Surgeons learn how to improvise in the field

By Tracie White

The first time Sherry Wren, MD, knew she needed to channel her inner MacGyver — the ‘80s sitcom secret agent who could fix anything with a little duct tape and a Swiss Army knife — she was treating a patient with severe burns at a hospital in Chad.

Severe burns were common in that central African country, where she was volunteering, in 2006, with Doctors Without Borders. Families often cooked over open fires in their homes, accidents were common and, as a result, skin grafting was a routine procedure for physicians posted there.

“I asked, ‘Do you have an electric dermatome?’” she recounted, hoping to use the surgical instrument commonly used in the United States to produce uniformly thin slices of skin for grafting. “They said, ‘Yes,’ and handed me a 12-inch-long knife.”

Now a veteran of multiple humanitarian missions with Doctors Without Borders, Wren, a specialist in gastrointestinal cancer surgery and a general surgeon at Stanford Hospital & Clinics, called upon her field-tested medical ingenuity, such as how best to perform skin grafts with low-tech tools, to teach a course held earlier this month at Stanford.

From using papaya paste for wound dressing to hand drills for relieving low-tech tools, to teach a course held earlier this month at Stanford.

During a continuing medical education course on international humanitarian surgery skills, physicians use hand drills on beef shoulder boxes to practice drilling burn holes for head injuries. The Stanford course, which emphasized the importance of being able to make do with the tools available, drew dozens of physicians.

New Emergency Department programs shorten wait times

By Sara Wykes

There was no obvious reason why patients flooded Stanford’s emergency department on Jan. 25. No major traffic collisions had occurred; the flu wasn’t on the rampage, as it was on the East Coast.

But over the course of that day, ED physicians and staff treated 206 people — a 47 percent increase over last year’s average daily number of patients and an all-time record. Without Fast Track and Team Triage, that record would not have been possible, said Patrick Callagy, RN, patient care manager in the ED.

In response to this rising tide, the ED has taken steps to improve the efficiency of patient evaluation and treatment, most recently borrowing strategies from the business philosophy of lean management. Lean management aims to eliminate any expenditure of energy or resources that does not create value for customers — or in this case, patients.

ED staff conducted a careful evaluation of their operations, down to the smallest detail. For example, they took a hard look at what paper forms were needed and where they were kept, how patients were informed of delays and what the discharge process required.

Hard work at poker

They used this information to make improvements. The other key step was to analyze the various medical needs of ED patients over a period of time to determine whether changes might be made to speed appropriate care for each type of patient.

First came Team Triage, inaugurated a year ago. In…

Accelerated aging evident in women with Alzheimer’s risk factor, study says

By Bruce Goldman

Healthy menopausal women carrying a well-known genetic risk factor for Alzheimer’s disease showed measurable signs of accelerated biological aging, a new study has found.

However, in carriers who started hormone therapy at menopause and remained on that therapy, this acceleration was absent, the researchers said. Hormone therapy for non-carriers of the risk factor, a gene variant called ApoE4, had no protective effect on their biological aging.

“This shows that ApoE4 is contributing to aging at the cellular level well before any outward symptoms of decline become apparent,” said Natalie Rasgon, MD, PhD, professor of psychiatry and behavioral sciences at the School of Medicine and director of the Stanford Center for Neuroscience in Women’s Health. “Yet, estrogen appears to have a protective effect for middle-aged women who are carrying this genetic risk factor.”

All people carry two copies of a gene called ApoE. (One copy is inherited from each parent). Like genes for eye or hair color, ApoE comes in more than one version. Some 15 to 20 percent of Americans carry at least one copy of ApoE4, a version that puts them at substantially increased risk for late-onset Alzheimer’s disease in comparison with people who are not ApoE4 carriers.

Rasgon is the senior author of a study involving 70 rela-
By Michelle L. Brandt

Boosting demand for intrauterine devices, commonly referred to as IUDs, and improving access to them significantly increased their use in developing countries, where they have traditionally been an unpopular method of birth control, a new study says.

Researchers at the non-profit Population Services International and the Stanford University School of Medicine show how they were able to provide these long-acting, reversible contraceptives to more than a half-million women in 13 countries.

The group’s “experience with promoting a contraceptive previously believed to be unsuitable for these contexts should encourage both public and private providers,” the researchers wrote in their paper, which appears in this month’s issue of Contraception.

Paul Blumenthal, MD, professor of obstetrics and gynecology and director of the Stanford Program for International Reproductive Education and Services, is the study’s lead author. The other authors are with PSI, a Washington, DC-based organization dedicated to improving the health of people in the developing world.

Long-acting reversible contraceptives, such as IUDs, are known to be a safe, effective and inexpensive form of birth control. The IUD does not have widespread popularity, though: A 2005 United Nations report showed that IUDs were used by 7.6 percent of women of reproductive age in developing countries, compared to 14.5 percent of women in developed ones.

Experts believe there are a variety of factors that prevent women in developing countries from using IUDs, which include: fear of side effects, removals and referrals, and by offering IUD insertions at a variety of clinics throughout each of the countries. Outreach clinic event days were held in six countries, during which IUD insertions were offered to local women over a one- to three-day period. Between January 2009 and January 2010, 57,501 women across the 13 countries were provided with long-acting, reversible contraceptives, with 26,311 women in 12 of the countries selected through this study.

