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49ers collaborate on sports injury research

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FALL 2010

Stanford Medicine News

UPDATES
FOR THE
LOCAL
COMMUNITY

STANFORD HOSPITAL & CLINICS | LUCILE PACKARD CHILDREN'S HOSPITAL | STANFORD UNIVERSITY SCHOOL OF MEDICINE

Mobile devices added to medical school curriculum

Stanford's School of Medicine provided all 91 of this year's incoming medical students with iPads under a pilot program to integrate mobile technology into academics.

The iPad initiative is designed to give students flexible access to content they need, whether it's a virtual cadaver, lecture slides and videos, or scientific journal articles. Stanford is one of a handful of medical schools and universities around the country experimenting this academic year with the use of student iPads.

"We want to explore the use of iPads and other technologies to help students access the enormous amount of medical knowledge that is being produced constantly," said Charles Prober, MD, senior associate dean for medical education. "Devices like the iPad may be able to help users access that pool of knowledge."

Henry Lowe, MD, senior associate dean for information resources and technology at Stanford's medical school, said he has found the device to be extremely helpful and believes it is growing in popularity among doctors.

Did you know?

You cannot tickle yourself.

Making weight loss work

A huge change, a new life

Sam Feldman cocks his head, remembering a kid he used to know. The boy was self-conscious about his weight, and as a result he lacked self-esteem. He felt different from other kids.

That boy was Sam before he enrolled in the six-month, behavior-based Pediatric Weight Control Program at Lucile Packard Children's Hospital. To say he changed would be a vast understatement.

What the internationally recognized program offered Sam, 11, was a way to take control of his own health—something even many adults can't manage. Starting at 48 percent above his ideal body mass index (BMI), the Palo Alto youngster has worked his way down to just 7.5 percent over his BMI. He says this shift was both monumental and surprisingly manageable.

"You see a huge change in your life, but the point of the program is that it's slow-paced and pretty simple," he said.

Program Medical Director Thomas Robinson, MD, MPH, said the team takes the best science about weight loss in children and makes it work with real-world families.

"Decades of weight loss research have taught us what works best," said Robinson, who also directs the hospital's Center for Healthy Weight. "The evidence is in our results. I have not heard of any other programs that come close to our participation and completion rates."



Sam Feldman, 11, made fun activities a big part of his weight-loss regimen.

PHOTO: DNK DIGITAL

Breaking bad habits

Like many kids, Sam and his family had tried various regimens in the past: low-fat diets; high-protein, low-carb diets; boot camp-type programs. But as Sam's mother, Robin Feldman, said, "Those efforts were just one piece

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► **San Francisco Chronicle**

“It’s sort of like idling the car too high at the traffic light—you’re racing your engine when you don’t need to.”

—DAVID SPIEGEL, MD, professor of psychiatry and behavioral sciences, on overreacting to stressful situations. *Aug. 31*

► **The New York Times**

[The ruling was] “devastating to the hopes of researchers and patients who have been waiting so long for the promise of stem cell therapies.”

—IRVING WEISSMAN, MD, director of the Stanford Institute for Stem Cell Biology and Regenerative Medicine, on an injunction blocking researchers from using federal funds to conduct embryonic stem cell research. *Aug. 24*

► **The Examiner**
SAN FRANCISCO

“Teens need more sleep; we already knew this. But we try and treat them like mini-adults. We cannot treat them the same way as an adult, though.”

—RAFAEL PELAYO, MD, associate professor of psychiatry and behavioral sciences, on the benefits of teen sleep. *Aug. 12*

► **The Mercury News**

“When a child is diagnosed, parents ask: Why is this in our genes? Now we have an answer.”

—ATUL BUTTE, MD, PhD, assistant professor of pediatrics at Lucile Packard Children’s Hospital, about his study showing that the same genes causing certain diseases today may have protected us from more deadly ailments in the past. *Aug. 18*

► **American Medical News**

“A couple of generations ago, the house call was the way physicians would find out about the real lives of people and make an impact in their lives. Today it’s social media.”

