The new Stanford Neuroscience Health Center on Quarry Road in Palo Alto is devoted to the outpatient care of adults with neurological disorders. The 92,000-square-foot building combines neurology, neurosurgery and interventional neuroradiology services under one roof to make it as easy as possible for patients to receive a complete range of care. Physicians in 21 neuroscience subspecialties will care for patients at the center, which incorporates advanced imaging and treatment technology, therapeutic support, neurodiagnostics, interventional procedures, clinical trials and education.

The building’s interiors were designed with extensive input from a neuroscience patient advisory group. The panel will continue to meet regularly so that the perspective and experience of patients and families will continue to be integrated into service and patient care.

The new center’s co-leaders are Frank Longo, MD, PhD, professor and chair of the Department of Neurology and Neurological Sciences, and Gary Steinberg, MD, PhD, the professor and chair of the Department of Neurosurgery at Stanford Medicine. They recently answered some questions about the new center.

**Under one roof**

NEUROSCIENCE CENTER INTEGRATES SERVICES IN ONE LOCATION

Stanford Health Care will open a new hospital in about two years that will greatly expand the space available for patient care. Why was a neuroscience health center needed?

**Longo:** Many of our neurology and neurosurgery patients often need care in several ways—maybe a CT scan, a visit with a doctor and a session with a physical therapist. As Stanford Health Care grew and expanded, our care evolved at different locations. Getting to services in several locations can be especially difficult for a patient with a neurological disorder who may be easily confused or have difficulty moving around. We knew we couldn’t consolidate with a remodel, and we needed more space than we might have had in the new hospital, which opens in 2018. We also wanted to include the feedback of our patients and our neuroscience patient advisory board right from the start.

**COMMUNITY MATTERS**

In 1968, Stanford surgeon Norman E. Shumway, MD, PhD, and his surgical team performed the first successful adult human heart transplant in the United States. That landmark intervention was the first bold stride in Stanford Medicine’s enduring leadership in cardiovascular diagnosis, treatment and prevention that is, today, as promising as ever.

Nearly two decades later, Stanford’s Philip Oyer, MD, implanted the world’s first successful ventricular assist device as a bridge to transplantation. And in 2004, Stanford physicians were among the first to use the Berlin Heart, a miniature, external heart pump attached by tubes, to help a 5-month-old—the youngest patient ever—survive for 55 days until a heart transplant saved his life. The Stanford team also helped a 5-year-old survive for 234 days until transplant, longer than any child in North America.

Today the Stanford Cardiovascular Institute (CVI) is advancing stem cell biology, genetics, molecular imaging, population health and device innovation that is helping to create the...
Sound Bites

**US News**

“If [teens] don’t eat right, they can become irritable, depressed [and] develop problems such as obesity and eating disorders—and those have a whole host of psychological morbidities.”

—Neville Golden, MD, professor of pediatrics, on how nutrition impacts the brain and behavior of teens. Jan. 5

**Science**

“While we pass on relatively few changes in our human DNA for each generation, this study indicates that we are potentially passing on huge changes in our gut microbiome.”

—Justin Sonnenburg, PhD, associate professor of microbiology and immunology, on his study about how a low intake of fiber reduces the range of gut bacteria—a change that is passed along to our children. Jan. 13

**PBS**

“I think the biggest challenge is that people don’t want to make plans and have discussions because the topic is so threatening to them. So what happens is, because they don’t plan for it, they are subjected to treatments that are A, not helpful and B, not what they want.”

—V.J. Periyakoil, MD, director of the Stanford Palliative Care Education & Training Program, on-end-of-life decision-making. Jan. 14

**Reuters**

“There is no reason why you can’t do the screening right there (in the waiting room) on an iPad.”

