Pregnant women with PTSD likelier to give birth prematurely

By Erin Digitale

Pregnant women with post-traumatic stress disorder are at increased risk of giving birth prematurely, a new study from the School of Medicine and the U.S. Department of Veterans Affairs has found.

The study, which examined more than 16,000 births to female veterans, is the largest ever to evaluate connections between PTSD and preterm birth. Having PTSD in the year before delivery increased a woman’s risk of spontaneous premature delivery by 35 percent, the research showed. The results were published online Nov. 6 in Obstetrics & Gynecology.

“This study gives us a convincing epidemiological basis to say that, yes, PTSD is a risk factor for preterm delivery,” said the study’s senior author, Ciaran Phibbs, PhD, associate professor of pediatrics and an investigator at the March of Dimes Prematurity Research Center at Stanford University. “Mothers with PTSD should be treated as having high-risk pregnancies.”

Spontaneous preterm births, in which the mother goes into labor without a known cause, account for about half of all preterm births. The study found that women with PTSD were 2.7 times more likely to give birth prematurely. Women who had experienced a traumatic event but did not develop PTSD were at no increased risk.

The study provides a direct and unexpected molecular link between cancer and stem cell science that is similar to an embryonic stem cell and can become any tissue in the body.

A part of the human genome called Rb has long been known to control the development of many types of human cancers and is known of a class of proteins called tumor suppressors. Although Rb has long been known to control cell division, the researchers found that it also directly binds and inhibits the expression of genes involved in molecular link between cancer and stem cell science that is similar to an embryonic stem cell and can become any tissue in the body.

A protein that plays a critical role in preventing the development of many types of human cancers has been shown also to inhibit a vital stem cell property called pluripotency, according to a study by researchers at the School of Medicine.

Blocking expression of the protein, called retinoblastoma, in mouse cells allowed the researchers to more easily transform them into what are known as induced pluripotent stem cells, or iPS cells. Pluripotent is a term used to describe a cell that is similar to an embryonic stem cell and can become any tissue in the body.

A study of female veterans showed that pregnant women with post-traumatic stress disorder were at an increased risk of giving birth prematurely.

Method predicts risk of blindness from eye ailment

By Bruce Goldman

School of Medicine scientists have found a new way to forecast which patients with age-related macular degeneration are likely to suffer from the most debilitating form of the disease.

The new method predicts, on a personalized basis, which patients’ AMD would, if untreated, probably make them blind, and roughly when this would occur. Simply by crunching imaging data that is already commonly collected in eye doctors’ offices, ophthalmologists could make smarter decisions about when to schedule an individual patient’s next office visit in order to optimize the chances of detecting AMD progression before it causes blindness.

AMD is the leading cause of blindness and central vision loss among adults older than 65. An estimated 10-15

Blood, brain oxytocin levels linked, study finds

By Erin Digitale

For years, scientists have debated how best to assess brain levels of oxytocin, a hormone implicated in social behaviors. Now, researchers at the School of Medicine have found the first direct evidence in children that blood oxytocin measurements are tightly linked to levels of oxytocin in cerebrospinal fluid, which bathes the brain. Low oxytocin levels in blood and CSF are both correlated to high anxiety levels, the research also showed.

The findings were published online Nov. 4 in Molecular Psychiatry.

“So many psychiatric disorders involve disruptions to social functioning,” said the study’s senior author, Karen Parker, PhD, assistant professor of psychiatry and behavioral sciences. “This study helps scientifically validate the use of measuring oxytocin in the blood, and suggests that oxytocin may be a biomarker of anxiety. It raises the possibility that oxytocin could be considered as a therapeutic target across a variety of psychiatric disorders.”

An invasive procedure

Collecting CSF requires an invasive lumbar puncture procedure, in which a needle is inserted into the space around the spine.

To avoid this, scientists measure oxytocin in the blood, but they have been unsure how well these measurements reflected the hormone’s levels in the central nervous system. The new study shows that, although oxytocin levels are consistently lower in blood than in CSF, the levels in the two are linked.

To conduct the research, Parker’s team sought volunteers from among a group of people who needed lumbar punctures for medical reasons. The study included 27 subjects ages 4-64. With the volunteers’ consent, the researchers tested oxytocin levels in CSF obtained during the lumbar puncture. They collected blood samples at the same time that the CSF was obtained. In addition, the parents of 10 children enrolled in the study answered a questionnaire about the children’s anxiety levels.