—ALAN GREENE, MD, clinical professor of pediatrics at Lucile Packard Children’s Hospital, on the power of Facebook, Twitter and other social media tools. *Sept. 6*

Field science

Teamwork advances sports medicine research

In conjunction with Newton’s laws of motion—most notably the one about force equaling mass times acceleration—the San Francisco 49ers are helping physicians and scientists at Stanford University Medical Center learn more about the biomechanics of football injuries.

The 49ers’ medical director, Daniel Garza, MD, an emergency and sports medicine physician at Stanford Hospital & Clinics, is working with two research assistants to measure the impact of blocks and tackles by using pressure sensors worn by some of the players in their uniforms.

“It’s unprecedented for an NFL team to support research at this level,” said Garza, who is also an assistant professor of orthopaedic surgery and of emergency medicine at Stanford’s School of Medicine.

Mutual benefit

The project reflects what coaches and physicians with the 49ers describe as a unique and mutually beneficial relationship. Stanford Hospital & Clinics is the only academic research hospital providing comprehensive medical care to an NFL team and has served as the official medical provider of Stanford Athletics for almost two decades. The 49ers, in turn, are helping Stanford advance the field of sports medicine.

“We have a population of elite athletes we can learn from,” said 49ers physician Gary Fanton, MD, a Stanford orthopaedic surgeon and clinical professor. “We can collect biomechanical data to improve our understanding of sports health and sports-related injuries.”

The 49ers’ co-owner John York, PhD, a retired clinical and research pathologist, supports the research efforts, Garza said. The NFL also has given its blessing, lifting the usual restrictions against computers on the sidelines so that Garza’s research assistants can collect and analyze data.

“We’re trying to understand the biomechanics of the trauma players receive so we can assess how well their body armor is working and what physicians should be looking out for,” Garza said.

Tracking data

Sensors are worn on the chest and abdomen of some offensive players and in the shoulder pads of some defensive players. The players also wear wireless transmitters, which send information about the force and location of hits to laptop computers on the sidelines.

The researchers hope the data



Several players with the 49ers wear sensors to help Stanford researchers measure the impact of blocks and tackles.

“We can collect biomechanical data to improve our understanding of sports health and sports-related injuries.”

—Gary Fanton, MD
Stanford orthopaedic surgeon

they collect will teach them more about the incidence of chest, abdominal and shoulder injuries in the sport. Eventually, their work could lead to advancements in protective gear and earlier diagnoses of medical problems, Garza said.

The researchers are conducting a second experiment, using infrared cameras to capture and measure heat emanating from players as they rest on the sidelines during breaks in the game or after changes of ball possession.

The goal is to identify and help players who may be predisposed to heat illness. After intense exercise, blood flow normally increases to arteries, veins and capillaries just below the skin to help the body cool down. This mechanism is particularly active in the cheek region, one of the body’s natural radiators. Given the amount of padding worn by football players, the cheeks become a particularly important outlet for heat dissipation, researchers say.

Preliminary findings suggest that after heavy exertion, players with a history of heat illness have less vascular flow to their cheeks. The researchers hope their data will pave the way to detecting heat stress in players before they suffer any ill effects, as well as serve as the basis for new tools or equipment to prevent overheating in the first place. ■

Official partnership

Stanford Hospital is now the official health-care partner of the San Francisco 49ers. The new alliance, which kicked off during the pre-season, will give 49ers fans at home games the opportunity to talk to medical staff from different parts of the hospital, such as the Heart Center, Neurosciences Center and Cancer Center, and pick up free educational materials at a booth in “Faithful City” near Gate 4 of Candlestick Park.

Gardens planned for healing, relaxation and respite

Where there is now a large parking lot, a concrete sidewalk and chain-link fences, Lucile Packard Children's Hospital plans to introduce a showcase landscape with a parklike setting where patients, visitors and staff can relax and play, rest and renew.