The project began in 2008 and was focused on Cambodia, El Salvador, Guatemala, India, Kenya, Madagascar, Myanmar, Nepal, Nigeria, Uganda, Tanzania, Zambia. The countries were chosen, Blumenthal said, because of their low IUD usage numbers, and because PSI identified them as areas with opportunities for significant improvement.

The initiative focused on both creating demand and improving service delivery. A group of community “motivators” conducted outreach in many of the countries, going door to door or arranging group meetings to educate women on family planning options and link them to local providers.（同様の文の続き）
When eclampsia makes a rare appearance, Packard Children’s team is ready

By Erin DiGital

When “Downton Abbey” character Lady Sybil Crawley’s life-threatening pregnancy complication went ignored in the show’s Jan. 28 episode, obstetrician Maurice Druzin, MD, turned from his television and said to his wife, “We’re going to have a real tragedy here.”

Druzin, the service chief of obstetrics and gynecology at Lucile Packard Children’s Hospital, was correct. Lady Sybil did not receive the emergency cesarean section she needed. Shortly after delivering her baby, she developed seizures and died, a scenario in which an expectant, laboring or newly-delivered mother’s high blood pressure escalates into deadly seizures — was a tragically frequent cause of maternal death in the 1920s world that the popular TV show depicted.

The morning after the “Downton Abbey” episode aired, a woman in labor at Packard Children’s suffered a sudden, unexpected eclamptic seizure. The team caring for her at the hospital’s Johnson Center for Pregnancy and Newborn Services knew they had to take immediate action. Although full-blown eclampsia is much rarer now than in Lady Sybil’s day, it can still kill. Speedy recognition and treatment of the problem are essential to saving moms’ and babies’ lives.

“Eclampsia and its precursor, pre-eclampsia, can arise out of nowhere,” said Scott Osterling, MD, the attending physician at this delivery. “It can be very serious for the patient and the provid-
ers.” Fortunately, eclampsia treatment has advanced greatly since the 1920s, and Packard Children’s high-risk ob-


steric team is at the forefront of those improvements. Druzin himself is among his colleagues’ readers, having served recently on two expert committees that made recommendations to the American College of Obstetrics and Gynecology and also the Department of Public


Health on how to diagnose and treat the problem. The new recommendations will be published soon.

It is now rare for women in developed countries to progress to full-blown eclampsia without prenatal care, Druzin noted. Patients are usually caught at the stage of pre-
eclampsia, when high blood pressure warns that something is going wrong. Six to 12 percent of women experience high blood pressure in the last few weeks of pregnancy, and a smaller number have the problem earlier along.

For the rare cases in which eclampsia still occurs, the entire Packard Children’s team has a concrete plan for taking quick action. Using the hospital’s in-house simulation and training program, full medical teams rehearse emergencies with realistic medical mannequins. They regularly practice and evaluate the steps needed to treat eclampsia successfully. Since Packard Children’s sees only about three patients a year with full-blown eclampsia, the simulations are an essential part of maintaining the care team’s skills, according to Druzin’s colleague Kay Daniels, MD, who co-directs the simulation program. They have also as-


sembled a “pre-eclampsia box,” an idea Druzin adapted from a colleague who treats the condition in developing coun-


tries, where it is much more common. The box contains all the medications needed to treat a patient so that no time is lost in tracking down the drugs when they’re needed.

On Jan. 28, the preparations and practice paid off. Within a few minutes of patient Veronica De La Cruz’s seizure, she had received medications to prevent further seizures and lower her blood pressure.

“One of the things I love about work-


ing at Packard is that Packard works,” Osterling said. “The hospital’s well-


rehearsed team was ready for this rare but known condition of healthy labor.”

Soon afterward, De La Cruz got the most important medical intervention for eclampsia: Her baby was delivered. De La Cruz’s name is Aiden Garcia. Although born four weeks early, he was healthy at birth. Mom and baby are now home from the hospital and are doing well.

“I remember, during the C-section, my mom telling me not to go to sleep, not to fall asleep, and then hearing the baby cry,” said De La Cruz, speaking through an interpreter. “That’s when I woke up totally.”

De La Cruz was glad to be at Pack-


ard Children’s. “The doctors know what they are doing, and they take very good care of you in the hospital,” she said.

Even with good prenatal care, such as De La Cruz had, a few patients still develop eclamptic seizures, though the problem is more common among women who don’t get prenatal care, Druzin said. “Pre-eclampsia can unpre-


dictably progress into severe eclampsia, right in front of your eyes,” he said, add-


ing that seizures can occur before, during or after labor. In a 2011 report from the California Department of Public Health, 17 percent of the state’s maternal deaths were linked to pre-eclampsia and eclampsia, and nearly half of those deaths were judged by experts to have been preventable, a number Druzin wants to reduce.

As part of that effort, he wants to educate pregnant women about warning signs of pre-eclampsia, which include high blood pressure, swelling in the lower limbs, headaches, blurred vision or light sensitivity, nausea, upper abdomi-


nal pain, and mental confusion or fogginess. If they experience such symptoms, pregnant women should alert their care-givers immediately.

Druzin is also leading efforts to equip every California hospital for sav-


ing moms’ and babies’ lives when confronted with a case like De La Cruz’s. He is co-chair of a state task force develop-


ing a practical guide for caregivers who diagnose and manage pre-eclampsia. “It


was shaped by the latest thinking around the disease, and will be distributed to every hospital in the state that sees ob-


stetric patients,” Druzin said. “The good news is that with a modern treatment approach, most women and their babies can have safe, healthy outcomes.”

