Lucile Packard Children’s Hospital has launched an ambitious effort to protect premature and dangerously ill infants from brain injury.

The new Neuro NICU, consisting of six beds in a dedicated room in the neonatal intensive care unit, will provide specialized neurological care to at-risk babies, including those who are premature, suffer early infections, have birth defects or were deprived of oxygen during labor and delivery.

Packard Children’s is one of a handful of hospitals in the country with a unit of this kind, which offers advances in treatments and technologies that allow physicians not only to keep fragile babies alive but also to reduce their risk of suffering neurological problems.

Better outcomes

“Survival rates of critically ill premature and term babies are now quite robust, but we are realizing that some of these surviving babies have developmental problems,” said neonatologist Krisa Van Meurs, MD, the unit’s medical director and professor of pediatrics at Stanford. Fortunately, new neurologic research has provided a diverse set of tools for improving vulnerable infants’ developmental outcomes and giving them the best chance at a strong start in life, she said.

“The challenge and exciting thing about treating these tiny babies is that the brain is developing on a day-by-day basis,” said Courtney Wusthoff, MD, a neonatal neurologist who arrived at Packard Children’s last September to help launch the Neuro NICU. With advances in research and technology, she said, “we have more and more options for interventions.”

In addition to bringing Wusthoff on board, the hospital has purchased a wide array of new equipment for diagnosing neurologic problems and monitoring babies’ brains and is providing specialized training for all its NICU practitioners on the latest research and treatments in infant neurology.
Breaking boundaries in studies of sex and health

This spring marked the launch of the Stanford Center for Health Research on Women and Sex Differences in Medicine, known as the Stanford WSDM ("wisdom") Center. There, Stanford scientists are encouraged to study sex differences in cells, tissues, animal models and human health outcomes and to emphasize women’s health. The center also aims to understand and reduce the health disparities experienced by men, whose lifespans are substantially shorter than those of women in all racial, ethnic and socioeconomic groups worldwide.

The center will unite the many Stanford faculty members conducting health research on women and sex differences in basic biology and the influence of gender on disease. It also plans to promote further research in all medical disciplines, as well as identify clinical areas (such as health issues in gay, lesbian and transgender people) that need to be recognized to provide health equity for everyone.

Marcia Stefanick, PhD, professor of medicine and obstetrics and gynecology, and Lynn Westphal, MD, associate professor of obstetrics and gynecology, are co-directors of the center. Stefanick shared their plans for the Stanford WSDM Center.

What was your ultimate goal in the creation of WSDM?

We’re eager to advance basic science of sex differences and similarities—something we believe Stanford geneticists, stem cell researchers and developmental biologists are well placed to do. We expect that our work will translate into better clinical practice for both women and men, and greater health for all ages across the population.

Why is it important to focus not just on women’s health but also on sex differences?

Most basic research is done on males (in particular rodents, which show varying sex differences across strains); therefore we often lack even the basic understanding of female physiology. One example involves differences in drug metabolism, as women experienced significantly more problems than men for eight of 10 drugs that had to be pulled off the market in recent years.

The traditional focus of women’s health has been on reproduction, fertility and diseases associated with female sex hormones. How will the work in the center move beyond that?

In general, every cell has sex, by having at least one X- and either a Y- or a second X-chromosome; therefore, the potential impact of “sex” on the functioning of every tissue and organ system is worth investigating, particularly in light of the powerful environmental factors associated with differences in reproductive hormones and function. Furthermore, our focus on reproduction is fraught with cultural biases that have resulted in misinterpretation of the data. For example, college students are still taught that the ovary is a “default” outcome of sexual differentiation, when in fact we now know that both ovarian and testes development are active, ongoing processes throughout women’s and men’s reproductive lives.

One of the center’s goals is to investigate the influence of gender on biology and the role of gender medicine in health outcomes. Can you provide some examples of how that will be done?

