UCLA Stroke Program Brings Treatments to the Community

Acting on the adage that when it comes to stroke “time is brain,” the first large-scale trial of a neuroprotective drug to treat stroke patients on their way to the hospital is underway throughout Los Angeles County.

UCLA is spearheading the Field Administration of Stroke Therapy-Magnesium (FAST-MAG) trial, sponsored by the National Institutes of Health, which brings together all of the county’s adult-receiving hospitals, the emergency medical system and fire department paramedics within the critical first two hours of stroke onset.

One in 15 Americans will die of stroke, which is the nation’s third-leading cause of death, after heart disease and cancer. Stroke is the leading cause of disability in this country, and the second-leading cause of dementia, after Alzheimer’s disease.

Currently, the only Food and Drug Administration (FDA)-approved treatment for the most common type of stroke is a clot-dissolving drug, tissue plasminogen activator (t-PA). Only a small percentage of stroke patients receive t-PA, in part because it can be safely administered only after a brain-imaging test, and by the time most patients arrive at the hospital and take the test, they have missed the three-hour time window for effective management.

Magnesium sulfate, which works by dilating brain blood vessels and preventing buildup of damaging calcium in injured nerve cells, is felt to be safe to give to patients who have either major stroke categories—blocking or bleeding—making it appropriate to administer in the ambulance en route to the hospital, according to Jeffrey Saver, M.D., director of the UCLA Stroke Center and principal investigator of FAST-MAG.

Dr. Saver and colleagues recently found that during every minute of a stroke, more than 1 million nerve cells die. “In the most common type of stroke, an artery is blocked, and oxygen and nutrients are not delivered to a region of the brain,” he explains. “These nerve cells can tolerate low blood flow for a few minutes, or, at best, a few hours. That’s the brief time window in which we have to intervene.

More than 50 promising neuroprotective drugs for stroke that worked in animal models have failed in humans, Dr. Saver notes. “It’s become clear that we need to give drugs sooner after onset of stroke, before much of the irreversible damage has occurred,” he says. “Using paramedics—the first healthcare personnel to come into contact with the patient—is a promising strategy.”

The FAST-MAG trial is one of the latest proactive steps...
CONTINUED FROM PAGE 1  taken by UCLA to educate consumers and physicians about the signs and treatments of stroke. Strokes cause disruption of normal blood flow to the brain. The two most prevalent kinds of strokes are ischemic, in which a clot inside a brain blood vessel blocks blood flow, and the less common hemorrhagic stroke, in which a brain blood vessel bursts. Both cases lead to brain damage.

In the majority of cases, the deleterious effects of stroke can be greatly decreased, or even eliminated; to accomplish that requires knowledge of preventive measures, understanding stroke symptoms and immediate action.

“‘Immediate’ is the key word,” says Sidney Starkman, M.D., head of UCLA’s Brain Attack Team, which is organized specifically to move with urgent speed and effectiveness to help stroke victims. “Stroke victims can help themselves by recognizing symptoms and acting fast. They can literally save their own brain cells from dying.”

Dr. Starkman, a faculty member in the Departments of Emergency Medicine and Neurology, leads a group of UCLA undergraduate students best known as “Sid’s Kids.” They have a rare opportunity for undergraduates: learning about clinical research through direct involvement with providing a potentially life-saving service.

From 8 a.m. until midnight, seven days a week, 365 days a year, one of Sid’s Kids volunteers in the UCLA Medical Center emergency department (ED), where he or she watches for potential stroke victims who might not yet have been fully evaluated by a doctor or nurse. Sid’s Kids are a selective group of students who are rigorously and extensively trained.

Tell Your Patients:

UCLA undergraduate students from the volunteer group “Sid’s Kids” make more than 100 presentations each year to community groups about the signs of stroke.

Signs of Stroke

- Sudden weakness or numbness of face, arm or leg, especially on one side of the body (the most critical symptom)
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination

Strokes can be indicated by any of the above symptoms in mild, moderate or severe degrees, and in any combination.