When eclampsia makes a rare appearance, Packard Children’s team is ready

By Andrew Myers

If engineers at Stanford have their way, biological research may soon be transformed by a new generation of light-emitting probes small enough to be injected into individual cells without harm to the host.

Welcome to biophotonics, a discipline at the con-


fluence of engineering, biology and medicine in which light-based devices — lasers and light-emitting diodes, or LEDs — are opening up new avenues in the study and influence of living cells.

The team described their probe in a paper published online Feb. 13 in the journal Nano Letters. It is the first study to demonstrate that tiny, sophisticated devices known as light resonators can be inserted inside cells without damaging the cell. Even with a resonator em-


bedded into a cell, it can still function to migrate, move and reproduce as normal.

Applications and implications

The researchers call their device a “nanobeam” because it resembles a steel I-beam with a series of round holes etched through the center. This beam, however, is not massive, but measures only a few microns in length and just a few hundred nanometers in width and thickness. It looks a bit like a piece from an Erector set. The key feature it occurs in a nano-


scale hall of mirrors, focusing and amplifying light at the center of the beam in what are known as photonic crystals.

These are the building blocks for nanoscale lasers and LEDs. While similar to the photonic cavities we have built and are quite possibly the most diverse and customizable in gredients in photonics,” said the paper’s senior author, Jelena Vuckovic, a professor of electrical engineering. “Apps come from fundamental physics to nano-


lasers and biosensors that could have profound impact on biological research.”

At the cellular level, a nanobeam acts like a needle able to penetrate cell walls without injury. Once in-


serted, the beam emits light, yielding a remarkable array of research applications and implications. While other groups have shown that it is possible to insert simple nanotubes and electrical nanowires into cells, nobody had yet realized such complicated optical components inside biological cells.

“We think this is quite a dramatic shift from exist-


ing applications and will expand enabled opportuni-


ties for understanding and influencing cellular biology,” said the paper’s lead author, Gary Shambat, a doctoral candidate in electrical engineering. Shambat works at the Nanostructures and Quantum Photonics Lab directed by Vuckovic.

Iron to a magnet

In this case, the studied cells came from a prostate tumor, indicating possible application for the probe in cancer research. The primary and most immediate use would be in the real-time sensing of specific pro-


teins within the cells, but the probe could be adapted to sense any important biomolecules, such as DNA or RNA.

To detect these key molecules, researchers coat the probe with certain organic molecules or antibodies that are known to attract the target proteins, just like iron to a magnet. If the desired proteins are present within the cell, they begin to accumulate on the probe and cause a slight-but-detectable shift in the wavelength of the light being emitted from the device. This shift is a posi-


tive indication that the protein is present and in what quantity.

“Let’s say you have a study that is interested in whether a certain drug produces or inhibits a specific protein. Our biosensor would tell definitively if the drug was working and how well, based on the color of the light from the probe. It would be quite a powerful tool,” said Sanjee Saro Gumbhir, co-author of the paper and chair of the Department of Radiology at the Stan-


ford School of Medicine, as well as director of Stan-


ford Early Detection. As such, embeddable nanoscale optical sensors would represent a key development in the quest for patient-specific cancer therapies — often referred to as personalized medicine — in which drugs are targeted to the patient based on efficacy.

A clever structure

Structurally, the new device is a sandwich of ex-


tremely thin layers of the semiconductor gallium arse-


nide alternated with similarly


see BIOPHOT, page 6

A photonic nanobeam is inserted in a cell. Clearly visible are the holes in the beam and its layered, sandwich-like structure.
Camp offers fun and support for children during a hard time

By Michael Claeys

For the past 12 years, Stanford undergraduate students have volunteered their time and energy to help create the quintessential childhood experience — summer camp — for kids whose childhoods are anything but typical.

The students are the organizers, fundraisers and counselors for Camp Kesem, a weeklong, sleep-away camp provided for free to the children of parents with cancer.

Camp Kesem (kesem means “magic” in Hebrew) is for boys and girls ages 6 to 16 with a parent who is either undergoing cancer treatment or has died of cancer, or whose disease is in remission.

The camp offers a safe and supportive place where kids can connect and have fun with others who understand their situation.

Like at any camp, there are games, songs, nature hikes and s’mores. But Camp Kesem also includes structured and unstructured times when campers can share how they have experienced their parents’ cancer. There is a ceremony, called “Roots,” in which the entire camp celebrates their shared connection, and there are nightly “Cabin Chats” where campers can discuss their circumstances in a more intimate setting.

Of course, not everyone is comfortable sharing difficult issues with a group, and the camp is designed to encourage individual connections. Camp Kesem’s leaders recruit and train a large cadre of counselors — at least one for every two campers — to ensure that campers always have someone to talk to, or just be with.

“When a parent is sick, children often don’t get as much attention at home,” said Heather Paul, the direct and sole employee of Camp Kesem at Stanford. “We want to make sure their week of camp is all about them.”

Counselors leave their laptops at home, power down their cell phones and pour all their energy into creating an unforgettable experience for the campers. It doesn’t hurt that the campsite in the Santa Cruz Mountains gets poor cell reception.