—Keith Humphreys, MD, professor of psychiatry and behavioral sciences, on a new recommendation from the U.S. Preventive Services Task Force that all adults be screened for depression. Jan. 26

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**Young Athletes Academy tackles youth sports injuries**

Young athletes are highly prone to injuries, accounting for more than half of the 7 million sports- and recreation-related injuries each year in the United States, according to the federal Centers for Disease Control. Every 25 seconds an athlete between the ages of 5 and 24 visits the emergency room for a severe sports injury, Safe Kids Worldwide reports.

“We’ve seen a three-fold increase in the number of youths participating in organized sports since 1995,” said Charles Chan, MD, an orthopedic surgeon at Stanford Children’s Health and Lucille Packard Children’s Hospital Stanford. “That’s 44 million children a year. In an effort to achieve success, which unfortunately is measured by winning, we’ve lost sight of overall health and well-being.”

That’s why the new Children’s Orthopedic Center and Sports Medicine Program at Stanford Children’s Health developed a Young Athletes Academy, which launched in January. The academy’s team of physicians, physical therapists and athletic trainers visits area high schools to work with students and coaches in injury prevention and treatment.

“We aren’t just visiting schools and conducting pre-season physicals,” Chan explained. “We’re there to educate athletes and to develop treatment plans with school trainers and coaches. The goal is try to prevent sports injuries altogether.”

**Focus on prevention**

Scott Larson, executive administrative director of the program, said the outreach includes teaching young athletes how to properly stretch, warm up, run and jump. “We’re being proactive,” said Larson, “and providing learning objectives that hopefully will last throughout a young person’s athletic career.”

A prime focus of the academy is to prevent youths from sustaining anterior cruciate ligament (ACL) tears, one of the most common knee injuries in sports—and one showing an alarming rise among young girls. The team hopes to reduce the rate of ACL injuries—which can bring an athlete’s season to an abrupt end—by identifying risk factors early and implementing a therapy plan using motion analysis to improve joint alignment, as well as biomechanics. In addition, the academy offers screenings for overtraining and burnout, consultations on nutrition and the female athlete triad (three distinct and interrelated conditions), and comprehensive concussion management.

“We think Stanford’s approach with the Young Athletes Academy will be very beneficial for schools,” said Matt Smith, athletic trainer at Burlingame High School. “Injury reduction, improved conditioning, skill acquisition and overall better health are important to our kids, and we appreciate what this new program offers. We look forward to working with them.”

**Specialized studies**

Stanford Children’s Health also will launch the Pediatric Motion and Sports Performance Lab in May. Located at the new Stanford Children’s Health Specialty Services–Sunnyvale location, the new, 6,000-square-foot center will enable researchers to study and better understand the science of movement in young people.

“There’s a lot of research in the area of sports performance and athletics, but most of it focuses on mature athletes,” said Chan, a clinical professor of orthopedics at Stanford University School of Medicine. “Stanford physicians, scientists and care teams would like to change that by focusing on the growing athlete.”

SEE SPORTS ON PAGE 5
Nature by design
Hospital expansion adopts a California ecosystem theme

For nearly a year, a group of designers, architects, parents and staff held regular sessions to weigh in on some very important plants and animals. Discussions ranged from cottontail rabbits to Western dogwoods, tiger salamanders to black bears. The results of their final decisions will help refine the identity of the Lucile Packard Children’s Hospital Stanford expansion and make a lasting impression on the children, expectant mothers and families who will enter its doors when the new building opens in summer 2017.

“We wanted to create a hospital that had a real sense of place, one that could be nowhere else but in California. All of our conversations focused on the uniqueness of this area’s geography, ecology and wildlife,” said Robin Guenther, FAIA, principal at Perkins+Will and the lead designer of the hospital expansion.

The expanded facility builds on the foundation established 30 years ago by hospital founder Lucile Salter Packard, who envisioned a place for young patients and expectant mothers where the latest tools and technologies would be coupled with a warm, family-friendly environment. The addition incorporates many elements of the original hospital, which opened in 1991, while expanding on a design concept that integrates nature seamlessly into the overall patient experience.