Situated near the corner of Welch and Quarry roads, the hospital's proposed Emerald Garden will feature an open lawn, children's play area and stone retaining walls. Adjacent walkways lined with heritage redwoods and oaks will allow passersby to stroll on shady paths or read on benches set back from traffic.

These outdoor environments are part of the extensive landscaping plans that have been integrated into Packard Children's expansion in the Stanford University Medical Center Renewal Project. The project also involves construction of a new Stanford Hospital and the replacement of outdated facilities at the School of Medicine.

"Packard really embraced landscape as a central design concept," said Zachary Pozner, project manager for planning design and construction at Stanford Hospital & Clinics and Packard Children's. "Nature is a theme that is integrated throughout the building design."

In a setting traditionally rife with stress, Packard Children's planned network of gardens will add more than three acres of greenery, connecting the new facility to the existing one while providing a backdrop of calmness and serenity.

Designed with attention to the demands of security, comfort and safety unique to a hospital setting, each outdoor area will incorporate plants and amenities that reflect its intended use.

"A key challenge has been to make sure that there are garden spaces that will cater to the wide-ranging needs of the patients and their families, and visitors and staff," said Jacinta McCann, executive vice president of planning design and development at AECOM, the project's design firm. "Siblings of a sick child need areas where they can let off steam, parents need areas where they can take a break, and staff need areas where they can regenerate. All of these needs have been taken into account."

Courtyards and roof gardens will be easily accessible and allow natural light to filter into the corridors. Window boxes will be placed outside every room, so a patient confined to bed will have a view of flowers set against the sky. The same type of stone used in garden walls will be used indoors to mirror the relationship between the interior and exterior of the building.

Some areas will be dense with regional flowers, while others will feature native and drought-tolerant plants, including grasses, shrubs and trees



Nature Pathways (above) are designed for passersby, while the Rain Garden (left) uses a passive rainwater retention system for irrigation. The rooftop Discovery Garden (below) features play areas for children as well as secluded nooks for privacy.



similar to those in the university's neighboring arboretum. The landscapes also will provide habitats for local birds and insects.

McCann said sustainability has been a driving force behind the design, which incorporates green roofs, low-water demands, a cistern to store rainwater and the use of native plants. "Everything from selection of plant material and retention of trees to the form and functionality of the gardens is customized to the ecological setting of the site, the climate and the users," she said.

The designers worked closely with different groups to develop the concept and incorporate elements compatible to the university, as well as

the California climate. Heritage trees have been preserved, and more than 20 protected oaks and redwoods will be relocated to a new site that will provide better growing conditions, Pozner said.

"We have tried to create a real balance of landscapes," he added. "For the children and expectant mothers who come to Packard Children's, the gardens will be a retreat where they can savor the sights, smells and sounds of nature." [▶](#)

For more information about the expansion at Lucile Packard Children's Hospital and the plans for the medical center, please see the project's Web site, stanfordpackard.org.

Bariatric surgery let rabbi

Procedure is a tool in the battle with excess weight

Rabbi Nat Ezray's decades-long struggle with weight began early. He joined Weight Watchers in the fifth grade. Over the next 30 years, he lost and gained weight several times over, each time putting on a bit more, until his 5-foot-6-inch frame carried 280 pounds.

"I felt hostage to it and powerless in the face of it, even though I did diet after diet," said Ezray, now in his 16th year as rabbi of Congregation Beth Jacob in Redwood City.

He tried to keep fit by jogging and playing racquetball, but his body was breaking down. He developed sleeping problems, high blood pressure, high cholesterol, acid reflux and diabetes—ailments that commonly afflict people who are seriously overweight.

In 2002, he had a heart attack. He was just 42.

Surgery as a tool

Ezray fit a profile shared by many others struggling with weight: In spite of his best efforts, the pounds he lost always came back.

A physician friend recommended that he consult with John Morton, MD, MPH, director of bariatric surgery at Stanford Hospital & Clinics. What Morton tells anyone interested in gastric surgery is that it is "no magic bullet."

