the center at Stanford Medicine. He collaborates with Gerald Grant, MD, associate professor of neurosurgery. “It mainly affects the ability to focus—how a person interacts with the outside world. Poor attention is the most common cognitive impairment.”

Concussion injuries are gaining attention because of their prevalence among young athletes. Approximately 3.8 million people suffer concussions from sports and recreation-related activities in the United States each year—an estimated 100,000 of them among high school athletes. Almost half of all athletes do not report feeling any symptoms after a concussive blow, but people who have had a concussion are three times more likely to have a similar event and to experience slower neurological recovery.

**Defining concussion**

Currently, there is no universally accepted scientific definition of concussion, and both diagnosis and treatment vary from physician to physician. Symptoms can range widely and vary in intensity and duration. Doctors typically diagnose the condition by observing symptoms such as headache and dizziness and sometimes by testing reaction time, memory and comprehension. Brain scans, using magnetic resonance imaging or computed tomography, often show no physiological change.

Ghajar defines a concussion as a change in brain function after a direct or indirect force to the head, sometimes followed by a temporary loss of consciousness that results in neurological and cognitive dysfunction, such as disorientation, balance, slowed reaction time, blurred vision and impaired memory. The condition resolves by itself in a week in 92 percent of the cases, he said.

**Response to impact**

A concussion begins with an impact to the head, neck or torso, which causes a metabolic cascade within the frontal lobe of the brain, affecting the way it responds to stimuli. The result is a timing gap in the way the head perceives and processes information.
Hospital taps into sustainable water practices

Hospitals by their very nature require massive amounts of water to maintain complex medical systems and equipment critical to patient care. Heating and cooling systems, and specialty services such as laundry, sterilization, sanitation, food service and integrated computer systems, call for an ongoing source of water. And lots of it. In fact, hospitals today are the third most water-intensive public buildings, behind senior care facilities and hotels, using an average 570 gallons of water per staffed bed per day, according to Healthcare Design magazine. In comparison, the U.S. Environmental Protection Agency estimates that an average person uses about 80 to 100 gallons of water per day.

In this era of water conservation, architects, designers and planners for the Lucile Packard Children’s Hospital Stanford expansion are working to significantly reduce water consumption. The facility, scheduled to open in the summer of 2017, will add 521,000 square feet to the approximately 300,000-square-foot existing hospital, streamlining care for children, expectant mothers and their families. The design of the new Stanford Hospital, scheduled to open in early 2018, also incorporates water-efficient landscapes and sustainable technologies.

Landscaping priorities

An inherent sense of environmental responsibility is a driving force behind the children’s hospital design, which makes sustainability and “green” systems a top priority. The building integrates nature seamlessly into its layout, with almost four acres of gardens and green space for patients, families, visitors and staff to enjoy. The landscapes also will provide natural habitats for local birds and insects.

A water-sensitive approach to the building was factored in long before California’s current drought made xeriscaping and reduced water usage a major concern. “Seven years ago, when we started planning, we knew there was not enough rainfall to sustain even the most efficient hospital’s needs,” said Robin Guenther, principal at Perkins+Will and the lead designer of the expansion project. “That presented the option of finding ways to reuse water as much as possible.”

The landscaping will feature native and hardy adapted plants that require minimal water, such as drought-tolerant varieties of yarrow, flax lily, mountain lilac, lavender and sage. A specially adapted blend of grasses that require little or no water will be planted instead of a traditional lawn. Expanses of greenery and permeable pavers will allow rain to be absorbed into the region’s groundwater rather than run off into the Bay.

“Nature is an important part of the hospital’s identity, and landscape has been embraced as a central design concept.”

—Robin Guenther

The centerpiece will be the Discovery Garden, which will feature private meditation niches and nooks framed by hedges for privacy and quiet. The Emerald Garden will feature an open lawn, a children’s play area, stone retaining walls and shaded walkways. The Rainbow Garden, a respite for physicians and staff, will be linked to the campus shuttle system. Courtyards and roof gardens will be easily accessible and allow natural light to filter into the corridors.

Underground storage

These water-efficient landscapes will be irrigated with rainwater and condensate water—water that is extracted from dehumidifying indoor air—that will be collected in two 55,000-gallon underground cisterns. The distilled water that is used continuously in dialysis equipment also will be routed to the cisterns, ensuring that water will be available even when there is no rainfall. Constructed of steel-reinforced polyethylene, the cisterns are 70 feet long, 40 feet wide and 10 feet deep—about half the size of an Olympic-size swimming pool.