Stem cell and other basic science researchers who have attended our events have gone back to their labs and examined their data on male vs. female animals, with similarities and differences they hadn’t expected, resulting in new research directions within their labs. We’re slowly bringing these scientists together to discuss such findings, with the expectation of new collaborations, innovative approaches and paradigm-shifting research within the next few years.

The center’s emphasis extends beyond women. Why do you and Dr. Westphal feel so strongly that men need to be included? And how do you anticipate your work will benefit men?

We’re particularly keen to generate basic research that includes cells and tissues from both male and female animals. But we’re also eager to support the work of groups such as the Stanford March of Dimes researchers who are looking at the profound sex differences in human neonatal outcomes and neuroscientists who are investigating sex differences in brain pathology, such as autism and fragile X. To provide one example: Jennifer Tremmel, MD, director of Women’s Heart Health at Stanford and an advisory board member for our center, is training Stanford interventional cardiologists in radial angiography, a procedure that reduces bleeding complications in women undergoing angiography. It turns out the procedure is of benefit to men as well. She recently discussed this work on The Dr. Oz Show.

If you are interested in becoming involved in the Stanford WSDM Center, please contact sonoot@stanford.edu. You can stay abreast of the center’s work at facebook.com/StanfordWsdmCenter.
Under pressure
Building stress tests check for safety and stability

While bulldozers and backhoes change the landscape to make way for the new Stanford Hospital, parts of the building already have been constructed and put under intense scrutiny. Drenched by high-pressure water hoses, blown by powerful airplane propellers and shaken like a martini, important structural elements have undergone numerous tests to see how they will hold up to an earthquake or other natural catastrophe—long before the actual building goes up.

These in-depth processes revealed potential problems that have already been addressed, saving on construction costs and ensuring the well-being of patients and staff.

The new hospital will deliver advanced treatments and technologies in an environment that is modern, welcoming and easy to navigate. But designing the hospital is not just about appearances: Because Stanford Hospital & Clinics is a crucial community service that must be up and running in case of disaster, the new building’s structural components had to be tested, monitored and appraised for safety and stability.

Integrated approach
“Structural testing was fully integrated into the design process. The tests show us how the building components will react to a major earthquake and other stresses,” said Joseph Brogden, AIA, senior project manager for New Stanford Hospital construction. “We need to check the fit and finish, and see how things move, so we can fine-tune the details now to avoid issues in the case of a real event.”

A design team made up of architects, engineers and contractors drew detailed renderings of several key building components, from the exterior’s precast concrete shell to the silicon that holds the oversize glass windows in place. The team focused on potential architectural stress points in the new hospital, including a glassed corner of a patient room, the circulation corridor outside the operating rooms, a ceiling connection in the main atrium corridor and the inset windows in the intensive care unit.

“We wanted to test as many different systems as possible, so we picked elements with multiple components that had to fit together,” Brogden said.

Shake, rattle and roll
Full-size reproductions based on the team’s exact specifications were built at national testing sites. First the team did a series of static tests to check for normal circulation and weatherproofing. Then they did dynamic tests to assess how well the sections held up when subjected to intense air and water pressure powered by a full-size airplane engine, followed by seismic movements replicated by hydraulic jacks.

One test reconstructed a corner of one of the pavilions, built to scale at 45 feet by 25 feet by 15 feet. Over three days, the engineers subjected it to a number of stress tests to measure its movement range, wind loads and seismic loads. The section was jerked up and down, and side to side, while sensors measured potential leaks and weak spots. Some of the windows in the new hospital, for example, will be the first in the United States to have a pressurized cavity between double-paned glass with automated blinds inside. These windows use silicon rather than standard fasteners to hold them in place. Since current building codes have not yet caught up to this technology, the 13-by-8-foot windows were tested multiple times at a specialized site in Pennsylvania.