Taken primarily from guidelines published by the National Stroke Association (www.stroke.org)

Applying Research to Rehabilitation Following Stroke

As head of the UCLA Neurological Rehabilitation Unit, Bruce Dobkin, M.D., leads a team that begins working with brain-injured patients after the acute period has ended. As a better understanding of the role of chemical messengers in solidifying memories develops, Dr. Dobkin and his colleagues are laying the groundwork for therapeutic strategies to strengthen the memory in brain-injured patients through electrical stimulation or individually tailored medical regimens. In his studies of patients who are relearning how to walk, Dr. Dobkin has shown through functional magnetic resonance imaging (fMRI) that the brain changes as the skills are practiced.

“Rehabilitation efforts to improve the use of an affected arm, walking, speech and other disabilities depend on developing the best possible methods for practice and relearning within the amount of spared function that patients possess,” Dr. Dobkin explains. “Learning a skill is accompanied by changes in brain physiology and structure, and rehab aims to drive those changes for lasting improvements.”

To that end, Dr. Dobkin, and other research groups, have been testing treadmill training with partial body-weight support and robotic assistive devices for walking to determine if they can improve balance and speed after stroke. A new multicenter clinical trial of treadmill training funded by the National Institutes of Health began in May for patients admitted for rehabilitation from West Los Angeles, Inglewood, Long Beach and San Diego who are either two or six months post stroke and still walk poorly. (See http://neurorehab.neurology.ucla.edu)

Dr. Dobkin recently completed a multicenter trial of the technique for people with recent spinal cord injury, which did not reveal the method to be better than more common physical therapies, mostly because patients who received either treatment generally improved quite a bit. This new trial will also examine through fMRI adaptations that evolve in the brain as a consequence of training. Dr. Dobkin notes, “Insights from such studies may lead to better drug, physical and biological therapies for the future.”

“The students play an invaluable role as the eyes and ears of the Brain Attack Team,” Dr. Starkman says. “They focus on two questions: Is this a stroke and when did it begin?”

“Students can identify stroke victims or stroke mimics. I have them call me with anything that even looks like a stroke for two reasons: One, the call can save a life, and two, it provides a perfect teaching opportunity. I do a lot of teaching on the telephone.

“When a student contacts me, I immediately start for the ED and contact Judy Guzy, R.N., and Marina Shukman, R.N., who coordinate the stroke research. As I drive, I’m on the phone with the student, and I’m calling other members of the stroke team who will meet at the ED.”

Stoke team members include physicians with primary expertise in emergency neurology, vascular neurosurgery, stroke neurology, interventional neuroradiology and neurorehabilitation.

2 UCLA PHYSICIANS’ UPDATE
Recent advances have provided vital clues that shed light on how the brain repairs and rewires itself, facilitating recovery from stroke.

“We’re beginning to understand exactly how the brain repairs itself after stroke,” says S. Thomas Carmichael, M.D., UCLA neurologist. “We are identifying time windows in which certain repair processes are active.”

Dr. Carmichael and researchers in his lab are studying the molecular and cellular mechanisms of axonal sprouting and stem cell responses to brain injury, and how these two processes of neuronal regeneration lead to repair of damaged brain circuits.

Using imaging techniques, researchers have determined that most of the recovery after stroke occurs in the tissues that border the nerve cells that die due to lack of blood supply and oxygen. In addition, researchers discovered which gene systems mediate the axonal sprouting. These findings offer two important clues about the biology of stroke recovery.

The brain operates as a set of circuits that control movement, thinking, emotion and behavior. A stroke interrupts or kills off certain circuits, causing debilitating paralysis as well as speech and cognitive problems and behavioral and emotional changes. Some spontaneous recovery does occur, however.

For example, a patient may be unable to move his or her left side at all immediately following a stroke. Over time, usually about six months, some function returns. The circuits nearest the area damaged by the stroke naturally form new connections, routing around the damage and resulting in this recovery.

“What is happening is the brain is remapping and reorganizing itself, and that is where recovery is occurring,” Dr. Carmichael explains. “What we’re trying to determine is if we can improve and enhance that recovery.”

His research team found that nervous system injury induces expression of both growth-promoting and growth-inhibitory genes that together determine the location and degree of axonal sprouting. In the past, the extent of a patient’s recovery depended upon the severity of the stroke. But new therapeutics may be able to boost the axonal sprouting process, allowing for the formation of more connections. The brain could re-route its processes around the dead cells to restore more function.

Children who suffer from stroke recover fully because their brains are still developing and are in a more plastic state, better able to make the circuit connections needed for repair. As humans grow and develop into adults, their brains solidify and lose that ability.