The fact that we measured blood and CSF at the same time shows for the first time that there’s a tight relationship between oxytocin levels in those two compartments [blood and CSF] and anxiety,” said the study’s lead author, Dean Carson, PhD, postdoctoral scholar in psychiatry and behavioral sciences. Oxytocin levels were lower in the blood than in the CSF in all subjects, but the concentrations in the two compartments fol-

Cancer inhibitor controls stem cell attributes, as well

By Krista Conger

A protein that plays a critical role in preventing the development of many types of human cancers has been shown also to inhibit a vital stem cell property called pluripotency, according to a study by researchers at the School of Medicine. Blocking expression of the protein, called retinoblastoma, in mouse cells allowed the researchers to more easily transform them into what are known as induced pluripotent stem cells, or iPS cells. Pluripotent is a term used to describe a cell that is similar to an embryonic stem cell and can become any tissue in the body.

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Temple Grandin on autism, animal communication

Temple Grandin, PhD, is one of the most well-known and accomplished adults with autism. As a child, she did not speak until the age of 3½, communicating her frustration by screaming, peeping and humming. Born in 1947, she was diagnosed with autism in 1950, at which point her parents were told she should be institutionalized.

Grandin ultimately went on to earn a PhD in animal science from the University of Illinois in 1989. She is currently a designer of livestock-handling facilities, consulting for major U.S. companies, and a professor of animal science at Colorado State University.

She has been widely featured in the media, including a 2010 TED talk titled, “The World Needs All Kinds of Minds.” Grandin will speak at free public event at noon Nov. 19 in Stanford’s Clark Center auditorium. Her talk is titled, “Animals Make Us Human,” and it is sponsored by the School of Medicine’s Department of Comparative Medicine. (Seating is limited and is on a first-come, first-served basis.) In the following Q&A, Grandin reflects on autism in animals in response to questions posed by writer Ruthann Richter and Sherril Green, DVM, PhD, professor and chair of comparative medicine.

How does autism help you connect in a unique way to animals?

GRANDIN: Autism helped me understand animals because I think in pictures. Since animals do not have language, their memories have to be sensory-based, instead of word-based. In my early animal behavior work, I noticed that cattle often balked and refused to walk over shadows or pass a coat hung on a fence. In the 1970s, it was a new idea to look at things that cattle were seeing. There was specific evidence that animals think in pictures, and that this learning is very specific. When an animal is trained to tolerate one type of activity, it does not easily transfer to another similar activity. For example, habituating a horse to tolerate the sudden opening of an umbrella does not transfer to a flipping tarp. Animals often get specific fear memories that are associated with specific events. A horse that has followed his veterinarian into his eyes during a veterinary procedure became afraid of black cowboys hats. A white cowboy hat was safe and a black hat was scary. He was looking at a black cowboy hat when the alcohol was thrown.

Children with autism frequently experience challenges with language. What role might that play in their communication with animals?

GRANDIN: Verbal language is not required for communication with animals. Many nonverbal children with autism really understand animals. Parents have told me that their nonverbal child has an almost telepathic ability to communicate with their dog. I explain that it is not telepathy; Instead, the child is observing subtle body posture changes that many people do not notice. This is observing detailed changes in the dog’s behavior.

What have we learned from people with autism that can make us better stewards and guardians of our animals?

GRANDIN: Animal cognition has similarities to autism cognition. Animals are very aware of small, sensory details in the environment. People on the autism spectrum excel at work involving details, SAP, a large computer company, is hiring people on the mild end of the autism spectrum to debug and correct computer programs.

Concepts are formed from specific examples. To train a dog to always obey the “sit” command, it must be taught in many different locations. If all the dog’s training is done in the living room, the dog may only obey the commands in the living room. To teach a child with autism about road safety, he needs to be taught in many different locations. These similarities between animals and autism apply only to cognition. They do not apply to the emotions. Animals are highly social and emotional creatures.

What animal was your first pet? As a child, did your pet provide support to you in a way humans could?

GRANDIN: Our family had a golden retriever and a Siamese cat. My first pet when I was in elementary school was a white mouse named Crusader. He would come over to me by the boy who lived next door. He gave me both Crusader and his cage. I was very protective of Crusader and was worried that our cat might eat him. I fastened the sliding cage door with a large safety pin. I had visualized Simon, our Siamese cat, sliding the door open. Securing the door with a safety pin made it impossible for our cat to open it.

Working in animal welfare requires the ability to view the world from the animal’s point of view. Can you talk about how your experience of empathy with animals may be different from that of your colleagues?

GRANDIN: I enjoyed playing with Crusader and letting him climb up a string. For some children with autism, animals provide tremendous emotional support. As a young child, I was happiest when I worked with a classmate on a project. In fourth grade, I had a fun time with a friend when the assignment was to make cabinet tools with all natural materials. I have a sensory-based empathy with animals and can really relate to animal welfare issues when it comes to housing. One form of restrictive animal housing that must be changed is sow gestation stalls. It would be like living in an airline seat and never being allowed to walk in the aisle. I can feel the muscle cramps I would get if I could not move around.