“We needed to make sure that the windows would not leak. After the first test we found some spots where water got through, so we made modifications and tested it again,” Brogden said. “If there’s an issue, we do not leave until we understand the cause or take things apart until the problem is addressed.”

Finally the tests tracked how well the building components could withstand the effects of two different earthquake scenarios: the magnitude the structure can take without developing leaks and the highest magnitude it can tolerate and remain stable.

“Based on the results, each system will be able to withstand an 8.0 earthquake and remain functional,” said Brogden.

Sneak previews
The stress test scenario helps the design team with some of the more pragmatic aspects of the design as well, he said. “We know that the glass will not fall out under stress, but we were also able to see that we could replace the window if the glass somehow got cracked. We checked door heights and hall layouts to see how we could get a replacement in place if the motorized shades broke in 20 years.”

The interior has undergone a similar level of scrutiny. In planning the layouts of the new patient rooms and operating suites, life-size mock-ups were constructed off-site and assessed by physicians, nurses, technicians and even patients. Their evaluations of the space logistics provided first-hand feedback to improve efficiencies and coordinated care. The layouts also helped the construction teams, who used the walkthroughs to analyze how to position pipes, electrical wiring and infrastructure.

“As the building goes up we will continue to test to ensure that we meet specific criteria,” Brogden said. “Testing is an ongoing procedure, from the initial design to the final stage.”

Learn more about the Medical Center Renewal Project at sumcrenewal.org.

Components of the new Stanford Hospital were subjected to intense air and water pressure at special testing facilities.
rooks Bahr, MD, a clinical assistant professor of dermatology at Stanford, has paid the price for his carelessness under the sun. The fair-skinned Bahr has played outdoor sports his entire life, including football at the University of Utah. By the time he was 32, he had developed a basal cell skin cancer, which was removed.

Growing up, I always played in the sun and only wore sunscreen occasionally. It caught up with me,” Bahr said. “Now I wear sunscreen every day and encourage everyone else to do the same.”

Summer brings more intense sunshine and with it the need to pay special attention to the skin, especially among children and teens. Research shows that periods of severe sun exposure or sunburn—especially during childhood—increase the chances of developing skin cancer.

“When you get sporadic but intense ultraviolet radiation exposure, it causes an insult to skin cells’ DNA, which is believed to initiate the malignant changes that can lead to skin cancer, including melanoma,” said Susan Swetter, MD, a professor of dermatology at Stanford and director of the Stanford Pigmented Lesion and Melanoma Program. “Once those DNA mutations occur, your cells are more susceptible to damage from ultraviolet light. This damage accumulates over your lifetime.”

Ultraviolet (UV) radiation from the sun and artificial sources (i.e., tanning beds) is responsible for sunburn, accelerated aging of the skin (called photoaging) and skin cancer. Approximately 95 percent of UV radiation is composed of UVA-type rays, which are strong all day and all year long. The other 5 percent are UVB rays, which penetrate the skin less deeply but are 400 times more intense in the summer and at midday between 10 am and 4 pm. UVB rays play a key role in sunburn and skin cancer.

Sun protection during outdoor activities is mostly a matter of common sense: avoid the hottest hours of the day, seek shade when possible, use sunscreen liberally and wear protective clothing like hats, long sleeves and sunglasses—and practice these habits consistently.

Broad-spectrum sunscreens that block both UVA and UVB rays are recommended for daily use on the face, neck, hands and any other areas not covered by clothing. A recent study in Australia showed that people who used sunscreen regularly were at lower risk of melanoma, the most deadly form of skin cancer, compared to those who used it only occasionally.

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Most people use less than half of the sunscreen they need to achieve the actual SPF level of the product,” Swetter said. She suggests using a sunscreen with SPF of at least 30, applying two to three tablespoons to the body and one tablespoon to the face. Reapply sunscreen every two to four hours while in the sun, and more often when swimming or sweating, as there is no such thing as a waterproof sunscreen. Sunlight reflected off the water or beach also increases UV exposure.