“I love that about camp,” said third-year counselor Beckie Yanovsky. “I don’t check my phone; I’m just focused on the kids.”

Yanovsky is a biology major and undergraduate researcher studying pancreatic neuroendocrine cancer in the lab of Irv Weissman, MD, a professor of pathology. And like a number of counselors, she intends to be a doctor.

None of that matters at Camp Kesem, however, where she is known only by her camp name: Luna. (All counselors choose their own nicknames, which are used exclusively at camp.)

Yanovsky is a senior, so this is her last year as a counselor. While excited to see the returning campers, she is sad to graduate from the program that means so much to her.

“Camp Kesem taught me how to talk about my own experiences with cancer,” Paul. “It is the reason our campers look forward all year long to one week of camp.”

“Camp Kesem is all about them,” said second-year counselor Julie Koenig. “Counselors become family.”

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search in the field.

“Camp Kesem taught me how to talk about my own experiences with cancer,” Paul. “It is the reason our campers look forward all year long to one week of camp.”

“Through Camp Kesem, I realized that I want to have a direct impact on kids,” said Yanovsky. “It helped me find a bridge between my intellectual interest in cancer and my desire to be emotionally invested in people.”

Camp Kesem was founded in 2000 as a secular social action project of Hillel at Stanford, the campus Jewish community center. Hillel staff member Iris Rave and a group of students identified children of cancer patients as an underserved population, and thought a sleep-away camp might offer a fun and healing respite from difficult family situations.

In June 2001, Camp Kesem hosted its first 35 campers. Forty-seven attended the following year, inspired by the examples of courage in the face of hardship. Camp Kesem has grown to 131 campers and 75 counselors participated last year.

Paul, the camp director, works year-round with a team of 10 lead counselors, or “coordinators,” who are each responsible for key aspects of the program, like community relations and fundraising. Coordinators typically spend 10 to 15 hours per week on camp-related activities, including recruiting, interviewing and training new counselors to replace those who have graduated or moved on.

Paul, whose camp name is Autumn, has led the program for three years and matches her student counselors in energy and enthusiasm. She stresses that Camp Kesem is a camp first, where fun, friendship and posi-

tive memories are the goals. But it is also a place where campers can express grief or anger, confident that they will be embraced with compassion and understanding.

Paul and the coordinators support campers throughout the year with birthday cards, care packages and in-person visits. Groups of counselors regularly attend campers’ sporting events, graduations and even parents’ memorial services.

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In June 2001, Camp Kesem hosted its first 35 campers. Forty-seven attended the following year, inspiring Rave to establish Camp Kesem National to foster programs across the country. There are now 37 active chapters in 22 states, including five in California. Over 2,100 children attended the camps in 2012.

Stanford’s chapter has also grown: 131 campers and 75 counselors participated last year.

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Paul and the coordinators support campers throughout the year with birthday cards, care packages and in-person visits. Groups of counselors regularly attend campers’ sporting events, graduations and even parents’ memorial services.

“The community is the magic of Camp Kesem,” said Paul. “It is the reason our campers look forward all year long to one week of camp.”

That appears to be true of the counselors, as well.

They light up when speaking about the camp, emphasizing the joy they get from engaging with the campers, as well as the examples of courage in the face of hardship.

“My mom passed away from breast cancer when I was 9 years old, and my twin brother and I did not like to talk about it,” said fourth-year counselor Julie Koenig. “Camp Kesem taught me how to talk about my own experience with cancer.”

Koenig, a senior whose camp name is Squish, became a counselor after seeing a flyer posted in her fresh-

man dorm. She took on more responsibility each year at the camp, and is now co-chair of the coordinator team, the highest volunteer position.

“I was told my freshman year that Camp Kesem gives to you what you give to it,” said Koenig. “I have found that to be true.”

Koenig is a biology major and studies leukemia-associated gene mutations in the lab of Ravi Majeti, MD, PhD, assistant professor of hematology. She came to Stanford with a passion for science and a focus on cancer due to her family’s experience. Camp Kesem has strengthened her desire to help people with cancer. She plans to attend medical school and ultimately conduct cancer research relevant to her clinical work.

For more information about Camp Kesem at Stan-

ford, visit http://campkesem.org/stanford.
INSIDE STANFORD MEDICINE | FEBRUARY 25, 2013

By Julie Greicius

Until recently, patients at Lucile Packard Children’s Hospital whose kidneys weren’t functioning properly would often fall behind in their schoolwork because of the substantial amount of time they had to spend at the hospital for dialysis treatment.

While inpatients at Packard Children’s could study and take classes through the hospital school, most kids receiving hemodialysis were outpatients and hence ineligible to enroll. Yet they would still need to be in the hospital several times a week for three to four hours at a time while machines filter and remove wastes from their blood. Confined to a seat during the treatment, combating boredom and restlessness — sometimes in combination with the side effects of dialysis, which can include fatigue, nausea and headaches — it was a difficult environment in which to concentrate on schoolwork.

Often, their teachers at school didn’t fully understand their medical situations, resulting in low or failing grades.

In 2011, Packard Children’s came up with a way to help these patients academically. It hired Katie Fennimore to work exclusively with children in the dialysis unit.

Fennimore — a former elementary school teacher trained as an instructor for patients with special educational needs, such as chronic illness — works to ensure that each patient’s educational needs are met in the educational setting, and that medical needs are met in the educational setting.