For years, researchers debated whether the adult brain could remap itself the way younger brains do. After researchers proved this did happen in adults, the second critical step was to find out how.

As it turns out, the gene expression associated with axonal sprouting in the adult brain after stroke is unique, not like the axonal sprouting found in the peripheral or developing nervous systems.

“This may give us clues as to why the adult brain is not as successful at rewiring itself as the peripheral and developing nervous system is,” Dr. Carmichael says. “Obviously, most adult stroke patients don’t recover well enough after stroke to resume normal function, yet children do. The fact that there is a unique growth program in the adult brain suggests that there may be unique targets at which we can aim new therapeutics.”

Dr. Carmichael and his researchers are working to identify molecular targets to promote a neuronal growth program and induce increased axonal sprouting after stroke. Patients are taken through therapies that force them to walk more, use their arms more, or challenge their language function more completely. However, there are no drugs now that can be used to induce improved recovery after stroke.

“There needs to be a combination approach,” Dr. Carmichael says. “If we were to develop a drug that enhanced sprouting, we could use that drug in combination with physical therapies that are the traditional mainstay of stroke rehabilitation.”

The long-term goal is to move neurological rehabilitation closer to the acute stroke and marry the treatment of recovery to the treatment of the stroke itself.

“Epidemiological evidence has shown that most motor and sensory recovery is finished by the six-month mark,” Dr. Carmichael says. “The goal of the molecular studies in stroke rehabilitation is to move the start of neural repair closer to the acute stroke itself, and to extend this limited time window for recovery well beyond six months.”

Recommended Reading

Neurosurgical Advances Applied to Brain Aneurysms

Brain-saving treatments for intracranial aneurysms—the most common cause of subarachnoid hemorrhage, a devastating form of stroke—require skills possessed by experts in neurosurgery, neuroradiology, interventional neuroradiology and neurocritical care.

Advances in all of these fields working in concert have improved the outlook for many stroke—and potential stroke—patients. “It is rare that we find an untreatable aneurysm,” observes Neil Martin, M.D., chief of UCLA’s Division of Neurosurgery.

When an intracranial aneurysm bursts and bleeds into the space around the brain, the consequences are devastating, with approximately 70 percent of people either dying or suffering a severe stroke. When a patient makes it to the hospital alive, the aneurysm has bled for less than 30 seconds and then sealed itself off. “The initial hemorrhage will cause irreversible damage, but a second rupture will likely be fatal,” Dr. Martin explains. Therefore, treatment for a ruptured aneurysm aims to prevent a second hemorrhage.

“Based on what the aneurysm looks like, we decide what the absolute best treatment is for that patient,” Dr. Martin notes.

Improvements to the endovascular coil, developed at UCLA, include modifying the composition of its materials.

Quick diagnosis is key. Patients who arrive in UCLA’s emergency room with “the worst headache of their lives”—indicating the possibility of a ruptured aneurysm—now undergo one noninvasive diagnostic study to locate the intracranial aneurysm. “This is a revolutionary change,” Dr. Martin suggests. At most centers, the diagnosis requires two tests, one a computed tomography (CT) scan and the other an invasive transfemoral angiogram.

“At UCLA, if the CT scan detects a hemorrhage, then we do a CT angiogram contrast study to see what the aneurysm looks like,” notes Pablo Villablanca, M.D., UCLA diagnostic neuroradiologist, and director of UCLA’s Clinical Image Processing Service. Three-dimensional images from a CT angiogram, which visualize blood flow in the arteries of the neck and brain, provide detailed information on the location, size, geometry and particular characteristics of the aneurysm so that the patient can be triaged to the appropriate therapy, Dr. Villablanca explains.

“It takes 45 seconds to acquire the images, and then about three minutes to process the images for immediate information. So within five minutes you know with what you are dealing,” Dr. Villablanca notes.

“In some cases, we can avoid the angiogram altogether and go directly into surgery,” Dr. Martin adds.

Recommended treatments may include endovascular therapy, microsurgical clipping of the aneurysm or brain bypass surgery. These options, plus a few more, are also available to treat high-risk unruptured aneurysms that are often discovered during tests a patient is undergoing for an unrelated problem.