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Early support program connects families with autism resources

By Erin Digitaile

Finding autism caregivers and treatments is a daunting challenge for families facing a new autism diagnosis. But now there’s help.

The Early Support Program for Autism, a free service for families in the Bay Area, connects families with autism resources, selects a parent educator who offers parents consultations to help them build a strong relationship with their young child with autism.

“Parents are usually overwhelmed when they receive the diagnosis,” said program director Antonio Harden, MD. “We developed this program to fill a void in the autism services in the Bay Area.” Harden is also director of the Autism and Developmental Disabilities Clinic at Lucille Packard Children’s Hospital Stanford and a faculty member of the Autism and Developmental Disabilities Clinic at Stanford University School of Medicine. “This program meets a huge need,” said Ramsey Khashe, PsyD, who leads the program at CHC and also directs the Center at CHC, which focuses on behavioral health services for children and teens. “We help families get connected to local resources, and also provide some basic education about what autism is and how to work with their child at home.”

The Early Support Program for Autism offers two primary types of services, in both English and Spanish: a clinical care coordinator, whom families can call for information about autism resources in the Bay Area, and a parent educator, who offers parents up to five consultations to help build a strong relationship with their young child with autism.

“We added the services of the parent educator because many parents tell us that, in the midst of trying to establish autism treatment, it’s easy for them to lose sight of what’s important, which is their relationship with their child,” said Grace Gengoux, PhD, a child psychologist and clinical assistant professor of psychiatry and behavioral sciences at Stanford. The parent educator teaches parents developmentally appropriate, play-based skills for building bonds with their children who have autism.

“Her approach is a replacement for intensive autism treatment, but gives parents a place to start while they wait for therapy to begin,” Gengoux added.

The program was designed to help parents of young children right after diagnosis, typically before age 5. The parent educator’s services are offered only for families with young children, but the clinical care coordinator can also provide information about autism resources for older children and adults. Since launching in July 2013, the program has assisted more than 300 families. Because of a grant from the John & Marcia Goldman Foundation, the program provides services at no cost to families.

“I’ve spent the last 25 years of my career as an autism educator, so I am well aware of how overwhelming it is for parents to receive an autism diagnosis,” said Marcia Goldman, “John and I were motivated to establish the Early Support Program for Autism to create an easier and less stressful process for these families.”

More information about the program is available online at http://espa.stanford.edu, by phone at 723-3772 or by e-mail at autismsupport@stanford.edu.
Charles Whitcher, who helped develop pulse oximeter for OR, dies at 91

By Tracie White

Charles Whitcher, MD, professor of anesthesiology at Stanford School of Medicine, died May 18 at age 90. He was the first PhD graduate of the department of anesthesiology and helped develop technology for patient monitoring in the operating room.

Whitcher was born in Chicago on May 23, 1921 to Dr. Bruce R. Whitcher and Alice Bernice Pemberton Whitcher. He was educated at Marquette University, where he earned his bachelor's degree in mechanical engineering in 1943. After attending naval officer training school and completing his commission as an ensign in the U.S. Navy, Whitcher served as a medical officer in the Korean War and after the war as a working resident at the Naval Hospital in Oak Lawn, Ill.

During his 29-year career at Stanford, Whitcher held several positions in the department of anesthesiology. He worked as an anesthesiologist, an educator, and researcher, and was a key contributor to the development of anesthesiology as a specialty. He was known for his expertise in the field of anesthesia and his contributions to the development of anesthesia as a specialty.

Whitcher received many honors during his career, including a scholarship from the University of Wisconsin, the University of California, the University of Illinois, and the University of Michigan. He was also a member of the American Society of Anesthesiologists and the American College of Surgeons.

Whitcher's work in the field of anesthesia and his contributions to the development of anesthesia as a specialty have had a significant impact on the field. He leaves behind a legacy of excellence and dedication to the field of anesthesiology.

Charles Whitcher, who helped develop pulse oximeter for OR, dies at 91

Eugene Bleck, founder of pediatric orthopedics department, dies at 91

By Sara Wykes

Eugene Edmund Bleck, MD, who established the pediatric orthopedics department at the School of Medicine and developed many of the specialty’s first procedures, died Sept. 14. He was 91.

Bleck also served as chief of the Orthopedic Service at Stanford Hospital, now Stanford Health Care, from 1968 to 1988. He was succeeded by one of his former residents, Rinsky, MD. Another of Bleck’s former residents, William Maloney, MD, is now professor and chair of orthopedic surgery at Stanford.