“Because we are using water from multiple, constant sources, we do not need to rely on storm-water runoff, which is inconsistent, especially during an extended drought. Water is routed to the cisterns through a pumping system and can be diverted to an integrated bypass system if the tanks are full,” said Henry Phillips, PE, project manager at Sandis, a civil engineering firm that specializes in sustainable design.

These sources for irrigation will save as much as 800,000 gallons of water per year, said Michele Charles, project engineer for the expansion, adding that the system can be adapted to add more cisterns in the future. Hospital designers did an extensive analysis before construction to determine how much water the gardens would require so they could set the baseline for the expected supply of condensate water, Phillips said.

SEE SUSTAINABLE ON PAGE 7
Drains from both ends

Since the early ’90s, it’s been established that teens have a biological tendency to go to sleep later—by as much as two hours—than their younger counterparts. Yet when they enter their high school years, they find themselves at schools that typically start the day at an early hour. So their time for sleep is compressed, and many are jolted out of bed before they are physically or mentally ready. In the process, not only are they losing precious hours of rest, but their natural rhythm is disrupted.

They are being robbed of the rapid eye movement stage of sleep, some of the deepest, most productive sleep time, said Rafael Pelayo, MD, a pediatric sleep specialist with the Stanford Sleep Disorders Clinic. “When teens wake up earlier, it cuts off their dreams. We’re not giving them a chance to dream,” said Pelayo, a clinical professor of psychiatry and behavioral sciences at Stanford Medicine. “We’re sleep-depriving them.”

While teens are biologically programmed to stay up late, many social and cultural forces further limit their time for sleep.

For one, the pressure to succeed is intense. In high-achieving communities like Palo Alto, that translates into students who are overwhelmed by additional homework for Advanced Placement classes, outside activities and, in some cases, part-time jobs, as well as peer, parental and community pressures to excel.

Mixed messages

At the same time, today’s teens are maturing in an era of ubiquitous electronic media, and they are fervent participants. Some 92 percent of U.S. teens have smartphones, and 24 percent say that they are online “constantly,” according to a 2015 report by the Pew Research Center. The problem is exacerbated when teens are exposed late at night to lighted screens, which send a message via the retina to the portion of the brain that controls the body’s circadian clock. The message: “It’s not nighttime yet.”

Nanci Yuan, MD, clinical associate professor of pediatrics at Lucile Packard Children’s Hospital Stanford and director of the Stanford Children’s Health Sleep Center, said she routinely sees young patients in her clinic who literally fall asleep at night with cellphone in hand.

“With academic demands and extracurricular activities, kids are going nonstop until they fall asleep exhausted at night. There is not an emphasis on the importance of sleep, as there is with nutrition and exercise,” she said.

Adolescents also are entering a period in which they are striving for autonomy and want to make their own, independent decisions, including when to go to sleep. But studies suggest that adolescents do better in terms of mood and fatigue levels if parents set the bedtime—and choose a time that is realistic for the child’s needs. According to one study in the journal Sleep, children are more likely to be depressed and to entertain thoughts of suicide if a parent sets a late bedtime of midnight or beyond.

Emotional toll

According to the national sleep poll, by the time U.S. students reach their senior year in high school, they are sleeping an average of 6.9 hours a night, down from an average of 8.4 hours in the sixth grade. Many studies show that students who sleep less suffer academically, as chronic sleep loss impairs the ability to remember, concentrate, think abstractly and solve problems.

“We hypothesize that when teens sleep, the brain is going through processes of consolidation or learning of experiences or memories,” Yuan said. “It’s like your brain is filtering itself while it’s sleeping—consolidating the important things and filtering out unimportant things.” When the brain is deprived of that opportunity, cognitive function suffers, along with the capacity to learn. “It impacts academic performance. It’s harder to take tests and answer questions if you are sleep deprived,” she said.

That’s why cramming, at the expense of sleep, is counterproductive, said Pelayo, who advises students not to lose sleep to study, or they’ll lose out in the end.

Research has shown that sleep problems among adolescents are a major risk factor for suicidal thoughts and death by suicide, which ranks as the third-leading cause of fatalities among 15- to 24-year-olds. This link between sleep and suicidal thoughts remains strong, independent of whether the teen is depressed or has drug and alcohol issues, according to some studies.