The new building will add 521,000 square feet to the approximately 300,000-square-foot existing hospital, streamlining care and adding more private rooms. Once the expansion opens, the hospital and its satellite locations will be licensed for 397 beds.

Integrating nature
“Lucile Packard was passionate about helping kids. We wanted to honor her spirit and build a hospital that is about the people who will use it,” said Guenther. “It’s all about the patient experience and how families feel when they are in the building. From the very beginning, we knew that nature would be a guiding theme.”

The original hospital incorporates an ocean theme, using colors, sea animals and wavy patterns on the carpets to help visitors find their way around the building. Guenther and her design team expanded on that general concept to help integrate the two adjacent structures, joining together ocean and land. The addition is themed around the land-based ecoregions of California, with each floor representing a specific regional landscape.

The ground floor, for example, is themed to the California rocky shoreline, populated by harbor seals, the salt marsh harvest mouse and cypress trees; the high desert theme on the third floor will showcase bighorn sheep, valley quail and saguaro cactus. Leafy patterns and accent colors reinforce the sense of the unique environment on each floor, which reflect ecosystems by elevation, from deep ocean on the lowest level to mountain on the top floors.

“The themes establish a universal language to help visitors navigate the hospital,” Guenther said, since using visual wayfinding cues makes it understandable for people regardless of their native language. “It’s intuitive to use and intrinsic to the design layout.”

Commissioned artwork and animal sculptures will serve as directional landmarks throughout the hospital and provide inviting spots for entertainment and education. “There’s a signature theme of mothers and babies that helps create a sense of warmth and healing. We want the nature theme to act as a counterpoint to all the technology that is such an essential part of a hospital,” said Diane Flynn of Menlo Park, a member of the hospital’s Public Spaces Committee, which includes parents of former patients.

Group effort
Each environment has been carefully researched to include only native species, both common and endangered. Guenther’s group met with Stanford biologists and ecologists to define the specific ecosystems and to identify the flora and fauna unique to each region. They then showed the concept and a range of options to parents and children for feedback and final selection.

“It was a very democratic process, and the designers were extremely open to our input. We want to create a place like nowhere else, one that is representative of the Bay Area and California,” said Liz Pavlov, a Woodside parent working in the hospital’s Department of Family Centered Care. “Our vision was to create a place that is uplifting and entertaining and amusing to kids without being too ebullient or sweet.”

She and members of the Family Advisory Council looked at numerous iterations to refine the themes and to develop educational aspects of the selections. Their feedback was incorporated into artist renderings, which were presented to a focus group of young patients and their siblings for their insider perspective.

“Some of the kids’ top votes were surprising to me,” Guenther said. “They didn’t always pick the ‘warm and fuzzy’ animals. I mean, who would have thought that bighorn sheep would be a winning favorite? Some are endangered species, but we thought it was reasonable to include their stories even if the ending isn’t always happy. We made no attempt to enforce a balance, so there’s a random and unique cross-section of mammals, amphibians and insects of vastly different sizes and personalities.”

A sense of place
The hospital’s depictions of owls, foxes, bears and frogs are more than just decorations. Numerous studies have shown that integrating nature into a hospital setting helps to reduce stress and anxiety, speed recovery and increase patient well-being. Florence Nightingale observed in 1860 that placing patients where they could see nature was “quite perceptible in promoting recovery.”
STEINBERG: I've been at Stanford for 41 years, and it has long been apparent to me that the system we had was not ideal for patients with neurologic disease and illness. The impairments that accompany those conditions can make it difficult to navigate to different places. As a leader in patient-centered care, we wanted to integrate all our services into one location to create an optimal patient experience where people feel that doctors are coming to them, not the other way around. We couldn't have done that without this kind of building.

The Stanford Neuroscience Health Center is beautiful, but its exterior doesn't look so unusual. What's on the inside that sets this building apart from others?

STEINBERG: When the development of the center was first being discussed, we talked about creating an environment that would provide comprehensive care in a single facility. The new center offers even our most physically challenged patients the full continuum of care, from their initial treatment to lifelong living, including a balance and gait lab, mobility garden, and speech, occupational and physical therapy.

