Stanford Medicine News
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Humanwide personalizes prevention

Pilot program focuses on preventive care

PHOTO: STEVE FISCH

Megan Mahoney, MD, Stanford Medicine's chief of general primary care, says that Humanwide allows physicians to focus on the whole patient and prevent disease.

For years, physicians have sought ways to help their patients manage health risks and avert disease before it strikes. Now, a Stanford Medicine pilot program called Humanwide offers a promising new model to do just that, demonstrating how personalized, preventive care that combines biomedicine, digital health and a collaborative team-based approach can lead patients to healthier lives.

"Our vision of precision health is to predict, prevent and cure — precisely," said Lloyd Minor, MD, dean of the School of Medicine. "Humanwide is that vision realized in a clinical setting. There is so much that each of us can do to be engaged proactively in our health and our well-being."

In the Humanwide program, a care team partnered with each patient to create a comprehensive portrait of their health, using data from wearable devices, genetic and genomic testing, and wellness assessments. They used this knowledge to map a custom care journey for each patient, helping them achieve personal goals such as losing weight, managing stress or getting a chronic condition under control. In some cases, they helped patients understand and manage health risks when they had a family history of illness or genetic propensity for a disease.

The goal was to shift the health care focus upstream, using the latest technology to predict disease in time to prevent it or mitigate its impact, said Megan Mahoney, MD, Stanford Medicine's chief of general primary care.

"With Humanwide, we're able to focus on the whole human: who they are when they're working, who they are when they're playing, who they are when they're at home," she said. "This program demonstrates how we can zero in on what matters to a patient to craft the entire care plan around their goals."

David Entwistle, president and CEO of Stanford Health Care, said the pilot paves the way for a new mindset about patient wellness.

"Looking at genomic data and other factors that actually predict patient health allows us to be proactive instead of waiting for something to happen and having to react to that," he said. "Humanwide is an opportunity to build a deep understanding of each patient in a unique way."

Gathering the data

Over the course of a year at Stanford's Santa Clara clinic, 50 patients who were enrolled in the Humanwide project joined their primary care providers to take a deep dive into their own data.

They underwent family history and genetic assessments to gauge their risk for certain cancers and other diseases. Another screening evaluated how their genes influence their response

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PHOTO: STEVE FISCH

Lloyd Minor, MD
Dean, Stanford University School of Medicine

Paul King
CEO, Packard Children's and Stanford Children's Health

David Entwistle
President and CEO, Stanford Health Care

COMMUNITY MATTERS

Humanwide: Bringing precision health to life

Benjamin Franklin once famously quipped that "an ounce of prevention is worth a pound of cure." More than two centuries later, this idea remains as true as ever in health care — even as our industry finds itself at the cusp of a biomedical revolution.

Thanks to scientific breakthroughs that are happening today, it is likely that in our lifetime we will have the power to cure diseases that have long afflicted humanity. And yet, on a planet that will have 10 billion people by 2050, it won't be enough. A true revolution in health care, one that advances the human condition, will happen when we embrace prediction and prevention — at the community level — with the same enthusiasm we give to national moonshots to develop cures.

According to the U.S. Centers for Disease Control and Prevention, 80% of all heart disease and stroke, 80% of Type 2 diabetes and 40% of all cancer can be prevented through simple lifestyle changes. We have an enormous opportunity to tackle this issue, not only for the patients in our direct care, but for all of you who live in the communities we serve. More than ever, we see community health as a central part of our role, and we feel a deep responsibility to make

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SoundBites

Newsday

"For the first time in 18 years ... patients with diabetes have a promising option to guard against one of the most severe risks of their condition."

Kenneth Mahaffey, MD, professor of medicine, on his landmark clinical trial of a drug shown to lower the risk of kidney failure by a third in people with Type 2 diabetes and kidney disease. *April 15*

healthline

"Now we can see that women with ovarian cancer are dramatically under-tested."

Allison Kurian, MD, associate professor of medicine and of health research and policy, on her study showing the importance of genetic testing for women with ovarian and breast cancer. *April 18*

GIZMODO

"I think it's reassuring to know that when you come back things will largely be back to the same."

Michael Snyder, MD, professor and chair of genetics, on the final results of the NASA "twin study," for which he was a co-principal investigator, showing how Scott Kelly changed after a year in space. *April 11*

Forbes

"Don't give up. Don't be discouraged by what people say a surgeon or doctor should be. If you want it, then you are what a surgeon or doctor should be."

Auriel August, MD, general surgery resident at Stanford, on being a female, black and openly gay physician. *April 22*

You race. Kids win.