Fennimore helps kids ranging in age from 3 to 19 — preschool to high school — undergoing dialysis to set goals, stay motivated and keep up to date with classwork or prepare to enter school for the first time. She also bridges the gap between school and hospital, making sure that everyone involved in the child’s life — parents, school teachers, administrators, doctors and nurses — are in step with the patient’s medical status and needs, as well as his or her academic development.

“It’s especially high in school when kids have multiple teachers who see hundreds of kids,” Fennimore said. “We give them support to help them understand dialysis and what needs it may present for the child in the classroom.” For children who have an individualized education plan or 504 plan, Fennimore works with teachers to help ensure that students are on the right track while they’re at Packard Children’s.

Lori Vargas is mother to dialysis patient Taylor Simpson, 15, who was diagnosed with Goodpasture syndrome, a rare autoimmune disease, just over a year ago. “Katie is a huge help for us,” Vargas said. “She helps bridge the communication between us and the school when we need that extra support.”

For Fennimore, knowing her dialysis students individually is key to helping their progress. Vargas added, “Katie knows, off the top of her head, everything that is currently going on in Taylor’s classes. She will also be attending Taylor’s IEP meeting via conference call to help us communicate with Taylor’s teachers and explain the importance of Taylor staying in school even though she has this illness.”

Keeping kids engaged requires a good mix of skill and talent. “It can be hard to do schoolwork when there’s a TV in front of you,” said Fennimore, adding that parents know well. To help kids on dialysis make the most of their time, Fennimore uses the no-TV ‘power hour’ — the first hour of treatment when kids are still high-energy.

Screens aren’t always a distraction, though. “We have iPads and computers that have been donated to the dialysis center,” Fennimore said. “We put educational materials on those for the kids to use, such as learning games and apps. Teachers can recommend specific lessons as well.”

In addition to working directly with patients, Fennimore is also working on research with nephrologist Cynthia Wong, MD, medical director of the Packard Children’s dialysis center, to measure how a dedicated teacher has influenced patients in the dialysis unit. For example, the number of children who engage in educational activities during dialysis goes up from 14 percent to 79 percent when a teacher is present. Methods to achieve this level of engagement include assessment of educational needs; assistance with focusing on tasks; setting goals (one goal per month instead of a vast set of goals); bridging gaps between parents, students and school; and working on one-on-one and in group settings with specific California-based standards. Fennimore also aims to help kids build confidence. She understands that they enjoy making progress when they’re engaged in learning. “All kids lose focus,” said Fennimore, “but if someone’s there to encourage and help, it makes a huge difference.”

“Katie is a great motivator for Taylor while she’s here in dialysis to stay focused on her homework and grades,” said Vargas. “She rocks! We are grateful for all her help.” The dialysis teacher position is supported by a grant from the Bank of America Foundation.

Taylor Simpson, 15, undergoes dialysis several times a week. Katie Fennimore helps to ensure the patient’s educational needs are met and that her teachers are informed about her medical situation.

By Julie Greicius

Emergency continued from page 1

the same area as the waiting room, big, brown-sequined letters that spell 'TRIAGE' are affixed to a dividing wall, behind which patients are evaluated by a team of doctors, nurses and ED technicians. Apart from trauma patients brought in by ambulance to receive the highest priority care, everyone who comes to the ED passes through Team Triage’s area. Minor injuries are sorted as 4 or 5, the most critical as 1. “Most patients are 3s,” said Callagy. “They might have abdominal pain or broken bones.” Team Triage also makes it possible for earlier diagnosis of time-sensitive conditions, such as stroke.

An analysis found that 40 percent of the hospital’s patients were sick enough to have been admitted through the ED. It also showed that 12 to 13 percent of the ED’s patients were 4s and 5s, in no way needing hospitalization. Yet their relatively minor medical issues meant they were waiting the longest, starting with the time it took for them to see a doctor. “We knew we needed dedicated resources,” said Grant Lipman, MD, clinical assistant professor of emergency medicine and an ED physician. “The shorter someone stays in the waiting room, the better everyone is. It’s common sense and good medicine.”

Enter Fast Track, a dedicated team composed of doctors, nurses and ED technicians whose job is to treat, as efficiently as possible, those patients with less severe health problems. “We treat you and let you get on with your life,” said Lipman, Fast Track’s medical director. “You’re the least sick, so we’ll treat you the fastest.” The median length of stay for Fast Track patients is 65 minutes.

For 3s whose evaluation and treatment times might take longer because of tests or other requirements, another portion of the ED’s waiting room has been partitioned and furnished with comfortable treatment chairs and other basic medical equipment. In this area, clinicians can treat pain, for instance, with intravenous medication. “It’s still pain makes a huge difference,” said ED physician and Team Triage director Nounou Taleghani.

The benefits of these changes to the ED have been abundant and broad, the emergency medicine team says. Overall, the ED staff is far less stressed, Callagy said, because they can handle the highest patient counts so much more efficiently. And, in surveys returned by discharged patients, the change in wait time is clearly appreciated. The likelihood of Fast Track patients to recommend the ED is in the 99th percentile. The likelihood of patients to recommend the ED overall has risen from the 55th percentile to the 95th percentile since the changes were instituted.