LONGO: The center has a very special feeling to it. It’s something you notice as soon as you walk in. There are wider hallways and door openings. The colors and textures on the walls and floor have been selected for the safety for our particular patients. Floors are organized logically to reduce the need for patients to move around too much. There is also a one-time-only check-in system to make visits easier for people with more than one appointment in the building. We want our patients to come to our center and immediately recognize that it was designed to respond to their challenges in ways they have never seen in a care facility.

How did you come up with these unique features?

LONGO: We created a special neuroscience patient and family advisory council that began to meet very early in the building design and development process. We wanted to know, in as much detail as possible, how we could best accommodate our patients. The group participated in meetings with architects, clinical staff and space planners. Its input was a remarkable gift that produced changes rarely implemented in a health-care center in such detail and with such sensitivity.

STEINBERG: As a clinician, you can forget sometimes what it’s like to be a patient—how much time you spend waiting for appointments, traveling to visits, receiving treatments and waiting to meet with your team of physicians. We wanted to hear patient input so we could alter the old system. We also had many dry runs with the advisory council and other volunteers to see how the new system would work. We wanted to make sure they would be comfortable from the very first day we welcomed patients.

What are other features patients will notice?

STEINBERG: Many of our patients want to have family members or friends with them during their visit. Our care team might include me, a nurse practitioner, a doctor receiving advanced training and a subspecialist neurologist. That number of people can be a tight, if not impossible, fit in a standard exam room. The center’s larger exam rooms will accommodate many more people comfortably.

LONGO: The space for support services we now have in this building means our neurological rehabilitation area, which includes a balance center and the kinematic lab, can accommodate some of the newest therapeutic equipment available. On the first floor, patients will see a wellness room—a beautiful, light-filled room with many features of a dance studio. It will support educational classes, lectures and physical activity sessions. All of these features are good for patients.

How does this building benefit doctors?

LONGO: The center brings together people who may have had some interaction before but never experienced direct collaboration. This will be the first time we’ve gathered people from all these neurological fields together. I am sure that entirely new approaches to patient care will evolve because we have all of these disciplines together under one roof. Our clinicians are motivated every day by their patients to come up with better treatment options. Working in closer proximity means they can share their enthusiasm with each other and push the boundaries of what we can do for patients.

STEINBERG: One of the advantages of Stanford has always been the presence of people doing groundbreaking work in many fields. New ideas are born because we run into each other by accident. In this center, it won’t be an accident. There are conference rooms on every floor, and many neuroscience providers will have offices here in the building. Also, for the first time, we’ll have clinical research offices located here, too. The best patient care often involves collaboration between specialists and care teams in many fields. It’s a feature of Stanford Health Care and Stanford Medicine that continuously renews my drive and passion to create better ways of taking care of our patients.

To learn more about the center, please visit stanfordhealthcare.org/neuro.
Brad Ackerman has lived most of his life with essential tremor, a common movement disorder that most often affects the muscles in the head, tongue, jaw, voice and legs. The involuntary shaking or trembling caused by essential tremor can make the activities of daily life quite difficult. In Ackerman’s case, it disrupted the movement of his hands, limiting some of his daily activities, his career choices and his social life.

“No one wants to think about being disabled because of something like this,” Ackerman said. “It’s just not something you let yourself think about.”

Essential tremor, whose origin is not completely understood, is one of the most common movement disorders: An estimated 7 million Americans have been diagnosed with the condition, according to a 2014 study published in the journal Tremor. That is 2.2 percent of the U.S. population, far greater than the .15 to .3 percent of the population with Parkinson’s disease.