Endovascular Therapy

Aneurysms—weak, balloon-like defects that protrude from arterial walls—with a narrowed neck may be ideal for endovascular coiling. A device called the Guglielmi Detachable Coil (GDC), which was developed at UCLA by Guido Guglielmi, M.D., is released via microcatheter so that it fills the aneurysm and isolates it from circulation. This technology is the gold standard for endovascular treatment of aneurysms; more than 300,000 patients have undergone the procedure worldwide.

An improvement on the GDC coil, also developed at UCLA, is one made of a combination of platinum wire and a bio-absorbable biopolymer (matrix coil) that accelerates aneurysmal clot maturation and transformation into collagen treatment. The new tissue anchors the platinum coil and causes the aneurysm to heal across its neck, closing the connection between the aneurysm and the parent artery, says Fernando Vinuela, M.D., co-director of UCLA’s Stroke Center.

Another new development in endovascular treatment for wide-neck or large aneurysms is endovascular employment of small stents that can be used intracranially. These stents are deployed across the neck of the aneurysm and create an artificial boundary between the aneurysm and the parent artery, allowing for a safe coil deployment. These stents—specially developed for intracranial utilization—can be safely deployed in anterior cerebral, middle cerebral and basilar arteries.

Neurosurgery

Not all aneurysms are appropriately shaped for endovascular coiling or stenting. In those cases, neurosurgeons perform microneurosurgical clipping techniques via craniotomy to prevent bleeding.

Brain bypass surgery presents another option for certain inoperable or uncoilable aneurysms, allowing the aneurysm and blood vessel upon which it lies to be blocked off completely. “The extracranial-intracranial bypass is accomplished by using a scalp artery to connect to a brain artery,” explains Dr. Martin, who, along with UCLA colleague John Frazee, M.D., specializes in this technically challenging procedure, of which 10 to 15 are
performed each year at UCLA.

For small aneurysms, judged to be relatively low risk, experts may prefer instead to follow patients with a periodic CT angiogram. “We’ve found that about 10 percent of aneurysms in these patients will grow, and we assume that those are the few high-risk aneurysms destined to rupture at some point, so we will opt to treat those,” Dr. Martin says.

**Neurocritical Care**

Following a hemorrhagic stroke or surgery, patients need the same careful management that those with severe head injuries receive. At UCLA, the patient care in the 20-bed neurocritical care unit is melded and fused with the clinical research programs of neurology and neurosurgery, observes Paul Vespa, M.D., UCLA neurosurgeon and director of the unit.

UCLA has pioneered many brain monitoring innovations, including electroencephalogram (EEG), positron emission tomography (PET), magnetic resonance imaging (MRI) and magnetic resonance spectroscopy (MRS), all of which indicate how the brain is metabolizing nutrients and whether the brain is getting enough oxygen. Further, patients are monitored daily with a transcranial Doppler to detect early signs of vasospasm — a constriction of the brain’s arteries caused by the initial bleed that can produce an ischemic stroke.

“We’ve completely reinvented the paradigm of how brain injury patients are treated,” Dr. Vespa notes. “In most ICUs, these patients have been treated based on monitoring their heart, lungs and blood. We have made convincing arguments over the past 10 years that one should monitor the brain when treating brain injury.”

Based in large part on information gathered from monitoring, new treatments have developed. “Stereotactic hemorrhage evacuation is, in large part, based on EEG observations that if you leave blood inside the brain, seizures can develop and the patient can deteriorate,” Dr. Vespa explains.

Telemedicine allows doctors remote access to patients from anywhere there is access to the Internet. Expanding on that concept, UCLA was the first to introduce the robotic telepresent system to the ICU. The patient sees, hears and interacts with the doctor through a nearly 5-foot-6-inch tall robot, which displays a live video image of the physician’s face on its monitor/head. The physician, seated at a computer console, also sees and hears the patient through a live video image projected on a monitor. Using a joystick, the physician can drive the robot to the patient’s bedside, control movements of the robot’s head and even zoom in to take a closer look at the patient or bedside monitors.

“We are using the robot clinically and also conducting a research study to assess its effectiveness in such factors as preventing medical errors and decreasing the amount of time it takes to get to a patient during an emergency,” notes Dr. Vespa.