The Summer Scamper will raise money for life-saving research and care at Lucile Packard Children's Hospital Stanford

On June 23, more than 3,500 visitors will gather on the Stanford University campus for the ninth annual Summer Scamper, a race and festival that raises funds for children's health.

The fun-filled morning will feature 10- and 5-kilometer races that start at 8 a.m., followed by a kids' fun run. The celebration continues at the Family Festival with music, food vendors, the kids' zone, health and wellness exhibits, and more.

PHOTO: AMANDA CHAPMAN PHOTOGRAPHY

Kruz and Paizlee Davenport have a rare form of dwarfism known as Schimke immunoosseous dysplasia. They will serve as patient heroes for this year's Summer Scamper race on the Stanford campus.

Support for research

The event's goal is to raise $550,000 to support vital programs at Lucile Packard Children's Hospital Stanford and advance groundbreaking research at the Stanford School of Medicine that could improve the lives of children worldwide — children like Kruz and Paizlee Davenport.

Kruz, 5, and Paizlee, 4, have Schimke immunoosseous dysplasia, an extremely rare form of dwarfism with a life expectancy of nine to 11 years. It can cause kidney failure, strokes and heart disease.

"There was a 1 in 80 million chance both Kruz and Paizlee would have SIOD," said their mom, Jessica Davenport. The siblings are two of just five children in the United States who have the condition.

To be closer to specialized treatment, the Davenports temporarily moved to Palo Alto from their hometown of Muscle Shoals, Alabama. They have built close relationships with physicians at Packard Children's, where Kruz and Paizlee will each undergo a kidney transplant and Kruz recently became the first SIOD patient to receive a donor's stem cells. Down the road, the siblings will also need hip reconstruction surgery to combat dysplasia.

Raising money for SIOD

"Stanford and Dr. David Lewis graciously took on SIOD research in 2017, which led to meeting amazing doctors who are now our stem cell transplant and kidney transplant teams," said Davenport. "We feel blessed to have Kruz and Paizlee in the best care facility in the world."

Unfortunately, no cure exists for children with the disorder. That's why the Davenports decided to start the Kruzn for a Kure Foundation to raise money for SIOD research. So far, Kruzn for a Kure has donated more than $1.3 million to Stanford.

"We strive every day to not only give Kruz and Paizlee a promising life, but to give the other children all over the world a chance as well," said Davenport. "Continued funding is paramount for such an extremely rare condition."

As the first siblings with SIOD in the country, Kruz and Paizlee have become ambassadors for the condition and will be 2019 Summer Scamper Patient Heroes. Runners can keep an eye out for them on the racecourse, which starts on Galvez Street on the Stanford campus. SMN

To donate online or register for the 5K, 10K and kids' fun run, please visit SummerScamper.org.

Concussion advice for young athletes

Summer play can mean head injuries — learn how to prevent and treat them

Research assistant William Mehring (right) hands a mouthguard to Menlo School sophomore J.P. McKenney. Menlo is one of three local high schools participating in a study to better understand concussions in young football and lacrosse players.

PHOTO: STEVE FISCH

As kids and parents prepare for summer sports, Stanford neurosurgeon Gerald Grant, MD, thinks it's important for them to know what to do if a child or teen shows concussion symptoms.

Grant is a professor of neurosurgery at the School of Medicine and chief of pediatric neurosurgery at Lucile Packard Children's Hospital Stanford. He treats children and teens with concussions and is conducting research to understand how brain injuries happen during high-impact sports so we can prevent them. He spoke with *Stanford Medicine News* about how to recognize concussion symptoms and how to help young people recover from one.

Your Stanford research team is collaborating with three local high schools to study concussion risks among football and lacrosse players. What do you hope to learn?

Grant: We're eager to better understand how these injuries occur on the field. For every practice and game, the athletes wear an instrumented mouthguard developed in the lab of my collaborator, David Camarillo, PhD. Each game and practice is videotaped; we can correlate hits on the field with forces measured by the mouthguard. We can then reconstruct how the head moved in three planes of acceleration during the hit to understand how the brain moved. It's pretty amazing.

Trying to interpret these hits is the hard part. Some kids are having concussions we know about, and others may have events that are subconcussive or that the athlete doesn't report. It might take several cumulative smaller hits to lead to a concussion. We're trying to learn whether we can predict when those smaller hits are adding up to pose a danger to the brain so we can pull a player off the field before a concussion occurs. It's tricky because it has to be individualized for each player since everyone's threshold is likely different.

Stanford researchers have already done similar studies in college players. Why are you focusing on high school students?