“Gene was a larger than life figure, enthralled and full of energy,” Rinsky said. “He was quick to laugh, humble and a treasured mentor, colleague and physician to many.”

Bleck’s professional accomplishments were numerous: He was a founding member of a pediatric orthopedic group, which became the Pediatric Orthopedic Society of North America, and served as president of the society as well as the American Orthopaedic Association and the American Academy for Cerebral Palsy and Developmental Medicine.

Wrote first book as a resident

While a resident in orthopaedic surgery at the University of Wisconsin Medical Center, Bleck wrote his first scholarly book, An Atlas of Plaster Cast Techniques, which became an instant classic, Rinsky said. It was the first in a series of four orthopaedic books on cerclage, osteotomy and plaster cast and 85 publications in refereed journals.

“Charles Whitcher, DDS, of Templeton, Calif., Sarah Jane Bethune, PhD, of South San Francisco, and Eugene Bleck, PhD, of Switzerland; stepchildren Greg Airkin of Eugene, Ore., and Katy Eiche, of British Columbia, Canada, are left with a son, John, and seven grandchildren. Another son, Dan, preceded him in death.

A memorial mass was held Sept. 22. The family requests that memorial contributions be made to the Marquette University, Henry B. Bleck Scholarship Fund in Civil Engineering, 1212 Building #215, P.O. Box 1881, Milwauk ee, WI 53201-1881, or to the Gage University Foundation, 106 W. 5th St., New York, NY 10016.
Peer Support Program helps veterans combat PTSD

By Tracie White

On a stifling hot morning in April 2008 in the Kirkuk Province of Iraq, specialist Jayson Early left his military base and headed to a nearby Iraqi police station on his first field assignment.

During the subsequent 14 months he served in the country, Early worked both as a military policeman, training Iraqi police forces, and as a gunner manning the turret on his Humvee. During this assignment, he was sent on an innocuous-sounding public affairs er- rand to photograph a burned-out truck parked at an Iraqi police station.

“I was 19 years old,” he said. “He’s now a father of two and living where he grew up, in the small town of Hickson, near Modesto, in California’s Central Val- ley. “I walk up to the truck with my camera thinking there is nothing there.” Then he looked inside.

“They were body parts, coagulated blood, hair all over,” he said, pausing. “I just wasn’t expecting it.” An Iraqi family had been executed in the vehicle, presum- ably by insurgents. Early had gone through intense military training to prepare for moments like these. He blocked any emotions. He followed orders, clicked the camera and moved on. It wasn’t until years later that he realized just how permanently those images, and many more like them, had burned into his brain.

Like so many of the 2.6 million Iraq and Afghani- stan war veterans who have returned home over the past decade, Early brought his combat training back with him to the United States — the hypervigilance, the emotional numbness. The training that kept him alive on the battlefield didn’t serve him well in civilian life.

The absence of the adrenaline high of battle and the closeness to combat buddies left him detached and lonely. Anxiety in crowded places and flashbacks triggered by fireworks or screaming children led to isolation and self-medication with alcohol and cocaine. He had se- vere post-traumatic stress disorder, but he didn’t know it.

“You went through hell essentially and made it out viable,” he said. “You can’t be a psychic. You can’t be a psychologist or a licensed counselor who broke through to him. It was his fellow veterans. “Friends may not understand, but you’re not alone,” Early said. “It means a little more when a vet reaches out and says, ‘Hey, I know what it’s like.’”

Troubled and hard to reach

The need to connect the waves of veterans who have recently returned from the war zones of Iraq and Afghanistan with mental health services has grown more urgent as the disturbing mental health statistics rise. An estimated 22 veterans commit suicide each day, according to the Department of Veterans Affairs. That’s four times the rate of the general population.

In the years after his deployment to Iraq ended, Early found daily life a constant struggle. He tried to live a ‘normal’ life. He got married, had two children. But flashbacks, sleeplessness and guilt consumed him. He turned to drinking and drugs. A minor stroke during his posting to Fort Riley, Kansas, from Germany, ended his career in the military, and he moved back home to California.

“You went through hell essentially and made it out viable,” he said. “I don’t think that veterans are asLtd. in needing care.”

In early 2012, when Early’s support group grew, he decided to get help for depression, PTSD and alcohol addiction. He admitted himself into the psychiatric ward at Palo Alto VA for depression, PTSD and alcohol abuse.

“Allow me to be my own therapist. I’m the one who is going to be my own therapist,” he said, pausing. “I thought ‘This is just a bunch of bull. I don’t need this, I’m fine.’ Then the other vets started talking about some stuff, and it was like ‘Holy crap!’”