Tanning-bed trouble
Swetter strongly advises against the use of indoor tanning beds, which emit UVA and UVB radiation at up to 15 times the intensity of natural sunlight.

“The tanning-bed industry has long promoted the concept that tanning beds give a safe and healthy tan because they don’t allow as much of a burn,” Swetter said. “But that’s a complete fallacy. Any time tanning occurs, there is cellular damage to the skin. There is no safe tan apart from sunless tanners, which simply stain the top layer of the skin.”

The U.S. Food and Drug Administration considers artificial UV radiation from tanning beds a dangerous carcinogen, and the American Academy of Dermatology warns that people who use them increase their risk of developing melanoma by 75 percent.

One in five Americans will develop...
skin cancer in his or her lifetime, the vast majority of which will be basal cell and squamous cell carcinomas. Melanoma accounts for only 4 percent of cases but more than 80 percent of all skin cancer deaths. People with fair skin and those with a number of moles, sun sensitivity or a family history of skin cancer are more likely to develop melanoma. Older men have the highest incidence and mortality rates from melanoma, but the number of new cases in young women is on the rise—likely due to tanning-bed use.

**Athletes at risk**

Exercise is certainly part of a healthy lifestyle, but outdoor exercise requires sun protection. Research has shown that perspiration increases the skin’s susceptibility to sun damage and could increase skin cancer rates in athletes and outdoor enthusiasts.

Bahr, Swetter and other Stanford dermatologists initiated a program to educate the university’s student athletes about their increased risk and help them improve their sun safety habits. Called SUNSPORT (Stanford University Network for Sun Protection, Outreach, Research and Teamwork), the program is a collaboration of the Stanford dermatology and athletic departments, the Stanford Cancer Institute and Stanford Hospital & Clinics.

SUNSPORT dermatologists provide skin screenings, give educational talks and materials to athletes and coaches, and work closely with the trainers who interact with the teams throughout the year.

“The rates of skin cancer in the coaches and significant sun damage we’ve seen in 18- to 22-year-olds are striking,” Swetter said. “Our hope is that through improved sun protection practices, we can prevent skin cancer in what we now consider a ‘higher risk’ population.”

SUNSPORT aims to leverage the popularity of Stanford Athletics to help spread the sun safety message to students, faculty and fans. “Having Stanford athletes serve as ambassadors to their peers and to younger school-age athletes is also a major goal,” Swetter said.

“We formed SUNSPORT to help Stanford’s outdoor athletes and their fans realize the dangers of sun exposure without adequate protection,” added Bahr. “I learned from my own experience that the danger is real, but it can be avoided.”

Learn more about SUNSPORT at stanford.sunsport.edu.

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**Fending off heat stroke**

Heat stroke can affect almost anyone when temperatures climb and the sunshine is intense. It can strike during a neighborhood softball game, at an outdoor concert, while sitting in a hot car or even when mowing the front lawn.

Stanford emergency medicine specialist Grant Lipman, MD, said three key elements contribute to heat illness: air temperature, the rate of sweat evaporation and radiant heat. Combine them with other factors, such as age, existing medical problems and level of exertion, and it’s possible to predict who is likely to suffer heat stroke, he said.

Physicians, sports enthusiasts and military officials use a special tool called a wet bulb globe temperature gauge, which uses three separate types of thermometers, to determine whether it’s safe to indulge in outdoor activities on hot days. The rest of us need to be extra careful when the weather heats up.

Lipman cautioned that anyone planning a strenuous adventure in the heat prepare by acclimatizing in advance. “If you’re one of those audacious individuals planning to hike the Grand Canyon, then seven to eight days of repeated short amounts of exertion in that environment will help,” he said.