Younger athletes are not as experienced about skills such as how to tackle, and there's so much more variability in their size and speed than at the college level. There's also a lot of brain development going on between ages 13 and 18; in my concussion clinic, this age group is very vulnerable and has the highest risk for health issues that may accompany a concussion, such as depression, PTSD and anxiety. In light of those vulnerabilities, we think it's really important to extend the work to this age group.

Stanford scientists have made several other recent discoveries about concussion. What are a few of the most intriguing findings?

Gerald Grant

Camarillo's lab has used the mouthguard technology in Stanford athletes to understand which motions inside the brain contribute most to concussion. They've found that impacts to the side of the head can shake the corpus callosum, which connects the two halves of the brain and helps with coordination and problem solving. They have also learned that tensing one's neck muscles during a high-impact hit does not seem to protect against concussion. We hope these findings can help us develop ways for players in high-impact sports to tackle and handle collisions more safely.

For children playing soccer, baseball, football and other high-impact sports, what precautions can parents and coaches take to safeguard their brains?

Kids need to be educated about concussion symptoms and know to tell someone if they have symptoms so they can be evaluated to see if it's safe to continue playing. Parents need to be on the same page about the importance of pulling an injured child or teen from play. The long-term risks are much greater if an athlete has a second brain injury before the first has healed. When in doubt, we should pull players out of the game.

The most common concussion symptom is headache. Others to watch out for include dizziness, vertigo, difficulty concentrating, fatigue, neck pain and high anxiety. An athlete might have just one of these symptoms or a mixture.

It's pretty common for me to see kids in my clinic who have had two or three concussions, are symptomatic and are still playing their sport, and I can't believe I'm the first one to say they really should not be playing.

After a child is diagnosed with a concussion, what should parents do to help with recovery?

No. 1, don't let your child go back to contact activities until they're cleared by a health care provider to play. That's the law in California — and it's important for parents and athletes to know about it.

While they're recovering from a concussion, the child or teen should slowly start doing something aerobic but with no contact risk. It's a myth that concussion recovery should be completely sedentary; there are new studies showing that moderate exercise speeds recovery.

Parents can also advocate with their child's teachers. We want kids to be at school, but in small doses; if a teacher overloads them, that could backfire. Taking time to recover from a concussion is especially hard for students who have super-high expectations for themselves. When they feel like they can't perform at their usual level, they can get very depressed. Being supportive and hopeful is really important. Parents can reassure their kids that they are going to get better, and that appropriate recovery time will allow them to heal.

What are the big unanswered questions about concussion in children and teens?

Some of my collaborators at Stanford are working on subtyping pediatric concussions. Their research is showing that these injuries may look different in different people: One kid might have terrible dizziness; another, mostly vertigo; another, bad cognitive side effects such as difficulty paying attention. We are now figuring out how to rehabilitate patients very specifically, focusing on diagnostics that can help us tease out how to classify the concussion and target therapy to help them get better as soon as possible. SMN

Training the first responders

Stanford physicians teach fire departments the latest emergency medicine techniques

Contrary to popular opinion and most television shows, the first responders to reach the scene of a medical emergency aren't usually an ambulance crew but firefighter-paramedics. In fact, the majority of the calls fire departments respond to are medical.

Because of the crucial role that fire departments play in pre-hospital care, Stanford Health Care and the Stanford Department of Emergency Medicine have developed partnerships with nine local fire departments, including those in Palo Alto, Mountain View and Santa Clara, to ensure that first responders are trained in the latest emergency medical care.

Typically, a single fire department will contract with one physician to serve as its medical director. The Stanford approach is different: Several faculty members in the Department of Emergency Medicine serve as the collective medical director for multiple fire agencies. The approach has yielded significant benefits, said Marc Gautreau, MD, clinical associate professor of emergency medicine and director of pre-hospital care at Stanford.

Stanford emergency medicine physician Peter D'Souza (center) watches while Palo Alto firefighters Brian Tognozzi (left) and Yovan Sierra practice resuscitation.

PHOTO: RAFAEL CRUZ

Individually contracted medical directors rarely provided on-site training to the firefighters because of the time involved in traveling to and coordinating with multiple fire stations. However, with a team of physicians to draw from, Stanford has been able to provide frequent, consistent training and ensure quick dissemination of new protocols and emergency procedures to stations throughout the peninsula, said Peter D'Souza, MD, clinical assistant professor of emergency medicine.

"Fire departments are receiving hands-on training from Stanford physicians in advanced emergency medical services, and fire personnel can turn around and provide very high-level care to the populations they are serving," Gautreau said. "We've already seen several great saves as a result of the advanced resuscitation skills implemented by local fire department paramedics. And we can provide training during shift hours, which means stations do not need to pay overtime for training, and resources can be directed toward offering the best care possible."