Sitting in a circle with a small group of other Iraq and Afghanistan veterans, a light bulb finally began to flicker in Early’s brain. Maybe those 14 months in Iraq of piecing together the body parts of Iraqi civiliz- tion, blown to bits, of constant adrenaline-pumping fear, of near-death experiences, bullet dodging, bomb scares — maybe all that and more could have caused some mental wounds. Maybe he did need help.

This is where Ontiveros, a fellow veteran who had been through similar experiences and received help for his own PTSD, stepped in. Ontiveros has 10 years’ experience as a Marine with three deployments to Iraq. He had been through treatment and was four years in recovery when Early joined his sup- port group. Ontiveros knows how hard it can be for a veteran to ask for help.

“A lot of these vets don’t know there’s anything like this kind of support out there,” Ontiveros said. “They just sit alone in their garage drinking beer. I know what that’s like. I used to just sit at home drinking. I wouldn’t get off the couch. I’d go days without shav- ing, without taking a shower.”

Ontiveros, 33, went from being a combat vet to a stay-at-home dad virtually overnight. He left the Marines in 2009 and returned to the United States for the birth of his first child. Back home, he began experiencing unexpected flashbacks, anxiety, guilt. He found he missed the Marines intensely. In 2010, he admitted himself into the psychiatric ward at the Palo Alto VA for depression, PTSD and alcohol abuse, then attended the PTSD residential rehabilita- tion program at the Menlo Park VA for five months. When he got out, he worked as a veteran with other veterans still in the program as part of his own thera- py. That’s where Jain found him, trained him and hired him.

“I always share my own personal struggles, some of the processes I use to deal with them,” Ontiveros said about how he leads group sessions in Modesto and Stockton. “We’re just focusing on the here and now, our everyday lives — whether that may be get- ting out of the house, or talking to civilians, or navi- gating resources within the VA. It’s about adjusting to being outside the military. We have to learn how not to be military.” It’s the shared experiences that make it work, he said. Veterans come from a military cul- ture that the outside world doesn’t understand. They innately trust each other.

Validation

The number of vets who have been reached by the program’s peer support providers — Ontiveros in Modesto and Stockton, and Guy Holmes in Sonora — is evidence that the program is working, Jain said. “Veterans are voting with their feet,” she said. Nearly 200 at-risk veterans, those who are tradition- ally the hardest for mental-health providers to reach, have enrolled in the program since its inception nearly two years ago. Participant feedback has also been posi- tive, with 75 percent of veterans reporting the service as helpful.

“We’ve been publishing on the concept of peer
Veteran Jayson Early, left, who suffered from PTSD after his deployment, joined a peer support group led by former U.S. Marine staff.

"We've shown that there's more of a bonding with the peer support specialists than with psychologists or psychiatrists," said Lindley, who also is of outpatient mental health for Veterans Affairs Palo Alto Health Care System. "They're providing the glue that helps these clients stay in treatment."

Jain has spent the five years since she left a private practice in Wisconsin and traveled cross-country to start the PTSD fellowship researching, writing and publishing on peer support. It was the discovery of her own father's hidden story of loss and trauma during the 1947 partition of India that changed her career trajectory and set her on a path committed to advancing the science of PTSD.

"It just moved me that I am from people who have had their lives torn apart because of traumatic incidents," she says. "Now, as a doctor and a scientist, I have this platform. Doesn't it make sense that I use it to help others torn apart by trauma?"

Peer support as treatment for individuals with PTSD isn't a new concept, Jain said. But there has been little published in the scientific literature to support its assertion was the only veteran struggling to deal with civilizational trauma, Jain said. "It just moved me that I am from people who have had their lives torn apart because of traumatic incidents," she says. "Now, as a doctor and a scientist, I have this platform. Doesn't it make sense that I use it to help others torn apart by trauma?"

That's a powerful thing. The importance of being understood

After about a month of support group sessions led by Ontiveros, who told the group about his own daily struggles to communicate with his wife, to control outbursts of anger, to be willing to ask for help, Ontiveros informed the group about the other mental health services available to him. He gave tips on how to navigate the bureaucracy on how to open up and trust someone other than another veteran.

Ontiveros understood what it was like for Early when, one in March, he finally hit bottom.

"I had a really bad night," Early says. "I drank a bottle of whiskey, and a lot of beer. My wife spoke to my dad about me getting help because she knew I would listen to him more than I would to her. He said, 'Look, you are going to get help or the marriage is going to be done.'"

The next day, Early checked into the Menlo Park PTSD residential rehabilitation program, the same one where Ontiveros had stayed for five months. Ontiveros visited him there, and encouraged him to stick with the program early on when he wanted to drop out.