“Sleep, especially deep sleep, is like a balm for the brain,” said Shashank Joshi, MD, associate professor of psychiatry and behavioral sciences at Stanford Medicine. “The better your sleep, the more clearly you can think while awake, and it may enable you to seek help when a problem arises. Sleep deprivation can make it hard to remember what you need to do for your busy life. It takes away the support and the infrastructure.”

Sleep is believed to help regulate emotions and is an underlying component of many mood disorders, such as anxiety, depression and bipolar disorder. For students who are prone to these disorders, better sleep can help serve as a buffer and help prevent a downhill slide, said Joshi.

Changing school start times

Given the health risks associated with sleep problems, school districts around the country have been looking at one issue over which they have some control: school start times. Numerous studies have shown that in schools with later start times, students show significant improvement in mood and alertness, feel more empowered to succeed and are less likely to be involved in drowsy-driving incidents.

Bolstered by the evidence, the American Academy of Pediatrics in 2014 issued a strong policy statement encouraging middle and high school districts across the country to start school no earlier than 8:30 am. These decisions have been hugely contentious, as many consider school schedules sacrosanct and cite practical issues, such as bus schedules, as obstacles.

In Palo Alto, where a recent cluster of suicides has caused much communitywide soul-searching, the district superintendent issued a decision in the spring, over the objections of some teachers, students and administrators, to eliminate “zero period” for academic classes—an optional period that begins at 7:20 am that is generally offered for advanced studies.

But experts agree that it will take more than changes in school times to encourage teens to change their habits. More widespread education and resources for students, modified expectations on the parts of parents and teachers, and a cultural shift away from late-night electronic use are all needed to help youngsters gain much-needed rest.
In his senior year of high school, one of James Underwood’s friends left a Friday-night party around 12:30 am and nodded off at the wheel in a remote stretch of rural Arkansas. Exhausted after a long week, including early-morning commutes to school, he careened off the road and struck a tree about a mile from home. “It was kind of a shock to everyone,” said Underwood, now a sophomore at Stanford University.

Fortunately, his friend suffered no major injuries, but Underwood realized that the consequences could have been catastrophic. The experience motivated him to volunteer in the Sleep Ambassadors program, designed to teach high school students about the importance of sleep—and the dangers that loom when they don’t get enough.

**Reaching out**

Through the program, which has won awards from the California School Boards Association and the National Sleep Foundation, Stanford students and faculty in the undergraduate-level “Sleep and Dreams” class reach out to freshmen at Menlo-Atherton High School in Menlo Park to give them a primer on the value of sleep. The college students pair up with juniors from the high school, who continue to spread the gospel among their peers as part of an ongoing educational campaign.

“It’s a unique program among high schools nationwide, where sleep is rarely part of the curriculum, said Stanford sleep expert William De- ment, MD, PhD, who helped start the project. “It’s still true that sleep is not addressed in the educational system,” he said. “It’s a huge problem all over the country.”

This winter the program will be expanded to Palo Alto’s two high schools—Gunn High School and Palo Alto High School—where student stress has been a concern, said Rafael Pelayo, MD, a pediatric sleep specialist at the Stanford Sleep Disorders Clinic and one of the professors in the program. Pelayo also has done presentations to parents, teachers and students at local schools in an effort to encourage healthy sleep habits among the teens.

**Impact on accidents**

Some two-thirds of all sleepiness-related crashes involve adolescents and young adults, who don’t always perceive that they are fatigued and may be prone to risk-taking, studies show.

“A lot of people have the mindset, ‘I’ll be fine. I can make myself stay awake. I’m invincible,’” Underwood said. “But if you’re not surrounded by a stimulus, you can crash very suddenly. It can be incredibly problematic.”

In addition to lessons on the consequences of driving while drowsy, the program teaches students about the basics of teen sleep and the many ways in which sleep deprivation can impact their lives. “We try to give them what they need to know going into high school at a time when sleep deprivation is so common,” said Stanford sophomore Marleyna Mohler, one of the teaching assistants. “Sleep is seen as a kind of joke and not a serious topic. There’s definitely a stigma that people who sleep a lot aren’t having fun. Pulling an all-nighter is like a badge of honor, a diehard commitment.”

Follow-up surveys with students have shown a significant increase in their knowledge about sleep and greater awareness of their own need for more sleep.