A chance encounter

The idea for the partnership arose in 2016 when Kim Roderick, chief of emergency medical services for the Palo Alto Fire Department, stopped by the Stanford Hospital coffee cart. Roderick happened to see D'Souza, who had been involved with the fire department for many years and had collaborated with Roderick on a study in which first responders were taught a new method of delivering an anti-seizure medication.

As the two chatted, Roderick asked D'Souza whether he was interested in becoming the medical adviser for a number of fire departments in Santa Clara County, but D'Souza and his wife were expecting their first child and he felt the timing wasn't right to take on additional work. However, D'Souza proposed an alternative: The collective resources at Stanford Emergency Medicine could provide medical support for Palo Alto and other Santa Clara County fire agencies.

The idea of having an institution take on the role of medical director was untested, so there were no road maps to follow. "We brainstormed about using the entire physician group, and it kind of went from there," Roderick said. D'Souza discussed the possibility with Stanford emergency medicine leaders, and Roderick shared the idea with fire chiefs in the area. Two months later, they pitched the idea to the nine other emergency medical services chiefs in Santa Clara County. "They loved it," Roderick said.

Following a formal proposal process, Stanford took on the role for the Palo Alto Fire Department in February 2017. Stanford signed similar agreements with eight other fire agencies in the ensuing months.

In one of the initial training sessions, Stanford faculty members instructed Palo Alto firefighters on high-performance CPR, which optimizes resuscitation during cardiac arrest. HP-CPR requires a team of trained individuals who rotate through different roles to minimize the downtime between chest compressions. The goal of HP-CPR is not simply to save the patient, but to minimize the loss of brain function, enabling patients to resume their lives with minimal lasting damage.

The Palo Alto Fire Department immediately implemented the techniques, with positive results. "We used to see a return of spontaneous circulation in 17% of the patients," Roderick said, meaning that those patients were able to breathe and their hearts resumed pumping blood. "With HP-CPR we see spontaneous circulation in 20% to 25% of patients."

This was not an isolated result. Stanford recently trained members of the Santa Clara Fire Department in using a video laryngoscope, which enables responders to quickly insert a breathing tube without stopping chest compressions. One week later, D'Souza received a text message from the department's emergency medical services chief noting that crews had already successfully used the approach on three separate emergency calls.

Another benefit of the partnership is the ability to close the loop about critical patients or challenging emergency medical treatments. Roderick said 97% of the people the firefighter-paramedics transport end up at Stanford Hospital. But in her three decades on the job, she has rarely learned what happened to the patients once they passed through the hospital doors. "We didn't really know if we were having an impact," she said. "Most health care providers review cases and assess actions on a regular basis, but we didn't have that opportunity. Now, we can share lessons learned. We can reinforce techniques that have the best result."

Rare expert advice

The partnership has also given the fire departments access to experts including the four Stanford faculty members who are board certified in emergency medical services — only 600 or so are certified in the country, so they are a rarity in fire departments. In addition, Justin Lemieux, MD, a clinical assistant professor of emergency medicine who has had extensive training in combat casualty and tactical emergency operations, can provide training for a hostile situation such as a mass shooting.

The partnership with Stanford is also helping fire departments prepare for a new "community paramedicine" model that would enable first responders to undergo training on a wider range of treatments, possibly saving patients a trip