"We can't operate our way out of the obesity problem," he said. "It's part and parcel of a lifestyle change. These surgeries are simply tools."

Stanford follows the bariatric surgery guidelines established by the U.S. National Institutes of Health. That organization recommends surgery for people with a body mass index (BMI) of 40 or more and for people with a BMI of 35 who also have serious health issues related to their weight, such as type 2 diabetes or high blood pressure.

Stanford's Bariatric Surgery Program is the only one in Northern California recognized by the American College of Surgeons as a Level 1A Center for Excellence. Morton has performed more than 1,500 bariatric surgeries, with no serious postsurgical complications. He also is part of a surgical team, led by Craig Albanese, MD, MBA, chief of pediatric general surgery at Lucile Packard Children's Hospital, that performs adolescent bariatric surgeries.



"I had a lot of energy before, but boy, do I have a lot of energy now!"

— Rabbi Nat Ezray

Rapid recovery

Ezray decided to have a gastric bypass, one of the most frequently performed bariatric surgeries. Surgeons staple off all but a small portion of the stomach and connect that section directly to the intestines, reducing caloric absorption and exposure

take control



Regular exercise is part of Rabbi Nat Ezray's weekly routine.

to hormones that physicians suspect influence appetite and blood sugar.

He underwent the operation in the summer of 2007. He was home about four days later and recovered quickly. Just as quickly, his high blood pressure and cholesterol levels dropped so that he was able to reduce the amount of medication he required for these conditions. And he no longer needs any diabetes medication.

Now he rises early several days a week to stretch and do 45 minutes on his elliptical exercise machine. He frequently adds weight training to his routine to develop his core muscles.

"I had a lot of energy before, but boy, do I have a lot of energy now!" he said. "I didn't realize how much energy it took to fight the daily fight with food."

His congregation gave him great support when he told them about his surgery, he said. "I didn't realize how much anxiety people felt about my health."

And he has realized something else. "I don't have to hold on to the fear that I was going to die young." ■

To learn more about Stanford's Bariatric Surgery Program, visit tinyurl.com/2f9u94s.

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of the big picture and didn't really make a dent."

The big picture meant assessing not just what Sam ate but also how he spent his time.

"I would come home from school and watch TV, eat a junky snack," Sam said. "Now I come home and play sports, and if I'm hungry, I have a whole-wheat quesadilla and some fresh fruit. I used to get very little exercise. Now I do two hours a day, including half an hour of intense cardiac workout."

The essence of the weight control program wasn't simply a collection of rules he had to follow blindly—it focused more on allowing him to see for himself how different patterns could make him feel better. In some cases, he went well beyond what the program asked of him.

"One of our assignments was to cut out my screen time for a week. No TV, no computer, nothing with a screen at all. That was a big thing, because I used to watch TV every day," Sam said. "But it turned out it was really fun to turn off the screens. I got to do a lot more activities than I usually did, from reading to playing sports with my neighbors. So instead of just a week, I ended up going three months."

Sam's mother had some eye-openers, too. "The biggest surprise for me was learning about 'habit foods'—all those 100-calorie packs, granola bars, frozen yogurt, things made with artificial sugar," she said. "The theory is, you get in the habit of eating those, and then it just feels natural to go to McDonald's and have a Big Mac and shake. It's not that the program doesn't let you have them, it's that you learn to budget how much you have and try to cut down progressively."

Of course, changing the contents of one's pantry is just part of the solution. As Robin Feldman points out, there are sleepovers, birthday parties, holidays and trips to the grandparents' house to contend with—all potential wildcards when it comes to the kind of food being served. "But the program really understands those challenges kids face," she said, "so they help them develop strategies for those situations."

The program has had widespread impact well beyond the Bay Area. "We get calls from other hospitals and clinics around the country," said Program Manager Cindy Zedeck. "They want to know more about our success and how to establish their own programs."

Zedeck and her team have hosted onsite visits from a Japanese hospital, and a team from India is planning a trip to learn more.