“It’s not rocket science,” said Marlena Kane, director of business development for patient care resources at Stanford Hospital. “It’s bringing the right people together and getting them engaged. We want to make Team Triage and Fast Track permanent parts of the way we do business.”

Stanford, Lipman said, “has always been known as a center of excellence for complex specialty care. We want the community to know we’re the best and the safest at medicine’s bread and butter, too.”

Sara Wykes is a clinical affairs writer at Stanford Hospital & Clinics.

A portion of the emergency department’s waiting room (top) is furnished with comfortable treatment chairs and other medical equipment to treat moderately sick or injured patients. Behind a dividing wall (above), a triage team can evaluate patients’ conditions as they arrive at the emergency department.

By Julie Greicius is editorial director in the Office of Strategic Marketing & Communications at Lucile Packard Children’s Hospital.
Neurobiologist awarded Sackler Price for achievement

Carla Shatz, PhD, the Sapp Family Provostial Professor and professor of biology and neurobiology, has been awarded the Mortimer D. Sackler, MD, Prize for Distinguished Achievement in Developmen
tal Neurobiology. The award is given every two years by the Sackler Foundation and the Center for Cancer Genetic Medicine at Stanford, the Canary Family Provostial Professor and the Sackler Institute for Develop
tal Neurobiology at Weill Cornell Medical College.

The award recognizes researches

who have "advanced our un-
derstanding of the developmental
processes of mind, brain and be-
"cause we know that the brain de-
velops and the origin of mental illness." It honors
Schatz, the late psychiatrist and research
pioneer in biological psychiatry.

Shatz’s research focuses on

how the brain changes with lea-

ring, especially during early develop-
mental periods. Her re-

search has relevance not only for

understanding brain wiring and

neurodevelopmental
disorders, such as
dyslexia and schizophre-

nia, but also for under-

standing how the nervous

system and immune systems

interact.

Shatz was chosen for her pion-
ingering work and also for her

leadership in the field of

neuroscience and her track rec-

cord of mentorship. She was the

first woman to earn a PhD in neu-

robiology at Harvard, as well as the

first woman to receive tenure at

Stanford in the basic sciences.

"Our nanoscale probes can reside in
cells for long periods of time, providing

powerful sensor feedback or giving con-

trol signals to the cells down the road," said
Shambat. "We tracked one cell for
eight days. That's a long time for a single-
cell study."
Rasgon continued from page 1

tively well-educated, high-functioning women. It was published online Feb. 13 in PLoS ONE. First author Emily Jacobs, PhD, is a postdoctoral fellow at Harvard Medical School. When the work took place, Jacobs was still involved with the lab of another study co-author, Elissa Eped, PhD, associate professor of psychi- atry at the University of California-San Francisco.

“We know from numerous studies that ApoE4 is a major genetic risk factor for Alzheimer’s disease and late-onset Alzheimer’s disease and early mortality,” Jacobs said. “We wanted to see whether an accelerated rate of biological aging contributed to this risk.”

Another co-author of the study is Elizabeth Blackburn, PhD, professor of biology and chairman of the Department of Cell Biology at UCSF, who won the Nobel Prize in 2009 for her work elucidating the mechanism by which intracellular features called telo- meres act as biological clocks.

Telomeres are repeated sequences of alternating chemical units of DNA that cap the ends of each chromosome in ever-y cell of all living creatures from fungi to humans. Their function is analogous to that of the plastic caps ringing the ends of a shoelace: They stabilize chromo- somes, keeping them from unraveling or recoiling during meiosis, too. But telomeres themselves are not perfectly stable. The process of cell divi-sion, as well as the force of oxidative stress or inflammation, cause them to shorten.

If they reach a point at which chromo- somes are pinched, this could give rise to cancer or other malfunc-tions in the cell housing the challenged chromosomes. Evolution has engineered protective mechanisms into such cells so that they die or, at least, lose their abil-ity to divide further. But this evolutionary brake has its downside: It contributes to the slow but steady deter-ioration that manifests visibly in our aging skin and, less visibly, in all the other bodily organs.

Using telomere shortening as an index of biological aging, the investi-gators drew blood samples from almost 70 healthy women, most of them between the ages of 45 and 65, who had been on hor-mone therapy since menopause. These women were randomly divided into two groups. One group remained on hormo-nes, while the second group discon-tinued therapy.

Blood samples from the volunteers were taken when they first entered the study and again two years later. Jacobs, Rasgon, and their colleagues separated white blood cells from each sample, ex-tracted the cells’ DNA and measured the length of each woman’s telomeres at both time points. Then they calculated the change in telomere length that had taken place over the two-year period.

“The telomere length is relatively easy to measure in blood cells, and it’s an emerg-ing marker of biological aging,” said Jacobs. “It predicts the incidence of age-related diseases and mortality.”

Among the many other assessments the researchers made on these women was their ApoE status. They found that ApoE4 carriers’ telomeres were six times as likely as those of non-carriers to under-go significant shortening within the two-year study window. On average, the telomeres of ApoE4 carriers had shortened by an amount equivalent to what might be expected to take a decade, based on other studies of healthy women.

“However, hor-mone therapy effectively zeroed out telomere length over time. Carriers who remained on this regimen showed no evidence of telomere shortening.”