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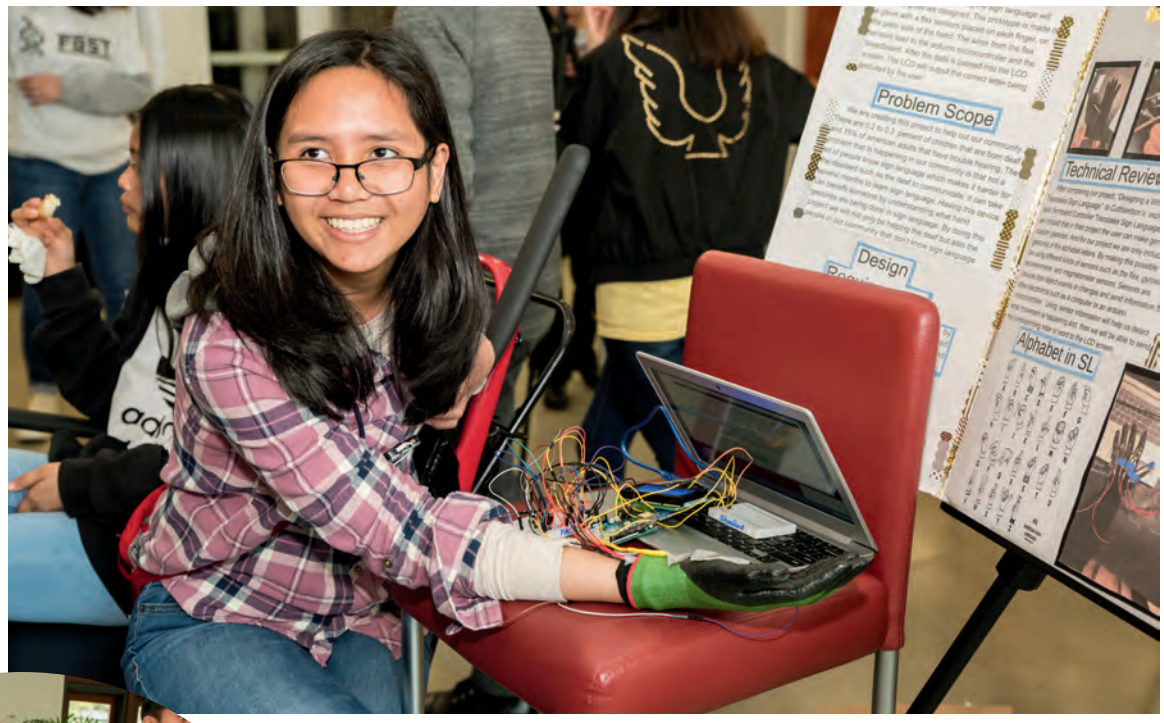
A FAST track for local teens

Stanford graduate students spark a passion for science careers

For some students at Andrew Hill High School in San Jose, science may not feel like a calling. But a program developed and led by Stanford graduate students is showing high schoolers that science can be more rewarding than they imagined — so engaging, in fact, they'll regularly show up on Saturdays to ask questions, design experiments and learn from mentors.



PHOTOS: STEVE FISCH

Above: Sandra Bunag of James Lick High School demonstrates a glove designed to help translate sign language into text.

Left: Graduate student Cooper Galvin listens to a presentation at a poster session on the Stanford campus for high school students who participated in the FAST program. Galvin helped create the program.

The Saturday program is the Future Advancers of Science and Technology, or FAST. Cooper Galvin, a graduate student in biophysics at Stanford, and four of his classmates — Andrew Kennard, Athena Ierokomos, Carlos Hernández and Derek Huang — started the program in 2015, hoping to create an environment in which students would be encouraged to pursue a passion project in science, technology or engineering through yearlong mentorship, Galvin said.

"Interesting and impactful science and engineering can be done by anyone, anywhere," Galvin said. "All a scientist or engineer needs is curiosity or a drive to make things better, mentorship or some system of accountability, and space to do the work."

Katie Liu, the current FAST president, said witnessing teens begin to understand the scientific process and become confident in their own ideas is one of the most satisfying elements of being a mentor.

"It's inspiring to me as a scientist when I get really discouraged about my own research and I see how persistent they are," Liu said. "I see the passion in students who definitely have a lot of other things going on in their family lives, and they still decide that FAST is important enough for them to keep showing up."

FAST participants and mentors meet for five hours on alternating Saturday afternoons during the school year. The program culminates in the opportunity for students to enter their projects in a regional science fair and present their work at a Stanford symposium.

The program began with about a dozen Stanford volunteers and 45 high school students, and has since expanded into a second location — James Lick High School, also in San Jose. It now has more than 100 high school participants and over 70 Stanford graduate student mentors.

Coaching from FAST mentors helps students stick with science after high school and includes support for applying to colleges, receiving financial aid, and learning about ethics and coding.

"They helped me apply to colleges and tried to help me find internships or summer programs to keep me involved in science," said Brianna Rivera, a former participant in the program who was later accepted into the bioengineering program at Boston University.

Rivera said FAST helped her stay on track academically, while coaching from mentors and the scientific process both taught her resilience.

"I didn't know that most of the time in science, research is like 99% failure," Rivera said. "And now, I think that's kind of what makes science so interesting for me. The fact that it is a trial-and-error process."

Galvin said having a space for ambitious effort and for spectacular failure is essential in learning, and mentors at any level can play a part in making that happen.

"We need safe opportunities to fail and be celebrated for trying really hard," Galvin said. "The potential of graduate students and all sorts of professional scientists to inspire the public to engage in science, follow curiosities, get messy — no matter age, race, socioeconomic status — is sorely untapped because many feel that is the job of professors and 'professional' educators."

In February, Lloyd Minor, MD, dean of the School of Medicine, hosted a lunch for the FAST founders and several of its graduate student leaders. "I'm proud of them for shaping the next generation of thinkers and thankful for their strong dedication to our community," Minor said.