A new attitude

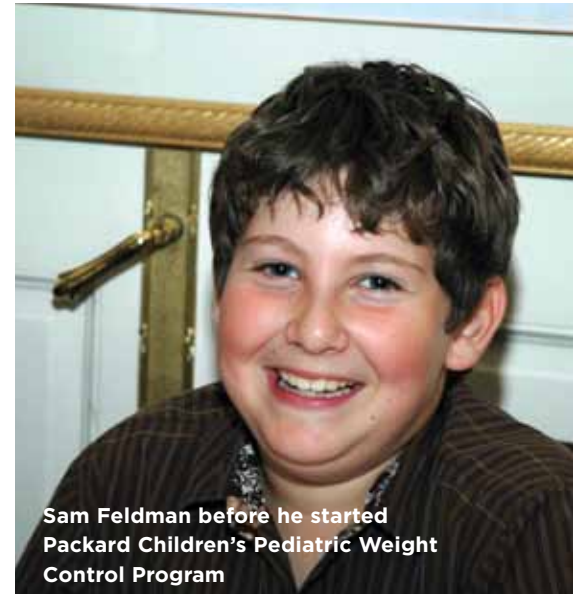
For Sam, now a sixth-grader, the program's achievements came into clear focus one day on the track at his school. The year before he started the program, when everyone had to do the mile run, he clocked in at 13 minutes. After he finished the program, he cut his time down to an astonishing seven minutes.

"I lapped the best runner in the class," Sam said. "He does track—and I lapped him!"

Sam was thrilled to observe the physical changes the program brought about. Some people didn't even recognize him after he dropped the weight, he said. More important, coming to Packard Children's each week didn't just help him change his physique, it helped him change the way he thinks.

"It's great to do this while you're young, because when you get older, it's harder to change your bad habits. Once the whole train is off the track, it's harder to get it back on," he said. "What you do learn is self-control and how to be a healthy person for the rest of your life. To me, that means you have nothing to lose and only something to gain." ■

Learn more about Sam and the Pediatric Weight Control Program at Packard Children's Hospital at tiny.cc/feldmanCHW, call 650-725-4424 or e-mail weightcontrol@lpch.org.



Sam Feldman before he started Packard Children's Pediatric Weight Control Program

"It's great to do this while you're young, because when you get older it's harder to change your bad habits."

— Sam Feldman

LEARN MORE ABOUT YOUR HEALTH

EVENTS ARE FREE UNLESS OTHERWISE NOTED. SPACE MAY BE LIMITED, SO PLEASE CALL TO REGISTER IN ADVANCE.

Bringing Baby Home

Presented by Packard Children's Hospital

A two-part workshop for expectant couples and new parents

DATE: Sundays, Oct. 24 and 31

LOCATION: Perinatal Education Classroom, P140, 1520 Page Mill Road, Palo Alto

Attendance fee. To register, visit birthclasses.lpch.org.

The Truth about Health Reform: A Good Start for Women

Co-sponsored by Women's Health@Stanford

SPEAKER: Ellen R. Shaffer, PhD, MPH
Co-director, Center for Policy Analysis

DATE: Monday, Oct. 25, noon-1 pm

Location: Room 304-305, Li Ka Shing Center for Learning and Knowledge, 291 Campus Drive, Stanford University

Heart to Heart: A Seminar on Growing Up for Parents and Kids

Presented by Packard Children's Hospital

For Girls Only (ages 10-12)

Wednesdays, Nov. 3 and 10

For Boys Only (ages 10-12)

Tuesdays, Nov. 30 and Dec. 7

For details and additional dates, and to register online, visit hearttoheart.lpch.org.