"Things don't get completely better, but every day gets easier to cope with from the tools I learned while at the Menlo Park VA," Early said. "That was a big realization for me. I never would have made it through the program alone."

Ontiveros said he told Early why he tells all his veterans what he's learned the hard way: "That is what we give ourselves of not being normal — that stigma — doesn't allow us to accept who we are. I tell them we have been in a situation that only 1 percent of the rest of the population has been in. What we have seen, the rest never did. It's who we are."

"Those other vets in the group around my age, they were opening up," Early said. "They were talking about day-to-day hassles. Dealing with crowds at the grocery stores or dealing with somebody that's incompetent at the drive-thru. Your fuse is so short to begin with, something so minor sets it off. Normal hassles, that a normal person wouldn't get upset about. I'm the kind of guy, at the grocery store if somebody bumps into me, and doesn't say sorry, I'm going to slam into their cart and just walk away."

The importance of being understood

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That's a powerful thing. The importance of being understood

After about a month of support group sessions led by Ontiveros, Early said he began to realize that he was on a path struggling to deal with civilian life, which helped break down his own barriers to the possibility of getting additional psychiatric help.

"The very thing that alienates these vets from so-called normal — that stigma — doesn't allow us to accept who we are. I tell them we have been in a situation that only 1 percent of the rest of the population has been in. What we have seen, the rest never did. It's who we are."
Child mortality in developing countries

Many studies have assessed the national child mortality trends in developing countries, but they say little about the mortality gap between the poorest and wealthiest within those countries. National trends could be associated with either narrowing or widening gaps between the poorest and wealthiest populations, Ben-David noted. For example, if child mortality rates gap was becoming more apparent among the wealthy compared with the poor, the overall child-mortality rate in that country could decrease even as the mortality gap widens. Conversely, if the child mortality gap decreases faster among the poor, the health gap could narrow.

To compare wealth status and under-5 child mortality within a country, Ben-David used data from the demographic and health surveys for 1.2 million women living in 929,224 households in 54 developing countries. The women provided information about their children’s survival status.

The people who conduct these surveys, they’re intake surveys,” said Ben-David, who is also a faculty member of Stanford Health Policy, which is part of the Freeman Spogli Institute for International Studies. “They reach remote villages up the Congo basin and in the Sahel in Niger, and track the heads of households and women for these in-depth interviews.”

The surveys include information about each woman’s birth histories, including detailed birth registers documenting millions of children. With this data, Ben-David could estimate the probability of a child dying before reaching age 5 per 1,000 live births.

Tallying household possessions

Determining each household’s wealth status was not as straightforward as reviewing annual income and tax returns, which don’t exist in the countries involved in the study. “These surveys tally the possessions in the household. What is the floor made of? What is the roof made of?” Ben-David said. “You can get a wide distribution of household possessions that reflects to a large degree the household wealth.”

Next, Ben-David developed a three-tier wealth index using the household assets. The three wealth categories were relative — poorest, middle and wealthiest.

To analyze trends in wealth status and under-5 mortality, Ben-David looked at all developing countries that had completed the surveys in two specific time frames: 2002-07 and 2008-12. The study found that the under-5 mortality rates among the poorest groups were decreasing more rapidly. The average decline was 4.36 deaths each year.

“Every life is touched by suicide”: Laura Roberts discusses importance of prevention, training

Laura Roberts

“Three factors appear to be in play: first, a predisposition or vulnerability — for example, the presence of depression or anxiety that increases the general risk of suicide; second, access to a means of death, for example, a gun; and, third, an experience or a set of experiences that make the individual feel like he is out of place, isn’t part of things and doesn’t belong — referred to as ‘ thwarted belongingness, ’” she said.

Yet despite their expanded knowledge, psychiatrists must develop skills to cope with the loss of a patient. According to one study, between 10% and 25% of psychiatry residents lose a patient to suicide. Roberts said her department strives to create a culture of support. “We’re very, very vigilant to these issues and extraordinarily committed to the well-being of all in our Stanford community,” she said.

Just as a cardiologist may lose a patient to an aggressive cancer, psychiatrists may lose patients to suicide over the course of our professional lives,” she said. “As psychiatrists, we respond exactly as one would expect — as human beings we grieve the loss, we feel it very deeply, but then we go on and seek to learn and to prevent another such loss in the future. … We do our best to support the survivors of those losses. Because in one five adults in this country will experience an episode of mental illness, it is essential that we remain constantly aware of the possibility of a preventable death due to suicide.”

The issue was co-sponsored by the Wisconsin-based Charles E. Kubly Foundation, a family foundation that seeks to support those suffering from depression.