In general, staying safe in summer heat is fairly straightforward, he said, but it’s important to be aware of physical responses to avoid heat-related conditions. Here are some basics:

- **Humidity does matter.** The more humid it is, the more difficult it is to sweat. Sweating—and having sweat evaporate by means of a fan (or natural breeze)—is one of the body’s most important means of cooling down its core temperature.
- **Slow down in hot weather.** The more active you are, the more heat the body needs to dissipate. Your muscles use only a small portion of the energy you exert; the remainder is used to heat the blood and core temperature. Even walking can be too much if the outdoor temperature is too high to allow proper cooling.
- **Stay hydrated, but avoid liquids that are very cold.** Drinks with alcohol and high amounts of sugar can backfire because they can trigger high loss of body fluid. Sports drinks can replace salt and minerals lost through sweating, but individuals on a low-salt diet should choose other options. Food should be cool and have limited spice.
- **Wear light-colored, lightweight and loose-fitting clothing and a wide-brimmed hat.** Find shade when you can. When the heat is extreme, stay indoors in air conditioning or enjoy a cool bath or shower.
- **The risk of developing heat illness is higher among older adults and very young children and among people with fever, heart disease, high blood pressure, poor circulation and obesity.** Those already nursing a sunburn are more vulnerable to heat. Certain medications, including antidepressants and diuretics, can also affect body temperature regulation.
- **Know the signs and symptoms of heat-related illnesses.** For instance, if you’re not sweating and your skin feels hot, or if you feel nauseous, are dizzy or have a headache, slow down and take steps to cool the body. Mental confusion is another sign that the body is experiencing too much heat.
- **Act quickly to obtain first aid.** Get out of the sun and stop moving. If possible, submerge yourself in a swimming pool, lake or body of water and move your limbs so the water circulates around your body. That’s the liquid version of wind, which will cool you faster.
- **If you would rather not stay inside, “Wake up extra early and get out before it’s too hot,” Lipman said. “Don’t do anything in the middle of the day.”**
Menopausal Hormones: Still a Hot Topic
Presented by Stanford Hospital Health Library

Speaker: Marcia Stefaniak, PhD
Professor, Stanford Prevention Research Center
Date: Wednesday, June 26, 7 pm
Location: Stanford Hospital Health Library, 211 Quarry Road, Suite 201, Palo Alto
To register, call 650-498-7826.

Grandparents Seminar
Presented by Packard Children’s Hospital
Date: Monday, July 8, Aug. 5 or Sept. 9, 6 pm
Location: Community Programs Classroom, 4000 Bohannon Drive, Menlo Park
Fee. Register online at calendar.lpcch.org or call 650-724-4601.

I'm Sorry, Can You Repeat That?
Presented by Stanford Hospital Health Library

Speaker: Robert Jackler, MD
Professor, Otolaryngology (Head and Neck Surgery)
Date: Wednesday, July 10, 7 pm
Location: Stanford Hospital Health Library, 211 Quarry Road, Suite 201, Palo Alto
To register, call 650-498-7826.

Chilling the body
Heather Thomas, whose family has benefited from the service, arrived in labor at a San Jose hospital in early 2012 and was found to have suffered a placental abruption, a naturally occurring complication in which the placental lining had separated from the uterus. The baby was not getting oxygen and needed to be delivered immediately. But after the delivery, baby Jackson did not breathe. He had a seizure within a minute of his birth.

After Jackson was resuscitated, a physician asked Heather and her husband, Gary, to consider transferring their son to Packard Children’s to receive controlled hypothermia, a recently developed treatment for preventing brain injury after oxygen deprivation. In this procedure, the infant is placed on a blanket latticed with tubes that carry cool water. The baby’s body is cooled to 33.5 degrees Celsius for three days. Research conducted at Packard Children’s and elsewhere has shown that, if begun within six hours of birth, cooling slows damaging metabolic processes and gives the brain time to heal.

“Until relatively recently, we could only provide supportive care for full-term babies who suffered brain injury in the labor process,” Van Meurs said. “About 25 percent of neonatal mortality is due to birth asphyxia, so controlled hypothermia has the potential to have a big impact.”