Healing Ourselves/Healing Others: The Power of Writing

Co-sponsored by Women's Health@Stanford

SPEAKER: Sharon Bray, PhD
Author, *When Words Heal: Writing Through Cancer*

DATE: Monday, Nov. 1, noon-1 pm

LOCATION: Room 304-305, Li Ka Shing Center for Learning and Knowledge, 291 Campus Drive, Stanford University

Grandparents Seminar

Presented by Packard Children's Hospital

An update for new and expectant grandparents on changes in obstetrical, newborn and infant care

DATE: Wednesday, Nov. 3, 6-8:30 pm

LOCATION: Perinatal Education Classroom, P140, 1520 Page Mill Road, Palo Alto

Attendance fee. To register, visit birthclasses.lpch.org.



The Fatigue Prescription: Four Steps to Renewing Your Energy, Health and Life

Presented by Stanford Health Library

SPEAKER: Linda Hawes Clever, MD
Clinical Professor of Medicine, UCSF

DATE: Thursday, Nov. 4, at 7 pm

LOCATION: Stanford Health Library, Oshman Family Jewish Community Center, 3921 Fabian Way, Palo Alto

To register, call 650-498-7826.

Think Before You Pink: Breast Cancer, Corporations and You

Co-sponsored by Women's Health@Stanford

SPEAKER: Barbara A. Brenner, JD
Executive Director, Breast Cancer Action

DATE: Monday, Nov. 8, noon-1 pm

LOCATION: Room 304-305, Li Ka Shing Center for Learning and Knowledge, 291 Campus Drive, Stanford University

All About Pregnancy

Presented by Packard Children's Hospital

DATE: Tuesday, Nov. 9, at 7 pm

LOCATION: Perinatal Education Classroom P140, 1520 Page Mill Road, Palo Alto

Registration required. To register, visit birthclasses.lpch.org.

Bariatric Surgery: One Treatment for Obesity

Presented by Stanford Health Library

SPEAKER: John Morton, MD, MPH, FACS
Associate Professor of Surgery

DATE: Thursday, Nov. 11, at 7 pm

Location: Stanford Health Library, Oshman Family Jewish Community Center, 3921 Fabian Way, Palo Alto

To register, call 650-498-7826.

A Packard Children's Innovation: The Center for Fetal Health

LPCH Anniversary Lecture and Tea

SPEAKER: Susan Hintz, MD, MS
Associate Professor, Neonatology

DATE: Sunday, Nov. 14, at 3 pm

LOCATION: Packard Children's Auditorium, 725 Welch Road, Palo Alto

To reserve a seat for this free lecture, visit events.lpch.org.

What Do We Know about Preventing Breast Cancer and Other Top Cancer Killers in Women?

Co-sponsored by Women's Health@Stanford

SPEAKER: Marcia Stefanick, PhD
Professor of Medicine (Stanford Prevention Research Center)

DATE: Monday, Nov. 15, noon-1 pm

LOCATION: Room 304-305, Li Ka Shing Center for Learning and Knowledge, 291 Campus Drive, Stanford University

Medicare, Medigaps, HMOs and Prescription Benefits for Seniors

Presented by Stanford Health Library

SPEAKER: Don Rush
Counselor, Health Insurance Counseling and Advocacy Program

DATE: Thursday, Nov. 18, at 7 pm

LOCATION: Stanford Health Library, G2-B Stanford Shopping Center, Palo Alto

To register, call 650-498-7826.

Don't Scratch That—Rashes!

Presented by Stanford Health Library

SPEAKER: David Peng, MD
Clinical Associate Professor of Dermatology

DATE: Thursday, Nov. 18, at 7 pm

Location: Stanford Health Library, Oshman Family Jewish Community Center, 3921 Fabian Way, Palo Alto

To register, call 650-498-7826.

Speak, Memory

Dramatic readings about memory from literature and science

DATE: Thursday, Nov. 18, at 7:30 pm

LOCATION: Cubberley Auditorium, School of Education, Stanford campus

For more information, contact Stanford Continuing Studies at 650-725-2650.

Hospital noted for information technology

Stanford Hospital & Clinics was named one of 2010's Most Wired Hospitals and Health Systems by *Hospitals and Health Networks*.