Galvin and Liu are sharing their training materials and guidance with other Stanford student organizations. Their team has also begun meeting with potential leaders throughout the Bay Area who want to start their own chapters of FAST or incorporate the lessons FAST has learned in its four years of operations and monitoring student progress.

They plan to expand the academic scope of FAST into social sciences, including psychology and sociology, and into the arts. They're also considering how to make FAST's learning environment more inclusive of students from immigrant backgrounds.

"One idea is to have a dual-language option for students, to have Spanish-speaking mentors who will work with them in Spanish for brainstorming and experimenting, and in English for proposal writing and practicing presenting," Galvin said. "In this new twist on FAST, the students who are native Spanish speakers can feel empowered while still learning to navigate our English-speaking science community."

Rivera said discovering her passion for science and having women mentors to inspire and support her has made it easier for her to persevere.

"Though it's not completely apparent," she said, "you do always still feel the fact that you're not necessarily taken seriously. But I remember, during the FAST program, when I felt like all of a sudden that feeling didn't matter anymore. I just knew what I wanted to do, and I was so excited about it." SMN

HUMANWIDE *FROM PAGE 1*

to different medications — why some drugs may be more effective for them than others. And the providers interviewed the patients extensively, cataloging the behavioral, environmental and social factors that can influence health.

The patients then received tools to gather more data: a glucometer, a scale, a blood pressure cuff and a pedometer. Regular measurements taken at home automatically uploaded into patients' electronic health records. Their care team monitored the data remotely and analyzed it in the context of the patients' other health factors.

"We saw this as an opportunity to bring in data that was previously not available, giving us an unprecedented understanding of our patients' health risks," Mahoney said. "It gave us the ability to proactively take care of them in a way we've never had before."

The patients welcomed the prospect of learning more about their health, receiving answers for persistent questions, and working with a certified health coach to define personal goals and create a plan for attaining them.

For Eugene Celis, 43, that meant finding out once and for all if he had high blood pressure and identifying a way to lower the level of triglycerides in his blood. Both were particular concerns because of his family's history of heart disease.

Regular tracking through a portable blood pressure cuff indicated that Celis' readings were high, even though the measurements had been normal at doctor appointments. Through Humanwide, a team of clinicians confirmed the diagnosis and prescribed medication to manage his blood pressure. A health coach encouraged him to improve his diet and increase his physical activity.

PHOTO: STEVE FISCH

Mahoney evaluates Humanwide pilot program participant Debbie Spaizman.

Though it was difficult to accept his new reality, Celis felt confident in the diagnosis because it was backed by data he collected himself.

"I like the fact that they're doing it systematically, not just guessing," he said. "What motivates me about this program is that I see the results in real time."

Early warning signs

Humanwide's comprehensive, predictive approach flagged a number of early health concerns previously unknown to the patients. For example, five women learned they had a high risk for breast cancer and were recommended for enhanced surveillance.

Data from at-home devices helped providers identify and address prediabetes in several patients, as well as more quickly fine-tune medication dosages for others with chronic illnesses. Evaluating genetic influence on medication responses also helped clinicians better match drugs and dosages to the biology of individual patients.

For participant Debbie Spaizman, the evaluation was a breakthrough. Some types of narcotic pain medication made her feel woozy and itchy without any pain relief. Spaizman had nasal surgery coming up, and she didn't want to repeat the experience.

Through Humanwide, she found out that her body metabolizes some types of medications more slowly and less effectively, and that other types would be better for relieving her pain without the side effects.

"It was life-changing," Spaizman, 53, said. "I finally understood why I react this way, and I got answers about what drugs I could take instead."

An early evaluation of the Humanwide pilot found that both patients and providers liked its holistic focus, the care-team model and the longer interactions it allowed, said Steven Asch, MD, vice chief of primary care and population health, who led the analysis.

Mahoney and her team now are tailoring the program to more precisely fit the needs of healthy, chronically ill and medically complex patients.

"There's an unmet need — a lot of people are walking around with risk factors that are currently going undiagnosed," she said.

"With Humanwide, we're able to diagnose them so that patients can take action toward eliminating those risks. That's really the promise, and that's exciting." SMN

COMMUNITY MATTERS *FROM PAGE 1*

an impact. It is what motivates us to test new approaches to health care delivery — approaches that could one day help millions of people avoid illness and enjoy lifelong health.

At Stanford Medicine, we have embraced this effort through our vision of precision health: to predict, prevent and cure disease — precisely. Critically, in that order. In practice, it is a radically different approach to health care.

Precision health shifts the practice of medicine away from a reactive model toward one that emphasizes proactive, holistic, team-based care that is tailored to each person. The defining feature of this model is its purpose: to engage people early, when interventions have the greatest potential to improve their long-term health and well-being.