Packard Children’s participated in one of the earliest clinical trials of hypothermia and has offered it since 2000, she noted.

Inside perspective
After Jackson’s body temperature was returned to normal, he received a magnetic resonance imaging scan to check for signs of brain damage. Use of MRIs for newborns’ brains is also innovative and provides a noninvasive way to detect brain injuries.

“There were no signs of brain damage,” Heather Thomas recalled. “We burst into tears.”

During Jackson’s hospital stay, the Packard Children’s team also monitored his brain with a modified electroencephalogram technique tailored to infants. Brain monitoring technologies allow caregivers to check a baby’s brain-oxygen levels and detect seizures.

“In the past, it’s been assumed that you could tell just by looking if a newborn was having a seizure,” said Wusthoff, an assistant professor of neurology. But it turns out that 80 to 90 percent of seizures in this age group cause no outward changes. “Newborns’ brains are not developed enough to show on the outside what’s happening on the inside.”

Fortunately, Jackson had no more seizures. Now 17 months old, he loves to play with his big brother, totes his favorite toy shark everywhere and shows no signs of developmental problems.

Growing impact
In addition to the techniques that helped Jackson, patients in Packard Children’s Neuro NICU benefit from multidisciplinary care by clinicians in neonatology, neurology, neurosurgery, developmental medicine, neuroradiology and psychiatry. And patients’ families receive consultations with social workers and other services to assist with practical concerns during their baby’s hospitalization.

Perhaps the biggest benefit of the Neuro NICU is that all NICU caregivers are receiving more training and experience in caring for infants’ brains.

Bike Challenge for Cancer Research
The 2013 Canary Challenge, a bike ride to raise funds for research in early cancer detection, will be held on Sept. 28. The Challenge offers 5-kilometer, 50-kilometer, 75-kilometer, 100-kilometer and 100-mile routes for all levels through the foothills of the Bay Area. The event includes food and water stops, and mechanical and medical assistance. Donations directly benefit the Stanford Cancer Institute and the Canary Center at Stanford for Cancer Early Detection. For more information and to register, visit canarychallenge.com.

Bringing Baby Home
Presented by Packard Children’s Hospital
Date: Sunday, July 14 and 21, 10 am
Location: Community Programs Classroom, 4000 Bohannon Drive, Menlo Park
Fee. Register online at calendar.lpcch.org or call 650-724-4601.

Heart-to-Heart Seminars
Presented by Packard Children’s Hospital
For Boys Only: Thursdays, July 18 and 25, 6:30 pm
For Girls Only: Mondays, Aug. 5 and 12, 6:30 pm
Location: Packard Children’s Auditorium, 725 Welch Road, Palo Alto
Fee. Register online at calendar.lpcch.org or call 650-724-4601.

What Every Woman Needs to Know About Breast Reconstruction
Presented by Packard Children’s Hospital
Speaker: Gordon Lee, MD, Associate Chief of Clinical Service, Stanford Plastic Surgery
Date: Wednesday, July 24, 7 pm
Location: Stanford Hospital Health Library, 211 Quarry Road, Suite 201, Palo Alto
To register, call 650-498-7826.

Sex, Drugs and the Rockin’, Rollin’ Teen Years: What Every Parent Should Know
Presented by Packard Children’s Hospital
Speaker: Seth Ammerman, MD
Medical Director, Teen Health Van
Date: Thursday, Sept. 26, 7 pm
Location: Packard Children’s Auditorium, 725 Welch Road, Palo Alto
Register online at calendar.lpcch.org or call 650-724-4601.
Laser technology has been used for decades to reshape the cornea as a way of correcting nearsightedness, farsightedness and astigmatisms. The challenge of using lasers in cataract surgery is to control its intensity to avoid collateral damage to surrounding tissue, the retina and other parts of the eye yet still power the precise incision required to remove the cataract.