“We have a sense that it works. I get feedback from students who say, ‘I do remember what you said, and I do try to get more sleep,’” said volunteer coordinator Maggie Betsook. “If I can prevent one drowsy-driving accident a year, I’ll be happy.”

**Later start times**

Around the time the program was introduced, a group of Menlo-Atherton parents pressured the school board to change the bell schedule as part of the campaign to improve students’ sleep habits.

The school’s 7:45 am start time was pushed back one hour, with classes starting at 9:30 am twice a week. The schedule gives students a midweek respite to catch up on sleep, rather than relying on the weekend to recover from their accumulated sleep debt, said outgoing principal Matthew Zito. He believes these changes, together with other innovations, such as a ban on AP summer classes and a homework-free winter break, have helped improve student well-being.

“Student behavior is greatly improved. The number of disciplinary actions of a serious nature is dramatically reduced,” he said. “This isn’t all related to student sleep. But I think sleep is a factor in having a healthier academic and socio-emotional climate on the campus.”

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**COMMUNITY MATTERS FROM PAGE 1**

Apple’s new ResearchKit software framework, launched a first-of-its-kind, free iPhone app that allows users to contribute to a study of human heart health while learning about the health of their own heart and how to improve it. The app, called MyHeart Counts, delivers data use, among other topics. The conference has led to many fruitful collaborations in the big data arena.

Other Silicon Valley collaborators, such as Cisco, have helped Stanford Medicine capitalize on the latest advances in communication, enabling us to be among the first to offer virtual visits for our patients. Virtual care is especially important in locations where a shortage of specialists or long travel times make access to care difficult. Virtual visits, combined with in-person care, help to improve continuity and quality of care, reduce wait times and increase access.

Stanford Health Care offers eCare visits by phone or videoconference, and its new Click-Well Care allows patients the option of a “virtual” primary care physician for even greater convenience and flexibility. Beyond primary care, Stanford Health Care also offers virtual visits for skin conditions using Cisco’s HealthPresence technology. At Stanford Children’s Health, discharged patients can benefit from a “virtual rapid response” program for remote visits with intensive care specialists based at El Camino Hospital without the need for a return visit.

Silicon Valley philanthropy, through the Stanford Medicine Corporate Partners Program, also has been key in developing creative solutions to improve patient care and promote lifelong health. Today, these partners include Adobe, Apple, Cisco, eBay, HP, Intel, Intuit, NVIDIA, Oracle, PayPal and VMware. Thanks to the help of these partners, Stanford Medicine continues to deliver proactive, predictive medicine to improve health for people in the Bay Area and around the globe.

Together, the many elements of Stanford Medicine’s dynamic relationship with Silicon Valley add up to a robust environment of innovation, collaboration and leadership in the biomedical revolution. Our shared inspiration to drive rapid, meaningful advances in our complimentary areas of expertise—technology, medical research and health care—promises a future of breakthrough ideas and better health for people everywhere.
to follow the dot’s movement, which tests predictive ability. A person with a concussion cannot track the light well, resulting in “jitters” in the eye movement in relation to the target. The system works, Ghajar said, because visual tracking and attention share similar neural areas in the brain.

He is involved in a large-scale study of military personnel, high school athletes and other groups to determine whether the degree of disruption in eye movements detected by the device correlates with concussion and recovery. Using this eye-tracking technology, he and his colleagues plan to develop best practice guidelines, conducting clinical research and educating medical professionals and consumers about concussion.

For Fisher, watching her progression on Ghajar’s eye-tracking system showed tangible proof that she was, indeed, recovering from her concussion. After almost four months of gradually building up her strength and focus, she finally was able to get back to all her usual activities, including bicycling—always with a helmet.

Three distinguished national health experts will discuss “E-Cigarettes: A Threat or an Opportunity for Public Health,” at a forum on Monday, Oct. 26. The panel discussion will run from noon to 1:30 pm in Berg Hall at the Li Ka Shing Center, 291 Campus Drive, on the Stanford medical school campus. The event is free and open to the public.

E-cigarettes are nicotine-delivery products that are becoming extraordinarily popular, particularly among young adults. The current debate in public health is whether e-cigarettes will replace tobacco cigarettes and improve health, or re-normalize smoking, which would be a public health disaster.