In 2018, Stanford Medicine took an important step in this direction with Humanwide, a comprehensive pilot project to bring precision health to life in a single community. Through this pilot study, we have demonstrated that high-touch health care, paired with the latest advances in science, technology and medicine, can achieve transformational health outcomes for patients.

At our Stanford primary care clinic in Santa Clara, a cohort of 50 individuals from diverse socioeconomic, racial and health backgrounds enrolled in Humanwide. Over the course of a year, they received comprehensive care from a nontraditional team of clinicians, specialists and support staff that met daily to strategize on each patient case and track progress.

Humanwide offered patients a unique tool set to personalize their care and empower them to proactively engage in their health. The tools included genetic testing and counseling to assess health risks, pharmacogenomics to tailor medications, wearables to monitor health at home, telehealth consultations, personalized wellness coaching, behavioral health counseling and health education courses.

From this wealth of information and the thousands of patient interactions that followed, the Humanwide care team was able to correlate a wide range of factors for each patient and take precise clinical actions to lead them toward better health.

While the study reveals both promise and progress, the true impact of Humanwide is best told through the moving stories of patients and families that unfolded during the pilot, which we were privileged to capture in a new documentary film: humanwide.stanford.edu.

Humanwide represents the beginning of a journey. Through the pilot study, we have learned what it takes to implement precision health in a clinical setting. We hope to use these insights as a blueprint, showing how health care that emphasizes prevention and early intervention can be scaled across communities to help people live the healthiest lives possible. SMN

FIRST RESPONDERS *FROM PAGE 4*

to the emergency department. For example, the first responders could treat a bad asthma attack on-site. The state of California is developing a scope of practice that could enable paramedics to treat conditions that are now commonly handled in emergency departments. Having fire departments participate in the model makes sense, Roderick said. "We have the infrastructure already," she said. "We respond to calls 24/7. Why not include options for the patients besides transports to an ED? Patients might prefer more options depending on the emergency."

Stanford recently acquired an emergency response vehicle that is being retrofitted to serve as a mobile training unit. Between scheduled trainings, physicians will be able to travel to stations to provide short refresher courses to firefighters while they are on shift. D'Souza and Roderick also hope to incorporate timely, case-specific simulations in response to unusual medical scenarios that firefighters encounter.

"We want to ensure our patients have the best odds of survival, even before they set foot in the emergency department," D'Souza said. "Our commitment is to serve our community and provide the best possible care at every stage. In order to do so, we have to reach beyond the walls of the hospital." SMN

New hospital to open for tours

PHOTO: BRYAN HAUX/SKYHAWK PHOTOGRAPHY

Community members can preview new Stanford Hospital in September

Tours of the new Stanford Hospital will be available to local residents Sept. 14 and 15 as part of the Community Days open house.

After 10 years of planning, design and construction, the new Stanford Hospital will officially open its doors to patients in late November. But on Sept. 14 and 15, local residents can get a sneak peek inside as part of Community Days, a two-day open house featuring tours of the 824,000-square-foot facility and a health- and wellness-inspired street fair.

"We are thrilled that our vision of expanding our world-class academic medical center has come to fruition," said David Entwistle, president and CEO of Stanford Health Care. "The new Stanford Hospital is first and foremost our community's hospital. Community Days is an opportunity to share it with our local community first, before opening the doors to our first patients later this fall."

With the opening of the new hospital, Stanford Health Care more than doubles its capacity with the addition of 368 new private patient rooms and a new 76-bed trauma center and emergency department that is more than twice the size of the current emergency department. In addition to serving the surrounding community, Stanford Hospital is the only Level I trauma center between San Francisco and San Jose, treating the most critically ill and injured patients from across the region brought in by Life Flight helicopter or ambulance. The new Stanford Hospital becomes the latest addition to the expanding Stanford Medicine enterprise focused on research, discovery and delivery of complex medical care.

"Community Days will be a once-in-a-lifetime opportunity for the general public to go behind the scenes of the new hospital before it opens," said Maggie Pringle Grauer, chair of the Stanford Medicine Community Council. "We are creating an experiential tour that will give visitors a first-hand look at the delivery of modern medicine."

> *"Community Days will be a once-in-a-lifetime opportunity for the general public to go behind the scenes of the new hospital before it opens."*

During the September event, Stanford docents will lead visitors on 50-minute tours of the new facility, from the trauma bay to the hybrid operating rooms, imaging suites, patient rooms and gardens. Tour highlights include an up-close look at the inner workings of the new hospital — the base isolators that protect it from a major earthquake, the robots that deliver supplies throughout the hospital, the technology-rich patient rooms and operating suites, the 400 pieces of original art, and the acres of rooftop gardens. Experts will be on hand to answer questions about the building's design and construction and the advanced patient care technologies inside.