Other Stanford researchers who contributed to the issue are Alan Louie, MD, professor of psychiatry and behavioral sciences; Rebecca Ben-Abraham, PhD, instructor of psychiatry and behavioral sciences; and Anne Tenner, senior editorial associate for the Department of Psychiatry and Behavioral Sciences.

Information about the department is available at http://psychiatry.stanford.edu.

To read a Q&A with Roberts about suicide, visit http://scopeblog.stanford.edu/2014/10/21/every-life-is-touched-by-suicide-stanford-psychiatrist-on-the-importance-of-prevention/
It has since been shown that Rb may also be involved in promoting cellular differentiation — a cell’s developmental progression to an organism that depends on an orderly arrangement of cells. A similar cascade of events occurs when researchers create iPS cells from a patient’s skin cells. The process of creating iPS cells from fully differentiated, or specialized, cells is in many ways very similar to that which happens when a cell becomes cancerous, said Sage, who holds the Harriet and Mary Zelencik Endowed Professorship in Pediatrics. “We wondered if we could learn more about both processes by investigating whether the loss of Rb affects reprogramming efficiency.”

Previous studies in other laboratories have suggested that Rb may also be involved in promoting cellular differentiation — a cell’s developmental progression to a more specialized state.

Link between Rb and pluripotency

The researchers found that embryonic mouse cells with an Rb mutation were able to efficiently and quickly converted to iPS cells than were cells in which Rb was present. Conversely, iPS cells,” Sage said. They wondered if this effect occurs in human cells, as well. To find out, they used a new technique called spectral domain optical coherence tomography.

This imaging technique is analogous to ultrasonography. The macula is scanned with a beam of focused laser light, and the amount of reflected light coming back at each point is measured and recorded. The resulting stream of data is computationally converted into an extremely high-resolution, three-dimensional image.

“Right now, a patient who goes into the ophthalmologist’s office typically gets an SD-OCT scan anyway,” said the study’s senior author, Daniel Rubin, MD, assistant professor of radiology and of biomedical informatics. “Our technique involves no new procedures in the doctor’s office — patients get the same type of scan they were scanned with, which is already available from that patient’s earlier visits.”

Generating a risk score

From this computerized analysis, the investigators are able to generate a risk score: a number that predicts a patient’s likelihood of progressing to the wet stage within one year, three years or five years. The likelihood of progression within one year is most relevant, because it translates into a concrete recommendation: how soon to schedule the patient’s next office visit.

Until now, attempts to predict AMD progression have relied on examining color photographs of the retina taken in their offices. There is no way to translate that information into risk scores. The high-resolution imaging technique, Rubin said, provides much richer detail. “You can almost see individual cells,” he said. Plus, it is far more amenable to digital analysis. Previsously proposed models have shown some accuracy over long periods of time, but none has been adequately accurate over the shorter, one-year time frame that’s relevant to making decisions about office-visit frequency, Rubin said.

In the study, the Stanford team analyzed data from 1,216 scans in 330 eyes in 244 patients seen at Stanford Health Care over a five-year period. They found that certain key features in the images, such as the area and height of drusen, the amount of reflectivity at the macular surface and the degree of change in these features over time, could be weighted to generate a patient’s risk score. Patients were followed for as long as four years, and predictions from the new model were compared with actual instances of progression to wet AMD. The model was able to correctly predict every occurrence of progression to the wet stage within a year. About 40 percent of the time when the model did predict progression to wet AMD within a year, the prediction was not borne out. “No test gets it right 100 percent of the time,” Rubin said. “You can tweak the model to trade off the risk of telling someone they are going to get it when they actually won’t against the risk of telling them they won’t progress when they actually do. No test, really, doesn’t want any false negatives, so you tune the model accordingly. The downside is that some people may get the test and then not come in sooner than, in fact, they probably need to. But that’s nothing compared with the downside of a patient at high risk to progression’s not coming in soon enough.”

Larger studies needed

Rubin emphasized that this proof-of-principle study needs to be followed up by a larger study. “Getting data gathered from patients seen at other institutions. He and his associates have now embarked on such a study. The study’s lead author is Luis de Sisternes, PhD, a postdoctoral scholar in cell biology and ophthal- mology. Other Stanford co-authors are Robb Tibshirani, PhD, professor of health research and policy and of statistics; Theodore Leng, MD, clinical assistant professor of ophthalmology; and former postdoctoral scholar Noah Simon, PhD, now at the University of Washington.

The work was supported by grants from Stanford Bio-X and Spectrum- Stanford Predoctoral and Diagnostics Accelerator.

Stanford’s Department of Radiology also supported this work. 108

“ ’Our technique involves no new procedures in the doctor’s office — patients get the same care they’ve been getting anyway.’”