“Our take-home findings from this study were, first, that ApoE4 carriers are at greater risk of biological aging, which is associated with negative health outcomes and, second, that if you were a postmenopausal ApoE4 carrier, being on estrogen therapy was a good thing for telomere length, an established measure of biological aging at the cellular level,” Rasgon said. “This brings us a step closer to being able to identify which women will benefit the most from estrogen re-placement therapy.”

In 2002, one arm of a large-scale longitudinal trial of women examining hormone therapy was halted due to an unexpected increase in adverse cardio-vascular events among women on the therapy. The ensuing publicity resulted in women abandoning the regimen in droves. But the trial subjects among whom these ill effects occurred were women who had begun estrogen treat-ment years after reaching menopause. Subsequent studies have demonstrated that women who start treatment at menopause or soon afterward may expe-rience some benefit.

Rasgon said that in addition to tim-ing and ApoE status, the type of estro-gen formulation used may prove to be an important determinant of hormone therapy’s health impact. She said she expects to publish other work soon con-cerning the differential effects of different formulations.

Rasgon’s graduate student Heather Kenna was another Stanford co-author of the study, which was funded by the National Institutes of Health grants and the Rob-ert Wood Johnson Foundation Health and Society Scholars Program. Department of Psychiatry and Behav-ioral Sciences also supported this work.

Rasgon discusses the study in a podcast at http://med.stanford.edu/121/2013/rasgon. html

Surgery continue from page 1

Several obstetricians from across the country, plus a few physicians from overseas, the course emphasized the impor-tance of being able to make do with the tools available.

Developing countries may not have well-stocked supply closets; there may be no blood bank nearby; anesthesia may be nonexistent. Songrams may be non-existent.

“We wanted to make phy-sicians understand that it’s all about somehow ‘making it work,’” Rasgon said. “You sur-vive on your wits, making do with what’s on hand.”

Wren organized medical experts from across vari-ous fields, the large majority from Stanford, to volunteer to teach different sections of the course. Some were extremely experienced: OB/GYNs such as Sherry Gosselin, MD, co-director of the Institute for Global Ortho-paedics and Traumatology at the University of Califor-nia-San Francisco, who has worked in more than 40 developing countries. Others, such as Stephen Skirboll, MD, a Stanford neurosurgeon, hasn’t worked on med-i-cal missions overseas but is an expert in how to teach fracture and dislocation treatment for bod-ily organs.

Rasgon recruited a hand surgeon to teach the skills necessary to treat hand injuries such as machete cuts and festering thorn wounds. She recruited an orthopaedist to teach the care of pelvic fractures and dislocations for injuries common to people falling out of trees while picking fruit, or caused by massive vehicle accidents due to horrific road conditions.

The course itself was something of a lesson in Mac-Gyver-like inventiveness. Students used pigs’ feet to practice suturing repair. Breast births were compressed from sleeping bags. An orthopaedic company donated thousands of dollars worth of fake bones; hand drills ordered online were used for bone-drilling practice.

“With very little or no equipment available,” Wren said, “it was a creative and challenging environment. Adaptability was stressed as another key asset to the successful medical mission physician. Wren taught about the need for gen-eral surgeons to be prepared to do new roles as ob/gyn doctors to do C-se-ctions or to develop the skill set necessary to treat postpartum hemorrhage.”

“The scope of practice that was ex-pected was phenomenally different than at home,” Wren said about her overseas missions. “You have to go outside your specialty.”

Wren, a professor of surgery and asso-ciate dean of faculty affairs at the School of Medicine, continually drew on her personal experience from medical missions to Chad, Congo and Ivory Coast to guide her course content.

C-sections were a common operation for her in Africa, never before having done one prior to that.

“The child woke up five days later, Wren having saved her life. The child woke up five days later, Wren having saved her life. The child woke up five days later...”

Wren, an assistant professor of surgery, said she learned to handle unexpected situations during her three-month mission to Chad, in 2007. The child woke up five days later, Wren having saved her life.

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“We don’t see many cases of C-section? I really hadn’t done them,” she said. “Ampu-tations, that’s easy for me. But C-sections. It’s just a skill that most general surgeons don’t have.”

Not to mention she had added the surprise of the occasional twins and triplets that came along without any advanced warning due to the lack of ultrasound tests.

In addition to C-section skills, Wren received on-the-job training in triage and neurosurgery. For exam-ple, Wren was told to ride in a small, open vehicle accident due to horrific road conditions.

“T he first time I had ever done any real triage,” she said. “The difference in the way you handle patients critical and who could wait for treatment. Because I was the only surgeon, I had to pick out who went first.”

Wren chose an unconscious 8-year-old girl with head trauma and operated on her skull fractures first. The child woke up five days later, Wren having saved her life.

The team consisted of six members. The team consisted of six members. The team consisted of six members.

Additional preparations were made for each procedure, including an emergency C-section for if the patient’s命 was at risk.

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The child woke up five days later, Wren having saved her life.
Newborns delivered, each morning at Packard Children's

Parents of sick newborns need clear, immediate access to information about their baby's condition. While conversations with the physician or nurse are a key source of information, Packard Children's has found another way to keep moms and dads in the loop. When the hospital's neonatal intensive care unit switched from paper-based files to electronic medical records, it became easier for caregivers to maintain and share medical information with each other. The next step was to extend this information to vital members of the care team—parents.