The new technology, known as the Catalys Precision Laser System, uses a noninvasive imaging technique to create a three-dimensional, computerized map of the eye as a pattern for the laser to follow. The pattern is then superimposed on a three-dimensional image of the patient’s eye to confirm for the surgeon that the laser is on target. It also allows the surgeon to monitor the laser’s incisions.

The reduced energy needed to remove the lens lowers the risk of infection and damage to surrounding tissue, including the corneal epithelium, and minimizes other complications.

Nearly 60 years ago, Savoie’s mother had cataracts removed from both of her eyes. “She was a week in the hospital with sandbags on each side of her head the whole time,” Savoie said. “When I think about that, I think how amazed she would be now.”

Did you know?
The average life span for a stomach cell is two days.

Learn more about the Byers Eye Institute at stanfordhospital.org/eyeinstitute.

Eye issues
Each year 3 million Americans have their cataracts removed through an approach that has not varied for years: With hands trained by years of careful practice, ophthalmic surgeons follow the circular outline of the eye’s lens to reach the tissue hardened by time and score its surface with ultrasound so it can be removed and replaced with an artificial lens.

Savoie had the procedure done with the help of a laser that her eye surgeon describes as “one of the most amazing things to come along in cataract surgery.” Her vision is so improved that she says she was a child when she last saw the sky so blue. “I can’t tell you how wonderful I feel,” she said. And because she had one cataract removed with the laser and the other by the traditional approach, her experience gives her a special perspective.

The advantages of the laser begin with its precision. “Creating a circular opening in the lens capsule is a critical step in cataract surgery,” said Artis Montague, MD, director of cataract surgery services at Stanford and director of the operating rooms at the Byers Eye Institute. “Experienced surgeons are quite good at creating these circles. I’ve drawn thousands of them and can create that circular opening very well. But compare me making that circle to a laser making that circle, and the laser is going to be perfect every time.”

The laser’s edge
That perfection, guided by a three-dimensional scan of each patient’s eye, is just one benefit. Because the laser breaks the cataract into a latticework of tiny squares, the surgeon can remove the cloudy lens with far less ultrasound energy. The difference in inflammation and impact on the patient is substantial compared to traditional surgery. Nearly a month after the traditional procedure on her left eye, Savoie still feels the grittiness that patients typically experience. In her right eye, done with the aid of the laser, she feels nothing but that dramatic improvement in vision.

“The difference is phenomenal,” Savoie said. “I would highly recommend this new process.”

Montague, who said she is conservative by nature and cautious to adopt new things, is impressed by the innovative technology, which was co-invented by researchers at Stanford and tested in clinical trials at Stanford and elsewhere before receiving federal Food and Drug Administration approval.

“I went into medicine to help patients, so for me it’s very satisfying,” Montague said. “Patients are happier. It feels safer. Time will tell, but I think it has the potential to change cataract surgery tremendously.”

Precision and control
Laser technology has been used for decades to reshape the cornea as a way of correcting nearsightedness, farsightedness and astigmatisms. The challenge of using lasers in cataract surgery is to control its intensity to avoid collateral damage to surrounding tissue, the retina and other parts of the eye yet still power the precise incision required to remove the cataract.

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Mary Savoie is back to doing the activities she loves, thanks to a new laser technique used for her cataract surgery.

Save the Date
Healing Matters
All members of the community are invited to attend the second annual Healing Matters on Sept. 7, a half day of breakout sessions and presentations on health and wellness by some of Stanford’s most distinguished faculty and clinicians. Topics will range from screening controversies to sleep, aging, neuroscience and pain management. Siddhartha Mukerjee, MD, PhD, author of the Pulitzer Prize–winning book Emperor of All Maladies: The Biography of Cancer, will be the keynote speaker. The day will feature interactive activities, including personalized medical research, a life-size iPad to learn about the human body and displays about the new Stanford Hospital. Last year more than 350 people attended this free indoor/outdoor event.