Stanford’s Department of Radiology also supported this work.
Five medical school faculty appointed to endowed professorships

Harcharan Gill, MD, professor of urology, was appointed the Kathryn Simmons Stamey Professor, effective Oct. 7. Gill focuses on improving the treatment of prostate hyperplasia, or enlarged prostate. He cares for patients with urologic cancer and directs the urology residency program. He also serves on the Graduate Medical Education Committee of Stanford Health Care.

The professorship was established with a gift from Stamey and his wife, Paula Stamey, and colleagues at the Ernest G. Gill and Judah M. Grossman Foundations, to honor Gill’s research and dedication to urologic cancer patients and their families. The Stamey name is well known in the field of genitourinary cancer.

Susan Hintz, MD, MS, professor of obstetrics and gynecology, was appointed the Robert L. Hess Faculty Professor, effective Oct. 7. Hintz is a neonatologist and perinatal epidemiologist who works to improve the survival and health of extremely premature and high-risk infants. She helped to create, and currently directs, the Fetal and Pregnancy Health Program at Lucile Packard Children’s Hospital Stanford.

The gift from the Hess family was prompted, in part, by their experience in the 1970s when Rosemarie Hess gave birth to premature twins and one did not survive. At the time, the family had little money and the hospital helped cover their expenses. Since then, Robert Hess made gifts each year, starting with just a few dollars, and now encompassing three professorships, all supporting neonatology research.

Karla Kirkgaard, MD, was appointed the Violetta L. Horton Research Professor, effective Oct. 7. Kirkgaard studies viruses that store their genetic material as RNA. She has developed new approaches to target RNA viruses so they do not become resistant to drugs. She also examines the effects of genetics on inflammation.

The School of Medicine requested establishment of this professorship using money from the Violetta L. Horton Medical Research Fund. The fund was established in 1969 by Horton’s estate to support research into the cause and cure of poliomyelitis and similar viral diseases.

Albert Koong, MD, PhD, professor of radiation oncology, was appointed the Sue and Bob McCollum Professor, effective Oct. 7. He uses radiotherapy to treat gastrointestinal disorders and to identify disease indicators. He is developing cancer therapies that target cellular signaling pathways.

The professorship was established with a gift from the McCollums and is intended to support a faculty member in radiation oncology. Sue McCollum is the founder and president of My Blue Dots, a non-profit organization that supports cancer research. She is also a poet and writer. She has been a member of the Stanford Cancer Council since 2009. Bob McCollum is the chairman and chief executive officer of R.S. Hughes Company Inc., an industrial supplier. They have supported cancer research at Stanford since 2001.

Sheri Spunt, MD, professor of pediatric oncology, was appointed an Endowed Professor of Pediatric Cancer, effective Oct. 7. Spunt works to improve the treatment of children and young adults with soft tissue sarcomas, a type of cancer that can be found in any part of the body. She also works to develop drugs to treat solid tumors in children and to understand the long-term effects of childhood cancer therapy.

The position was established by a gift from 14 donors with an interest in supporting pediatric cancer programs and appreciative of the work of Harvey Cohen, MD, professor and former chair of pediatrics.

**Role of foreign aid institutions**

Bendavid said the evidence in this study is consistent with gains in controlling communicable diseases, such as malaria, measles, diarrhea and respiratory illnesses, that preferentially affect the poorest. Over the past decade, international health aid organizations have financed interventions for these diseases at a high rate.

“Dr. Bendavid’s study is an important contribution to knowledge about child health improvements in the developing world,” said Davidson Gwarkin, a senior fellow at the Results for Development Institute and a senior associate at Johns Hopkins Bloomberg School of Public Health. “It makes a persuasive case that these improvements have often begun by addressing the poverty even more than the better-off.”

Gwarkin was not involved in the study.

The study also raises questions about the role of foreign aid institutions in low- and middle-income countries. While the aid efforts are making a difference in child-mortality rates in countries with effective governments, the study seems to show that this is not the case in nations with poor governance, Bendavid said.

“We have the technologies, we have the means, we have the know-how to reduce child mortality dramatically,” said Bendavid. “Even for such low-hanging fruit, however, implementation is not always easy. You have to have government that enables basic safety, and the ability to reach poor and rural communities that benefit from these kinds of programs.”

This work was supported by the National Institute of Allergy and Infectious Diseases, the Doris Duke Charitable Foundation and the Dr. George Rosen- stein Professorship in Primary Care Research in Developing Countries. Stanford’s Department of Medicine also supported this research.

Lisa Marie Potter is a science-writing in- tern for the medical school’s Office of Com- munication & Public Affairs.

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