A group of physicians, nurses, parents and informatics specialists designed a template that is printed out each morning to be placed by the baby's bedside. The printout, called "Your Baby's Daily Update," provides a snapshot of key items from the electronic medical record, including the members of the care team, lab results, nutritional status and any changes over the past 24 hours. The printout has room at the bottom for the nurse or physician to leave a handwritten update or personal note.

"The team had a good sense of what was needed to be included on the printouts based on what parents wanted to know about their child each day," said Jonathan Palm, MD, MS, a neonatologist and member of Packard Children's medical informatics services. "The update empowers parents with the knowledge to contribute to medical decision-making regarding their infant and creates a meaningful connection."

When Shannon Maher's son Aiden Kuwaty was born 10 weeks early, the couple was able to communicate with their baby's attending with clarity. Because the couple had an older child at home, they took shifts at Aiden's bedside, catching each other up on his condition by phone. But the stress of Aiden's fragile state made it difficult for Maher to recall specific details of his care. Instead, she gave her husband information from the printed update each time they talked. "It really helped to have some numbers to give him," she said.

Since it was introduced in 2010, the update has been translated into Spanish and the distribution process has been expanded and streamlined. Based on the NICU's experience, other Packard Children's departments are beginning to offer similar updates for the families of their patients, too.

"The update includes all the basics that a parent wants to know and is a starting point for more in-depth conversations," said Heather Keller, a parent lead in the Department of Family-Centered Care and a member of the team that developed the project. "It's also a wonderful tool for parents new to the NICU who face a tremendous amount of new information about their child's care and condition."

In a scientific study designed to evaluate "Your Baby's Daily Update," parents reported that they found the printout very useful, and more than 95 percent said that they "always" liked receiving it and felt more competent to manage information related to the health status of their babies. Parents rated the quality of the update as highly as information from their conversations with doctors and nurses, and more highly than many other information sources, such as NICU bulletin boards or the Internet. Many considered the report to be "refrigerator worthy," taking it home for display, as well as posting it on family blogs and Facebook. The study was published in the Journal of Participatory Medicine in December 2012.

Shannon Maher said all of Aiden's updates in a special folder at home. She sometimes looks at them as a reminder of his first fragile weeks, which present a marked contrast to the healthy, active toddler Aiden is now.

FOUR SCHOOL OF MEDICINE FACULTY MEMBERS WERE RECENTLY NAMED TO ENDEWENDED PROFESSORSHIPS.

Advani, Mackey, Minor and Reijo Pera appointed to endowed positions

Ranjan Advani, MD, professor of medicine, was appointed the Saul A. Rosenberg Professor in Lymphoma, effective Dec. 31, 2012.

Advani's research interests include the clinical investigation of Hodgkin's disease, non-Hodgkin's lymphomas and cutaneous lymphomas. Advani is also interested in translational research to find new medical therapies and biologically targeted therapies.

This professorship was established in 2009 by Christopher Redlich Jr., '72, a member of the board of directors of Stanford Hospital & Clinics. It is intended for a distinguished faculty member in the field of lymphoma, with the goal of fostering excellence in clinical research and patient care.

The Fishers founded the San Francisco-based retail clothing chain The Gap Inc. in 1969, and have been generous friends to Stanford. Perrell, an angel investor, is a graduate of Stanford's Graduate School of Business Management and co-founder of Perrell and Guillaumin, the clothing chain The Gap Inc. in 1969, and have been generous friends to Stanford. Perrell is an angel investor in companies such as neurotherapeutics with novel therapies.

Her lab studies the cellular and molecular mechanisms underlying the organization of cortical circuits and the role of memory and navigation. As an associate professor of neurobiology, effective Feb. 1, her lab studies the cellular and molecular mechanisms underlying the role of cortical circuits for spatial navigation and memory.

Of the five professorships, three were established in 2011 by philanthropic gifts that have benefited cancer research, human cell biology and radiology research. Carl Naumann died in 1977 and Elizabeth Naumann in 1981.

Renee Reijo Pera, PhD, professor of obstetrics and gynecology, was appointed George D. Smith Professor in Stem Cell and Regenerative Medicine, effective Dec. 11, 2012. The professorship was established in 2012 with a gift from the George D. Smith Fund and is intended for a faculty member in the field of stem cell biology and regenerative medicine.

Reijo Pera's research focuses on understanding human embryonic stem cells, especially their ability to generate pluripotent stem cells, somatic cells and germ cells. Her early work resulted in identification of one of the first genes specifically implicated in human germ cell development.

The professorship was established by Stanford in 1929, with gifts that have benefited cancer research, human cell biology and radiology research. Carl Naumann died in 1977 and Elizabeth Naumann in 1981.

Renee Reijo Pera

Sandip Biswal, MD, was promoted to associate professor of radiology, effective Jan. 1. He also serves as director of the Brain-MINDS Imaging Fellowship in the Department of Radiology.

Paul Bollyky, MD, DPhil, was appointed assistant professor of medicine (infectious diseases), effective Jan. 1. His research is focused on the role of extracellular matrix in inflammation and infection.

Lisa Giocomo, PhD, was appointed assistant professor of neurobiology, effective Feb. 1. Her lab studies the cellular and molecular mechanisms underlying the organization of cortical circuits and the role of memory and navigation.

Anne Dubin, MD, was promoted to professor of pediatrics, effective Feb. 1. She is interested in the diagnosis and treatment of arrhythmias in pediatric heart failure, especially the use of reprogramming therapy in the pediatric and congenital heart population.