Date: Saturday, Sept. 7, 9 am–1 pm
Location: Li Ka Shing Center for Learning and Knowledge, 291 Campus Drive, School of Medicine campus
Free parking at Stock Farm parking lot.
For more information, visit healings matters.stanford.edu.
Very special delivery
Center for complex pregnancies, at-risk newborns

Zoe Bower was 18 weeks pregnant when she and her husband, Dan Edelstein, received devastating news during a prenatal ultrasound: The fetus had a hole in the diaphragm muscle that normally separates the chest and abdomen.

The hole, called a congenital diaphragmatic hernia (CDH), would make breathing impossible at birth. It had already allowed the fetus’s developing intestines to move into the chest and crowd the growing lungs. The prognosis for a fetus with CDH is uncertain. Bower and Edelstein had been eagerly anticipating a second child, but now they wondered if there was any hope for this pregnancy.

The couple consulted with physicians at the Center for Fetal and Maternal Health at Lucile Packard Children’s Hospital, a team with deep experience in explaining fetal diagnoses, managing complex pregnancies and caring for high-risk infants and children. Since it opened in 2009, the center has helped more than 1,000 families through complex medical problems that threaten the health of the fetus, the mother or both, through comprehensive continuum-of-care plans.

“Our aim is to provide outstanding care to women carrying fetuses with complex anomalies starting before their infants are born,” said neonatologist Susan Hintz, MD, the center’s medical director and a professor of pediatrics. At any given time, the center’s physicians, coordinators and nurse practitioners follow 65 to 75 pregnant women—40 percent of whom travel more than 80 miles to obtain their expertise. The team includes experts from every subspecialty at Packard Children’s, from maternal-fetal medicine physicians to neonatologists, radiologists, geneticists and other medical and surgical specialists who treat critically ill babies.

“We really needed to know: Is this hopeless or can we make a go for it?” Bower said, recalling her first consultation with the center’s physicians. CDH carries serious risks, but depending on the prenatal findings, and with expert medical and surgical care, many patients thrive, the Packard physicians told her.

“It’s hard to describe how incredibly soothing—not naively optimistic but just caring—they were,” Edelstein said. “They spent at least an hour with us, answered every question we had and gave us hope.”

The team began planning for the arrival of a baby girl who would be named Eloise. The parents received hands-on preparation for her birth, including a tour of the Packard Children’s Neonatal Intensive Care Unit and an introduction to the different kinds of breathing-support machines that might help Eloise after her birth.

“It made a big difference, being able to see these things beforehand,” Bower said. “There were two CDH babies in the NICU when we visited, and we were even able to talk to their parents. That was an aspect of care you wouldn’t get if there wasn’t a center coordinating everything.”

Meanwhile, Hintz and the fetal center coordinators made sure that all the Packard Children’s experts who needed to weigh in had consulted on Eloise’s case.

“Knowing that multiple people were reviewing the diagnostic tests and looking at them from different angles, with different expertise, was very reassuring,” Bower said.

About 15 caregivers were present when Eloise was born and provided immediate care that included inserting a breathing tube within 30 seconds of her birth. Edelstein went with the care team to the NICU and watched as they worked continuously open.

“Then we were able to talk to their parents. That was an aspect of care you wouldn’t get if there wasn’t a center coordinating everything.”

Nine days later, Eloise received the surgical repair she needed: a Gore-Tex patch to close the hole in her diaphragm. She made a slow but steady recovery, and headed home at 6 weeks. A few days later, a gastroenterologist at a check-up told her parents it was time to remove the nasogastric feeding tube that had been helping the fragile infant get enough nutrition.

“She was finally wireless,” Edelstein said. “That’s when she really felt like a normal baby.”

Eloise required expert coordinated care when she was born with a serious congenital condition. Today she is a lively and healthy toddler.