The annual Most Wired Survey and Benchmarking study, which tracks the progress of hospitals in information technology, recognizes organizations for achievements in four areas: infrastructure; business and administrative management; clinical quality and safety; and the care continuum. Stanford was one of only two hospitals in California to receive the honor.

"The recognition is a testament to our dedication to increase the reliability of data and improve the usefulness of results," said Carolyn Byerly, vice president and chief information officer of SHC. "It also highlights the progress we've made in using information technology to benefit patients."

Earlier this year, SHC received the highest-level designation for its electronic medical record system from the Healthcare Information and Management Systems Society (HIMSS), an organization focused on the use of information technology in health care. SHC is the fourth health-care organization and one of only six nationwide among more than 5,000 in the HIMSS Analytics Database to achieve this designation.



A new paradigm of pain

Author explores changing attitudes, approaches to chronic pain



Melanie Thernstrom

A 2009 report by the nonprofit Mayday Fund found that chronic pain afflicts more than 70 million Americans and costs the economy \$100 billion per year. Chronic pain plagued writer Melanie Thernstrom for years, motivating her to seek out the true nature of her problem. Her investigation resulted in a new book, “The Pain Chronicles,” in which she rigorously examines the evolving notions of pain throughout human history. *Stanford Medicine News* caught up with her during her recent book tour.

Why is pain so hard to describe?

A: Well, pain sits right at this juncture between biology and culture. On the one hand, it’s a very private experience. It draws on the meaning-making parts of the brain and brings all kinds of memories and associations into it. But it is also a

universal experience because we all have a similar nervous system. It’s not really like anything else, so it’s hard to find the words to describe it.

What does pain tell us about a time, culture or society?

A: Because pain is a subjective experience, a perception generated by the brain, it has enormous flexibility of meaning. It is stamped by the context in which it occurs, but it is also stamped by the social era. In ancient times, pain was a spiritual signifier coming from the realm of demons and deities. In the 19th century there was a shift to the belief that pain was simply a biological phenomenon that indicated tissue damage. Today we have a paradigm that in some way reconciles both the ancient one and the 19th-century one.

What happened to change this paradigm of “the gods are angry”?

A: With the discovery of anesthesia, pain was seen as something that could be controlled by man. That helped cement the view of pain as a biological phenomenon. However there were limitations to that view that were evident in things like phantom limb pain— if you cut off someone’s hand, they will still experience pain as coming from the hand, though it’s really being generated by the part of the brain that maps the missing limb.

What happens in the body to change from acute pain to chronic pain?

A: Some of the worst forms of chronic pain originate only in the nervous system. In many cases the person had an injury and the injury healed, but the nervous system undergoes changes and the system revs up so that it becomes increasingly more sensitive over time.

So pain begets pain?

A: Pain begets pain. There also is some evidence that chronic pain atrophies the gray matter of the

brain—the parts that are associated with cognition. Pain atrophies the so-called “thinking parts” of the brain twice as quickly as normal aging does.

In your book, you write about the way in which primary care physicians and patients talk about pain in very different ways.

A: I think we are in the midst of a paradigm shift about pain. The specialists know that chronic pain is a disease, but that understanding has not really seeped into the medical community at large. Again and again I interviewed patients who had the experience of going to their primary care physician and saying, for example, they have crippling back pain. And the doctor does an exam and says, “I think your back looks fine.” Maybe they do an MRI and they say, “I don’t see any problem.” The implication is that you must not have pain.

That it is all in your head.

A: Right. The MRIs are not going to show problems in the nervous system and the brain, where the pain actually is. In the lab, there is a lot of work being done in functional brain imaging studies of people in pain and people under pain stimulus, so that we can actually see what pain looks like in the brain. But that is not available in the doctor’s office.

What most excites you about the future of treatment for pain?

A: The most exciting directions of pain research are in the genetics of pain and the genes that make some people more vulnerable. I think that one day there will be a clinical test and you will be able to find out whether you are vulnerable. That would be very valuable to know.