"In the plaza outside, between the original Stanford Hospital and the new building, there will be a street fair with activities for all ages. Interactive activities for play and learning will keep the youngest attendees engaged," said Pringle Grauer.

Booths will feature demonstrations of the latest telehealth and virtual reality tools used in surgery and patient care, health and nutrition advice, and a knowledge bar staffed by experts who can answer questions about the new hospital. Food trucks will fill the streets, and the Stanford VOICES digital mural project will be unveiled. This digital display weaves together more than 3,000 drawings completed by patients, staff and community members to tell the story of Stanford Medicine.

"Community Days is an opportunity for people to see Stanford Hospital as their community hospital," said organizer Carla Scheifly, associate director of community outreach and engagement for Stanford Medicine. Scheifly's team worked with the Stanford Medicine Community Council to plan activities for the 3,000 people expected each day. "Stanford Hospital is here for you, not only when you're sick, but as a community resource to help you stay well."

The two-day event is open to all, with free, ample parking and shuttle access to the hospital entrance. Pre-registration is required. For more information or to sign up for a tour, visit stanfordhealthcares.com. SMN

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Boosting the health of the community

Stanford hospitals provide support to local nonprofits

PHOTO: MICAELA GO

For many families in East Palo Alto, traveling to a hospital can take over an hour by bus — a daunting trip with young children. Fortunately, the Ravenswood Family Health Center, with financial assistance from Lucile Packard Children's Hospital Stanford, offers patient care in the community.

"If we can keep kids from having to come to the hospital, that's a great thing," said Sherri Sager, chief government relations and community relations officer for Packard Children's. "It's part of the hospital's DNA to improve the health of all children in the greater community, and one way we do that is by partnering with community clinics in order to provide care that's close to home."

Many local seniors also face transportation difficulties. But Door to Door, a program operated by Palo Alto nonprofit Avenidas with support from Stanford Health Care, can take them to social visits, shopping or a doctor's office. A crew of mostly volunteer drivers help riders to and from the car if they need assistance, and riders who need help paying for the service can receive aid.

"There are many seniors who are homebound because they can't meet their transportation needs," said Colleen Johnson, director of community partnerships at Stanford Health Care. "And being isolated affects their mental health."

This year, as in past years, both hospitals are providing millions of dollars to help support local nonprofit organizations that improve residents' quality of life.

In fiscal year 2018, Packard Children's invested over $244 million to improve the health status of infants, children, adolescents and expectant mothers. The bulk of that investment provided for undercompensated care for Medi-Cal and other government-funded patients. Packard Children's direct support of local nonprofit organizations was upward of $2.7 million.

PHOTO: RACHEL TARANTINO

Stanford Health Care invested over $378 million to improve the health of adults, most of it to make up for Medi-Cal and other government reimbursement shortfalls. The hospital's contributions to community nonprofits and support after patients are discharged totaled $12.9 million.

These funds help support health education programs, bicycle safety promotion, screening for communicable diseases, grief counseling, housing assistance and many other services.

"As a nonprofit, Stanford Health Care takes our commitment to the community very seriously," Johnson said. "It's important for us to go beyond the walls of our hospital to support residents and families in achieving wellness."

Sager added: "We select organizations that have a proven track record of improving the health of some of our most vulnerable community members. For more than 25 years, we've been committed to improving the health of Bay Area communities." SMN

Above: Each summer, local high school students learn about medical careers during the Stanford Medical Youth Science Program.

Left: Sonia Menchavez, OD, checks Ashley's vision at the Ravenswood Family Health Center.

Some of the other services and organizations that Stanford Health Care and Packard Children's help support include:

Stanford Medical Youth Science Program. Every summer, 24 low-income and ethnically diverse students from Northern and Central California spend five weeks at Stanford learning about various medical professions. Stanford staff members mentor the students with the goal of steering them toward a career in health care.

Teen Van. Packard Children's operates a mobile clinic that travels to schools and shelters, offering multidisciplinary health services free of charge to youth ages 10 to 25. Many of the patients who rely on the Teen Van are living in difficult circumstances, including homelessness.

Community Mammography Access Project. The program helps Santa Clara County women ages 40-plus who are low income and/or uninsured receive screening for breast cancer through community outreach and health education.

Packard Children's Pediatric Weight Control Program. Overweight children and their family members learn lifestyle changes to manage weight through this 26-week course. Packard Children's offers financial help to families who cannot afford the program.