Family connection

In many cases, essential tremor is genetic and appears in families from generation to generation. Studies show that children have a 50 percent chance of inheriting the disorder from a parent. In Ackerman’s family, two uncles and several cousins had essential tremor. Because the condition was so visible in his family, he thought the difficulties he began to experience in childhood were normal. He learned how to compensate early on, figuring out how to hold his knife, fork and spoon in a way that allowed him to get food into his mouth without spilling. With a heavier object, he managed to grab it with one hand and then transfer it to the other before the tremor in that first hand would loosen it from his grasp.

But the tremor began to affect the direction of his life. In high school, he loved drawing and painting, but his tremor meant he could not easily hold or control a pencil, pen or paintbrush. He was in denial, telling himself that he just didn’t have the talent for art. But he did reimagine how to apply his creative drive: He became an industrial designer, where he could express and execute his visual ideas with the help of a computer.

The tremor, however, affected his social life. “I had to really think about what I would eat when I went out,” he said. “What could I get into my mouth?” Adjusting his movements to maintain his typical life became more and more stressful—and stress can worsen essential tremor symptoms. His wife, Carol, knew about the tremor years before their marriage and remembers the stress she felt (and knew he must have felt) as he struggled to light candles at their wedding ceremony in front of their 500 guests. She had also watched his condition deteriorate with time. “I would notice that when he would sign his name, it was illegible,” she said. “It was getting worse and worse.”

Another option

It is known that the underpinning for essential tremor is irregular electrical activity in deep circuits of the brain. But for many years, medication was the only option available to quiet that activity. However, medication doesn’t work for many people. For others, medication works but produces side effects that interfere with daily life. Ackerman didn’t like how he felt while medicated. “It just made me want to sit and do nothing,” he said. “It got harder and harder to do a drawing at work. After a while, I couldn’t do it.”

With his livelihood threatened, Ackerman turned to a newer treatment: surgery.

A minimally invasive procedure has helped to control Brad Ackerman’s essential tremor and has given him the freedom to do regular activities. Devices implanted in the brain to help control its electrical activity. The treatment, called deep brain stimulation, is currently being used at Stanford to treat Parkinson’s disease and other movement disorders.

Targeted implant

Ackerman had a procedure in February 2014 that involves MRI-guided placement of a small, insulated wire into one of the targeted brain structures. At the tip of that wire are four small electrodes that can release electrical impulses to block tremor. The wires are connected to a 2-by-3-inch battery pack that sits under the skin in the chest, just as cardiac pacemakers do. Like most people undergoing the procedure, Ackerman was awake during the process, providing feedback to his neurosurgeon, Casey Halpern, MD, so the surgeon could adjust the pacemaker to meet Ackerman’s particular needs.

“To transform my patients’ lives with a millimeter-sized electrode placed in the brain without destroying any tissue or requiring any large incisions is what inspires me every day,” said Halpern, assistant professor of neurosurgery. “These kinds of procedures have that power of transformation—and, until recently, this type of therapy wasn’t available.”

Studies have shown that after five years, patients experience a 75 percent improvement in the degree of their tremor during regular activities.

Ackerman noticed an immediate change as soon as clinicians turned on and adjusted the device. “It was much better,” he said, “and I can do my job better. I had such anxiety as a result of the tremor, from all the things I had to think about to do what most people consider simple tasks. My whole life has changed. And the surgery has been so successful.”
Close-up studies

At a workshop on veterinary medicine, Donna Bouley, DVM, PhD (left), a professor of comparative medicine, uses a model to teach rat anatomy to students at Alta Vista High School, a continuation school in Mountain View. In the December workshop, an enthralled group of students examined animal fur, antlers, teeth, placentas and hearts in hands-on exercises. They learned how to do suturing and how to wrap the broken leg of a horse.

The students also learned about the connection between animal and human health and about careers in veterinary science. Bouley led the session, along with veterinarians Megan Albertelli, DVM, PhD; Gabriella Suarez Mier, DVM; and Stacey Kang, DVM.

Preparing for Multiples
A class for those expecting twins, triplets or more

Date: Saturday, March 26, noon–4:30 pm
Location: Community Programs Classroom, 4100 Bohannon Drive, Menlo Park

Fee. Register online at classes.stanfordchildrens.org.