The other big direction—and this is work in which Sean Mackey, MD, PhD (director of the Stanford Pain Center), is really a world leader—is using imaging to identify the mechanisms in the brain generating pain and learning how to activate the system to dampen it. [SM](#)

To hear the full podcast, go to stan.md/bg1hmD. Learn more about Mackey’s research in chronic pain at paincenter.stanford.edu.

“Maybe they do an MRI and they say, ‘I don’t see any problem.’ The implication is that you must not have pain.”

Did you know?

The average lifespan for a stomach cell is two days.



“Pain sits right at this juncture between biology and culture.”

H.E.A.L. helps children make the move back to school

When Dawn Billman speaks of the leukemia that ravaged her 3-year-old daughter, she praises the medical care that saved her child's life. A decade later, the cancer in remission, she credits an innovative program at Lucile Packard Children's Hospital with fully integrating her daughter into a future she might not otherwise have had.

Elle Billman, now a straight-A student at Palo Alto's Jordan Middle School, didn't always have an easy time in academics, although initially neither she nor her parents understood why.

"In kindergarten, we could see she had all the precursors for reading," said Billman. "But something was wrong; she wasn't making the connections. I remember looking at her work and it hit me—she was getting worse. She had just finished chemotherapy, which had lasted two and a half years."

During a routine checkup at Packard Children's a few years later, Billman's frustrations poured out. She told of the hours of tutoring, the private testing and the fruitless exchanges with teachers and school administrators in an effort to get her daughter help. By then, Billman had learned that, although each child is different, research on the effects of chemotherapy in young patients pointed to an often-deleterious effect on learning skills. Private tests had labeled Elle's problem "acquired dyslexia," a direct effect of chemotherapy drugs.

Billman was directed to Jeanne Kane, an education specialist who coordinates Packard Children's H.E.A.L. program; Kane went to work explaining to the child's teachers, guidance counselors and principal how they could help Elle learn best. She shared research findings about how the drug methotrexate, used in the treatment of leukemia, can affect developing young brains.

"Fifteen years ago, you didn't send kids back to school who were on chemo," said Kane. "But school is their normal. That's where you want to place them."

Today, more children are surviving life-threatening illness. Children who have sur-



Elle Billman

vived or continue to battle a chronic illness often deal with the cognitive effects of their illness and treatment. H.E.A.L., which stands for Hospital Educational Advocacy Liaisons, is the only program of its kind in Northern California and one of only a handful in the country that specialize in helping children reenter the educational system after a hospital stay. Launched in 2003, the program is free and serves about 400 Packard Children's families a year, working across all diagnoses and at every clinic in the hospital.

"It's really family-centered health care," said Dawn Billman. "What they've done for us is amazing."

Kane's duties range from speaking directly with educators and administrators to coordinating individual educational programs and arrang-

ing special diagnostic tests. She also collaborates with an educational specialist, a neuropsychologist and an administrator who work in the program on a part-time basis.

"This is as complex, if not more so, than the medical system," Kane said. "So often nobody at school understands what is going on with these kids. Parents are tearing their hair out because it takes six hours to do homework."

When he was 8, Ben Fulanovich had emergency surgery to remove a malignant tumor from the base of his brain follow-


"It's really family-centered health care. What they've done for us is amazing."

— Dawn Billman

ing a year of vague, undefined symptoms. Through the radiation, chemotherapy, rounds of growth hormone therapy and surgery, Ben's mother, Gloria Seid, said Kane was there, helping to set up an individualized education program, arranging diagnostic educational testing, speaking with teachers and being a friend.

"She's all heart," Seid said. "If it weren't for her, I don't know that we would be where we are."

Ben, now 18, has just entered his freshman year at California State University of Monterey Bay, where he plans to study computer engineering. Elle Billman is now a member of the Santa Clara Aquamaids, the reigning national champion synchronized swim team.

"One family told us that we really do heal families," said Kane. "We hope to continue this healing for a long time to come." 

If you would like to help fund the H.E.A.L. program at Packard Children's, please make your donation online at supportlpch.org.