**Research**

According to Dr. Martin, current stroke research efforts at UCLA in neurosurgery, interventional neuroradiology and neurology are focusing on:

- Improving endovascular coils
- Refining microsurgical techniques for bypass surgery for aneurysms
- Studying brain injury associated with ruptured aneurysm
- Studying brain monitoring techniques to identify problems at an earlier stage
- Improving telemedicine
- Developing noninvasive, four-dimensional imaging tools

**Recommended Reading**


---

**Innovative Approaches to Other Brain Conditions**

**Arteriovenous malformations (AVMs) and cavernous angiomas** can be treated by endovascular embolization, surgery with craniotomy to remove the AVM, or with focused radiation therapy.

**Cavernous angiomas**, smaller vascular malformations that can occur in the brain, are often located in deep and difficult locations and require either surgery or watchful waiting.

**Spontaneous intracerebral hemorrhaging**, usually related to high blood pressure, has been difficult to treat effectively with conventional open surgery. UCLA is exploring minimally invasive techniques to remove brain hemmorhages, theorizing that the open surgery, which requires work deep in the brain, can extend damage in some cases. A National Institutes of Health grant has been awarded to UCLA, with Dr. Martin the principal investigator, to study the minimally invasive endoscopic evacuation of intracerebral hemorrhage.

** Severely narrowed carotid arteries** in the neck can be treated surgically with carotid endarterectomy, balloon angioplasty or stenting. However, these are not options when the carotid artery is completely blocked off. In these cases, it is possible to improve circulation to the brain using brain bypass surgery. UCLA is part of the national Carotid Occlusion Surgery Study (COSs) that uses an oxygen-15 PET scan to identify patients with poor blood circulation in the brain who are at high risk for stroke related to their blocked carotid artery. The participants are randomized into surgical and nonsurgical groups. Eligible participants include those who have had a transient ischemic attack or minor stroke within the last four months and who have completely blocked carotid arteries.
Advances in Imaging Improve Stroke Diagnosis

In the last decade, magnetic resonance imaging (MRI) has revolutionized the diagnosis of stroke.

Prior to the use of MRI, physicians based their stroke diagnoses largely on physical symptoms together with negative findings on computed tomography (CT), explains Jeffrey R. Alger, Ph.D., medical biophysicist and a researcher in the UCLA Ahmanson-Lovelace Brain Mapping Center. While CT was used to rule out the less common form of stroke caused by bleeding, it provided no positive sign of blood vessel blockage, the more common cause.

Two hurdles hindered the use of MRI for diagnosing stroke. First, it was difficult to get patients just hours out from a stroke into imaging studies to prove the value of MRI because they were being evaluated and treated. Second, the imaging procedure was lengthy, limiting the amount of information obtained. That is changing, particularly at UCLA.

MRI can be vital in the assessment and care of stroke patients, says Dr. Alger, whose research focuses on the development of novel in vivo imaging techniques that use MRI and magnetic resonance spectroscopy for study of the brain and the nervous system.

“At UCLA, our MRI protocols are very specific in defining whether a patient has had a stroke. We can differentiate hemorrhagic stroke from ischemic stroke, and these procedures sometimes even allow us to see the blood clot itself,” Dr. Alger notes.

“By using certain MRI procedures that measure functional parameters, we can tell how severe the stroke is, which usually is related to how long the patient has been suffering. Stroke onset is not always clear from clinical measurements, particularly if a patient wakes up with symptoms of stroke. We can’t know when during the night the stroke began. There are now MRI procedures that show indications of how old a stroke is. That has a lot to do with how the patient is then managed.”

Using MRI in stroke diagnosis and assessment came about by scientific accident. About 17 years ago, Michael Moseley, Ph.D., a researcher at the University of California, San Francisco, decided to try a new type of MRI called diffusion-weighted MRI in an animal model of stroke, just to see what he could see. Dr. Alger says the procedure delineated the tissue involved in the brain attack much better than any tool then in
existence. This marked the beginning of the development of a battery of MRI procedures that helps in the diagnosis of stroke.

“We now have a number of MRI stroke assessment protocols at UCLA that can be completed in 25 minutes,” Dr. Alger says. “These procedures clearly define whether a patient has had a stroke, which vessels are involved and how severe the stroke is. That information is quite useful in defining what the patient is suffering from, and very helpful in deciding how to manage individual patients. These procedures provide a tremendous amount of information.”