Infant Massage Workshop
A four-week class for parents and their infants 0–6 months of age

Date: Fridays, April 1–22, 11 am–12:30 pm
Location: Community Programs Classroom, 4100 Bohannon Drive, Menlo Park

Fee. Register online at classes.stanfordchildrens.org.

Events are free unless otherwise noted. Space may be limited, so please call to register in advance.
Shortly after he turned 60, Stephen Hudson received a single new lung to replace the one destroyed by his exposure to asbestos. He was happy to be alive, but it is never easy to adjust to post-transplant life. Among all the other new health habits required of him, Hudson had to take immune-suppressing medications to lower his body’s natural reaction to attack the new lung, and those medications boosted his risk of skin cancer.

By the time Hudson’s skin cancer was diagnosed, it had invaded his lower lip. It wasn’t a complete surprise. “I just forgot over the years that I was going to have this problem,” he said.

Increased cancer risk

For people lucky enough to have received a lifesaving kidney, heart, lung, liver, pancreas or bone marrow transplant, that luck comes with a caveat: a 60-fold increase in the risk of developing squamous cell skin cancer. Squamous cell skin cancer tends to be more likely to invade deeper into tissue and to spread elsewhere in the body. Immunosuppressant medications also multiply the risk of basal cell carcinoma by 10-fold and of melanoma by three-fold.

Hudson, 76, was so engaged in his post-transplant adjustment that he overlooked these potential complications. “I just let it go longer than I should have,” he said.

Stanford Medicine dermatologist Carolyn Lee, MD, PhD, is trying to head off these problems through the new Stanford High-Risk Skin Cancer Clinic, which serves as an early-warning system, a frontline defense and, if need be, an all-out hands-on-board diagnosis and treatment center for patients like Hudson.

Clinic physicians also see patients who develop skin cancer at a faster rate than average because they have very fair skin or a family history of skin cancer. Other people at higher risk for skin cancers are those with conditions that produce chronically inflamed skin, as well as the millions of Americans who take immunosuppressant medications for chronic autoimmune disorders, such as celiac disease, Crohn’s disease, Graves’ disease, lupus and rheumatoid arthritis.

Careful monitoring

“The good news about skin cancer is that unlike many internal cancers, you almost always see it coming,” said Lee, a clinical instructor of dermatology at Stanford University School of Medicine. “Careful surveillance is the best defense. What I hate to see is someone who’s been waiting for a transplant, then finally get it, only to be felled by skin cancer, which is fairly preventable.”

That’s why she encourages people who are waiting for a transplant to be seen as soon as possible before a transplant surgery. “It’s much better to take care of any precancerous lesions or skin cancer before that surgery,” Lee said.

Treatment and monitoring may depend in part on the age of the person with a transplant, and the type of transplant. “Someone who is young, who has not sustained a great deal of sun damage, who has no precancers or active skin cancers at the first visit can probably be seen every six months to every one year,” Lee said. “Transplant patients older than 50 usually have accumulated a certain amount of sun damage that can predispose them to skin cancer and so may require more frequent monitoring.

Careful monitoring includes special techniques that can remove cancer from large areas, such as topical chemotherapy, photodynamic therapy and chemo wraps. Clinic specialists include dermatologic and head and neck surgeons with experience removing skin cancers that can sometimes cover entire body parts, as well as plastic surgeons who can help repair the affected areas.

Patients also may participate in clinical trials of biologics that are targeted at certain newly identified skin cancer drivers and mutations. “Many of our doctors in the clinic also spend a significant amount of their time in research to advance our field,” Lee said. “This is particularly true in the study of basal cell carcinoma. We are pushing the boundaries on what is known and what can be done to treat it.”

She and a colleague are also investigating a phenomenon they have observed—that post-transplant patients who do develop skin cancers tend to develop more aggressive malignant cancers.