The forum will feature three experts with markedly different views on whether e-cigarettes are a threat or a benefit to public health:

- David Abrams, PhD, executive director of the Schroeder Institute for Tobacco Research and Policy Studies and professor in the Department of Health, Behavior and Society at the Johns Hopkins Bloomberg School of Public Health
- Bonnie Halpern-Felsher, MD, professor in the Division of Adolescent Medicine in the Department of Pediatrics at Stanford
- Robert Jackler, MD, chair of the Department of Otolaryngology—Head & Neck Surgery at Stanford and the lead scientist for Stanford Research into the Impact of Tobacco Advertising
The most important letter you may write

Recent research by V.J. Periyakoil, MD, has shown that doctors struggle in starting discussions about how their patients want to spend their last days. While polls suggest that most Americans would prefer to die at home without life-prolonging interventions, doctors are more likely to pursue aggressive treatments for terminally ill patients—despite the fact that doctors would not choose an aggressive course for themselves, her research shows. Because of this disconnect, Periyakoil has started the Letter Project, encouraging patients to write a letter to their doctor, explaining what matters most to them in their last days.

Periyakoil, clinical associate professor of medicine at Stanford Medicine, is a nationally recognized leader in geriatrics and palliative care. She directs the Stanford Palliative Care Education & Training Program and the Stanford Hospice & Palliative Care Medicine Fellowship Program.

Why did you decide to start the Letter Project?

I have seen too many patients die after being subjected to high-intensity treatments that were ineffective and burdensome. I found that most patients do want to engage their doctors in end-of-life conversations but have no idea how or when to begin. The obvious solution was a simple letter template that patients could use to tell their doctors in simple words what they wanted for themselves at the end of life.

What are the major barriers that prevent doctors from having frank conversations with their patients about end-of-life issues?

We did a study of more than 1,000 doctors and identified the top barriers: Doctors say that death is a taboo topic in many cultures and struggle to conduct end-of-life conversations with patients who have low English proficiency and health literacy, and those with deeply rooted cultural, religious and spiritual beliefs about end-of-life planning. In some cultures, the family insists that the doctor withhold the terminal diagnosis from the patient. In other cultures, people believe that when and how a person dies are in the hands of a higher power. Others lack trust in doctors and the medical system. Faced with these charged situations, doctors, who are not systematically trained to conduct these sensitive conversations, tend to avoid further dialogue.

Why is it important for a patient, rather than the doctor, to take the lead in end-of-life conversations?

It is a classic situation of each stakeholder waiting for the other to take the lead or waiting for the “right time.” This procrastination costs us dearly, as the physical and emotional toll on patients is enormous. Our research has shown that doctors (including me) choose a “do-not-resuscitate” status if we become terminally ill as we wish to die naturally without burdening our families. This begs the question of why dying patients are subjected to invasive measures that we (doctors) mostly do not want for ourselves. We thought that it was important to empower patients to take the lead in this process.

When doctors don’t have clear guidance from patients, how do they usually handle end-of-life situations?

There is a tipping point in the trajectory of every illness when treatment is ineffective and burdensome. Beyond this tipping point, high-intensity treatments do not prolong life with quality but rather prolong the dying process. But our health-care system does not often identify this tipping point, and odds are that most patients will be subjected to high-intensity treatments regardless of their values and preferences for care.

How is the letter different from an official document, such as an advance directive?

The letter addresses some important practical issues that are not currently addressed in the advance directive document. It clarifies the patient’s stance on palliative sedation should pain and symptoms become refractory. Most importantly, it offers guidance to the doctor about what to do when the health-care proxy overrides the patient’s stated wishes. We created an app that uses the letter template to generate pre-filled advance directives. By answering a few simple questions, patients are able to complete both the official advance directive and the letter (as a supplement to the advance directive) and to send the documents to their doctors to be saved in their medical records.

For more on the Letter Project and to find letter templates in multiple languages, go to med.stanford.edu/letter. The Stanford Letter Project app is available at the App Store and GooglePlay.

Conserving resources

The existing hospital facility also maintains its grounds in a water-wise manner. Designed during a drought in the late 1980s and opened in 1991, the gardens consist primarily of drought-tolerant plants. An ongoing program to monitor and maintain broken sprinkler heads limits run-off, while use of mulch to protect plantings helps retain moisture, said Patrick Connor, administrative director of support services. “No-mow” turf with an efficient irrigation system, which looks and feels like traditional lawn, invites families and visitors to lounge and play, he said.