UCLA’s Clinical Image Processing Service, under the direction of diagnostic neuroradiologist Pablo Villablanca, M.D., exclusively processes three-dimensional image data. “Within five to 10 seconds, we can create a complete data set of three-dimensional renderings from MRIs or CT angiograms. That information can be used for diagnosis, triage and for treatment planning,” he explains. “We can also fuse images—a CT image to an MR image, for example—to superimpose two different data sets to gain new perspectives about the disease.”

Today, four MRI procedures are used at UCLA to evaluate stroke patients:

- **Diffusion MRI** measures the rate at which water molecules move around in brain tissue. Where blood flow is interrupted by stroke, the molecules slow down, allowing the physician to see how large the stroke is and what part of the brain is affected. This procedure is being tested to see if it can provide an early sign that the patient might improve when given new drugs or treatment procedures.

- **Gradient echo MRI** identifies blood in brain tissue. Recent UCLA studies have shown that it can identify strokes caused by bleeding. The use of gradient echo MRI to identify bleeding in the brain and blood clot within an artery that is blocking flow provides information that a conventional MRI cannot capture.

- **MR angiography or MRA** allows clinicians and researchers to visualize blood vessels and the blood flowing through them to identify narrowed or blocked segments.

- **Perfusion MRI** measures the amount of blood flowing through individual parts of the brain in the small blood vessels that feed the cells. Researchers use this procedure to identify whether various areas of the brain are being properly supplied with oxygen-rich blood.

Because MRI shows how severe a stroke is and when it happened, researchers may be able to determine, for example, that patients with less severe or newer strokes may benefit from a particular therapy, while those with more severe or older strokes do not. In this way, MRI could help patients avoid undergoing costly treatments that in the end would not help them.

“That is the future—doing therapeutic trials to improve understanding of individual patients so we can personalize their therapies,” Dr. Alger says. “Cost is important as well. Some therapies are expensive. If we can be certain a therapy won’t work because of the individual characteristics of a patient, we can lower costs as well as save patients from unnecessary treatments.”

For example, one new stroke treatment, clot-busting drugs, appears to work only within a very narrow time window—three hours after initiation of the stroke. There’s interest in using MRI to define a group of patients who are outside that narrow time window, but perhaps could still benefit from clot-busting therapy. The biggest complication of clot-busting drugs is bleeding, but researchers can now monitor patients for that using MRI.

“Maybe some patients outside that narrow window after stroke could benefit,” Dr. Alger says. “We don’t know this now.”

In another UCLA-based clinical trial funded by the National Institutes of Health, researchers are using MRI to characterize patients who might benefit from a new corkscrew-like device used to pull out the clot.

For patients who are unable to undergo MRI due to severe claustrophobia or implanted devices that are MR incompatible, CT-based stroke protocols can be employed. “Three complementary studies—a noncontrast CT scan of the brain, a CT angiogram of the neck and brain and CT perfusion of the brain—provide similar information as revealed through multimodal MRI,” Dr. Villablanca notes. “The high special resolution of these techniques provides extremely detailed images of the brain vessels and may give information about vessels and aneurysms that is not available by

---

**Within five to 10 seconds, we can create a complete data set of three-dimensional renderings from MRIs or CT angiograms. That information can be used for diagnosis, triage and for treatment planning.”**

—Dr. Pablo Villablanca, director of UCLA’s Clinical Image Processing Service

---

**Recommended Reading**

Please check the box next to each item you would like to receive.

**Clinical Updates**

- **Anesthesiology**
  - The UCLA Pain Management Center takes a neurological approach to diagnosing and understanding pain disorders and offers the broadest range of treatments to effectively manage all types of pain.

- **Cardiology**
  - Cardiac resynchronization therapy uses a specialized pacemaker to control heart contractions in patients with congestive heart failure due to dilated cardiomyopathy.

- **Clinical Nutrition**
  - For more than 25 years, UCLA’s Risk Factor Obesity Weight Management program has offered a medically supervised, multidisciplinary program to help people lose weight and maintain weight loss.

- **Complimentary Medicine**
  - The UCLA Center for East/West Medicine offers an alternative, patient-based approach that aims to integrate care into an overarching optimization of the individual’s state of health.

- **Digestive Disease**
  - Emerging data may change the way hepatitis C is treated for the first time in many years, helping to reduce the risk of serious liver disease.

- **Nutrition**
  - The UCLA Food Allergy Program, currently the only one of its kind in the Western United States, offers centralized evaluation, treatment and education for adult and pediatric patients.