Hudson had to have his entire lower lip reconstructed after doctors removed the cancerous tissue, but the repair was done so well that it is nearly undetectable. Lee continues to treat him for small surface cancers on his head, nose, face and ears. Hudson has become conscientious about using sunscreen and wearing a hat with a brim large enough to shade his ears when he is outdoors.

And he doesn’t miss his appointments. “I have renewed confidence. You’re going in knowing that they are going to take care of you,” Hudson said, “and that they are doing all they can do.”

To learn more about the clinic, please visit stanfordhealthcare.org/medical-clinics/high-risk-skin-cancer-clinic.html.
A
fter her family lost its health insurance last summer, high school senior Beneralda Garcia-Flores began receiving her medical care through the Teen Health Van, a mobile health unit that parks regularly outside her school at the East Palo Alto Academy.

Garcia-Flores, who juggles school, homework and two part-time jobs to support her family, regularly visits with the medical staff to get her prescription medicines and address other health-care needs.

“Having this resource at school, where I spend much of my time, is very convenient,” she said. “It has been a big help to me and to other kids who come from low-income families and don’t have health insurance.”

This year marks the 20th anniversary of the Teen Health Van, a program for underserved youth sponsored by Lucile Packard Children’s Hospital Stanford and Stanford Children’s Health. Thanks to generous donors, the clinic recently acquired a new vehicle with the latest technologies to help improve care for its vulnerable patients.

“Having this new, highly reliable and state-of-the-art vehicle—along with all the latest technologies—is allowing us to better serve our patients,” said Seth Ammerman, MD, medical director of the program, officially known as Mobile Adolescent Health Services.

Ammerman and his health-care team, which includes a nurse practitioner, a registered dietician and a social worker, travel to seven schools and community centers from San Francisco to San Jose, providing free and comprehensive primary health care to young people age 10 to 25.

For many patients, the Teen Health Van is their only access to health care. The mobile clinic treats youth with a range of needs, including basic medical care, reproductive issues, skin problems, anxiety and depression, sexually transmitted infections and nutrition problems. The team also offers substance abuse counseling and treatment.

Children’s Health Fund, Samsung, Caroline and Fabian Pease, and the Westly Foundation contributed to purchase the new van and equip it with the latest interactive technologies. Using a tablet, the medical team can retrieve information to explain a condition and display results on a 32-inch monitor on the exam room wall. Patients and staff also can use video to translate images and sounds from stethoscopes and other medical instruments.

“The kids love these technologies because they’re interactive,” said Ammerman, who is also a clinical professor of pediatrics at Stanford University School of Medicine. “I can make notes on the tablet and save and print the information for the patient to take home. This technology is very personal and patient-specific.”

The van’s new technology also allows Ammerman to consult with medical specialists via live video chat. Before this service was available, it was difficult for patients to get consultations with specialists because of transportation and insurance issues.

“This type of remote ‘telehealth’ is going to change the way medicine is practiced for the underserved population,” he said.

“A big barrier for these kids traditionally not only is their ability to get primary health care, which we provide, but also specialty care. This is a way to overcome that barrier.”

Since the program’s launch in 1996, the team has served more than 4,500 patients during 15,000 visits. And the demand for its services continues to rise. Ammerman estimated that each dollar spent on prevention and intervention through the Teen Van saves $10 in future medical costs.

“These working-poor families make too much money to qualify for Medi-Cal,” Ammerman said. “Even with the Affordable Care Act and other programs, these families are still living paycheck to paycheck and can’t afford health insurance. Housing costs in the Bay Area are going up, making it harder to afford the necessities. And about 40 percent of our patients are currently or have been homeless in the past year.”

Amika Guillaume, principal of East Palo Alto Academy, said the van and the medical staff are an invaluable resource to the school community.

“To be ready to learn, kids need to be healthy and have their primary needs met,” Guillaume said. “The van has become a safety net for the students and their families who know they can always rely on the medical staff and the services they provide.”