The new building incorporates an extensive external shading system, and windows are positioned to avoid direct sunlight throughout the year. Limiting direct sunlight helps to reduce solar gain—the increase in temperature caused by the sun—while reducing the need for air conditioning, which has energy and water needs of its own. The hospital also has located its data center on the roof rather than in the basement, so that it can be cooled by ambient air rather than air conditioning. That move alone has reduced energy needs by 60 percent compared with other Northern California hospitals, Guenther said.

The hospital also plans to install water-conserving dishwashers and sterilizers, which are projected to use about 80 percent less water than their standard counterparts. Water-cooled pumps and air compressors will be replaced, and on-demand sinks and low-flow bathroom fixtures (also being phased into the existing hospital) are expected to save 2.5 million gallons of water a year. Together, these systems in the new building are expected to use 38 percent less water than in a comparable standard hospital, according to Guenther. An electronic dashboard in the main lobby will display the building’s ongoing water and energy usage.

“Throughout the design process, we looked at sustainability as a key feature,” said Jill Ann Sullivan, RN, MSN, vice president of hospital transformation and space planning. “Using water wisely makes an impact on the whole community and saves money in the long term. Plus, it’s simply the right thing to do.”

Learn more about the Stanford University Medical Center Renewal Project at sumcrenewal.org.
Helping families fight hunger
Stanford clinicians collaborate with the community

When Lisa Chamberlain, MD, began seeing patients in East Palo Alto more than 10 years ago, she never thought one of her top concerns would be whether her patients had enough food to eat.

It was during the 2010 recession that Chamberlain, a pediatrician at Lucile Packard Children's Hospital Stanford and Stanford Children's Health, learned from families at the Ravenswood Family Health Center that 50 to 60 percent of them were struggling to pay rent and buy food.

“We are trained to ask these questions because it's not always obvious that families aren't eating adequately. Most of the kids look normal and healthy,” said Chamberlain, an associate professor of pediatrics at Stanford University School of Medicine.

Some children are even obese because low-income families tend to shop and eat at places that don't have many healthy options, she said. They may be hungry or experiencing “food insecurity,” meaning their families don’t always have the means to buy food.

“There are some children who have real hunger, but more commonly we see children who live in families where there is a lot of stress around making ends meet,” she said.

Food for the needy

After seeing many families in need, Chamberlain decided to start a hunger program with her colleague Janine Bruce, MPH, director of the pediatric advocacy program at Stanford. Begun as a collaboration in 2012 with the Ravenswood City School District and Revolution Foods Inc., the project has grown to include the YMCA of Silicon Valley, Second Harvest Food Bank and the San Mateo County Library System, working together as the East Palo Alto Food Security Collaborative.

The collaborative has provided more than 33,000 meals to families and children since it started. The program is funded by Lucile Packard Children's Hospital Stanford and the School of Medicine, among others.

Chamberlain, medical director of the pediatric advocacy program, also works with Bruce to mobilize pediatric residents, medical students and undergraduates to address community needs through education, service and research.

Raising awareness

That advocacy has taken Chamberlain to Sacramento, where she works closely with state Sen. Richard Pan, MD, to raise awareness about children’s health care needs. This year they attracted the attention of state legislators by organizing the installation of a photo exhibition titled “Who’s Hungry? You Can't Tell by Looking.”

The exhibition, spearheaded by the American Academy of Pediatrics of California and created by San Francisco–based documentary photographer Karen Ande, was designed to illustrate the problem of child hunger in Northern California, where one in four children lacks adequate food and may suffer the ache of hunger. With permission from their parents, Ande took photos of 20 children at a health fair in the Tenderloin district in San Francisco. The children then were screened to determine which were from families with food insecurities.

“It was impossible to tell which 10 of the 20 children in the photos had food insecurity,” Chamberlain said. “They didn’t look any different. These families live in and among us, and we are unaware of their struggle. That’s why pediatricians have a key opportunity, and even a responsibility, to break the cycle by asking questions, because it’s really the only way to find out if there is a problem. And then we need to do something about it.”

Although the situation has improved somewhat with the economic recovery of the last few years, Chamberlain said, increased rents have created a noticeable uptick in families needing help. So she, Bruce and their community partners continue to address the issue and raise public awareness.

“We need more public and private partnerships to think about solutions to these problems,” she said. “There is a lot of innovation and wealth around us, and I think if we come together, we can eradicate hunger and food insecurity for our neighbors. I welcome anyone who wants to work with us and alongside our many dedicated and inspirational community partners.”

If you would like to support this program, go to pedsadvocacy.stanford.edu and click on the Give tab.