- **Pediatric Endocrinology**
  - A UCLA study shows significant growth improvement in children treated with growth hormone using a new dosing model.

- **Plastic and Reconstructive Surgery**
  - Plastic surgeons work with the Revlon UCLA Breast Center team to provide consultation on breast reconstruction alternatives for patients with breast cancer and other breast-related problems.

- **Neurology**
  - UCLA’s Alzheimer’s Disease Research Center and Memory Disorders Clinic conduct clinical research and provide consultative services for patients with age-related degenerative brain disorders that result in dementia.

- **Radiology**
  - A recent study found a lower risk of death or dependence among subarachnoid hemorrhage patients treated with an endovascular coil than among patients treated with open craniotomy and surgical clipping.

- **Surgery**
  - By maintaining a narrow focus on treating thyroid, parathyroid and adrenal disorders, the UCLA Endocrine Surgical Unit brings a wealth of valuable experience to these cases.

  - Intestinal transplantation can be an excellent treatment option for patients with intestinal failure who cannot tolerate long-term total parenteral nutrition (TPN).

- **Urology**
  - Robotic surgery allows surgeons greater flexibility in treating prostate cancer with a minimally invasive procedure.

**Newsletters and Reprints**

- **Newsletters**
  - Clark Urological Center Newsletter Volume 18, Number 1 Summer 2006
  - Jules Stein Eye Institute Clinical Update, Volume 15, Number 2 May 2006
  - UCLA Pediatric Update Volume 13, Number 1 Spring 2006

**Patient Learning Series**

- You can access the complete selection of the UCLA Healthcare Patient Learning Series at www.healthcare.ucla.edu

**Continuing Medical Education Opportunities**

- 33rd Annual UCLA Family Practice Refresher Course
  - June 5 – 9, 2006
  - The Beverly Hilton Hotel
  - Beverly Hills, California

- Primary Care Update 2006
  - June 10, 2006
  - Santa Maria Country Club
  - Santa Maria, California

- Pain Management and Palliative Care
  - June 9 – 10, 2006
  - Bel Age Hotel
  - West Hollywood, California

- Late Effects of Cancer Treatment and Survivorship: Strategies for Primary Care Providers
  - June 24, 2006
  - Marina Del Rey Marriott
  - Marina Del Rey, California

- Advanced Practical Training in Neuroendoscopy
  - January 14 – 15, 2007
  - UCLA Medical Center
  - Los Angeles, California

For additional CME opportunities, visit our website at www.healthcare.ucla.edu.

**Download** Clinical Updates at www.healthcare.ucla.edu. Click on <For Healthcare Professionals>.

Or check the items you’d like to receive and:

- **Fax** this page to us at 310 794-8696.
- **Mail** this page to us. Fold it to display the “Business Reply Mail” section on the outside and tape closed.
Look inside for UCLA Publications for Physicians and access the latest
• Clinical updates
• Newsletters
• Reprints
• Patient learning series
• Continuing medical education programs

Visit our award-winning website www.healthcare.ucla.edu to download printable PDF files.
UCLA Stroke Center

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has designated UCLA’s Stroke Center as a certified Primary Stroke Center, making UCLA the first medical center in Los Angeles County to earn this accreditation.

Among UCLA’s pioneering efforts to improve and advance stroke care:

- Developed the first device to treat acute ischemic stroke by mechanically removing stroke-causing clots from the patient’s brain within the first few hours of stroke
- Developed the Guglielmi Detachable Coil for treatment of intracranial aneurysms
- One of six centers nationwide to receive a Specialized Program for Translational Research in Acute Stroke grant from the NIH
- Spearheads the Field Administration of Stroke Therapy-Magnesium trial in Los Angeles
- Developed the Los Angeles Prehospital Stroke Screen (LAPSS) — a stroke recognition instrument for paramedics
- Developed novel surgical therapies for stroke
- Developed novel rehabilitation therapies and research
- Operates one of the first dedicated inpatient stroke units

UCLA Stroke Center: www.stroke.ucla.edu 310-794-6379
UCLA Stroke Hotline for Acute Cases: 310-825-6466

UCLA Medical Group ranks as one of the top 10 physician organizations in Southern California

U.S. News & World Report’s Best Hospitals Survey ranks UCLA Medical Center #1 in the western U.S.