
**University of
Colorado Hospital**
ANSCHUTZ MEDICAL CAMPUS
*An enduring PASSION for EXPLORATION
in the pursuit of NEW DISCOVERIES.*
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NEUROSCIENCES OUTCOMES

2011

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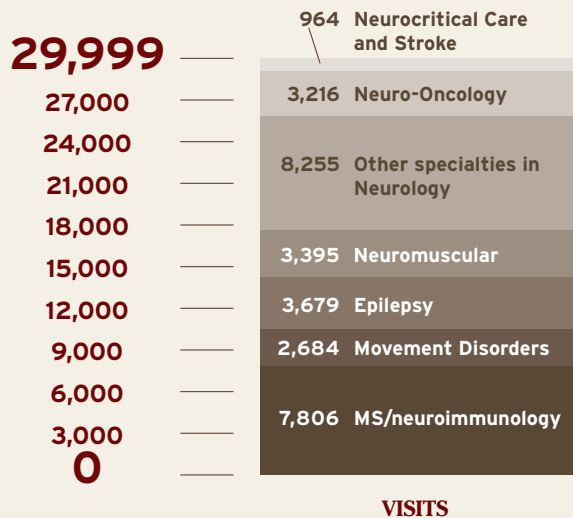
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The *UNIVERSITY OF COLORADO HOSPITAL DEPARTMENT OF NEUROSCIENCES* is one of the nation's leading neurosciences programs and is comprised of some of the country's top neurologists, neurosurgeons, neurointerventional radiologists, neurocritical care specialists, neuro hospitalists, NPs, PAs, researchers, social workers, counselors, dieticians and other caregivers. With a multidisciplinary team that subspecializes in and treats a broad spectrum of neurological conditions, the neurosciences division is a key reason why the University of Colorado Hospital was recently named the top performing academic hospital in the nation by the University HealthSystem Consortium. For more information, please visit us at uch.edu

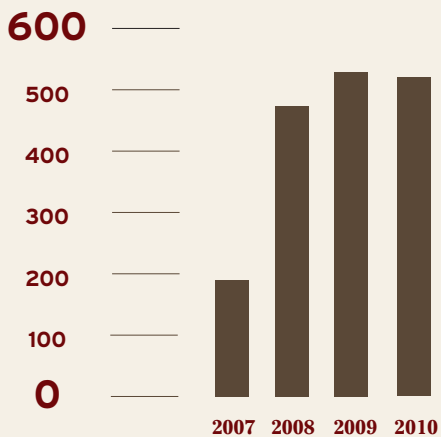
VOLUMES

TOTAL INPATIENT AND OUTPATIENT VISITS, UCH NEUROSCIENCES

FY 2011

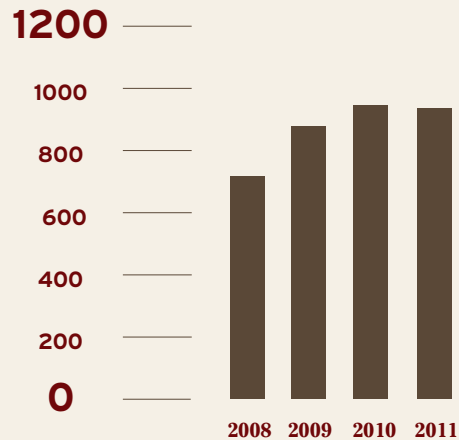


SPINAL SURGERY VOLUMES



NEUROSURGERY VOLUMES*

*excludes spinal surgeries. Based on the July 1 - June 30 fiscal year.



SIZABLE DIFFERENCE

New science, new treatments, a tripling of volume

In the past three years, the number of patients with multiple sclerosis at the University of Colorado Hospital has more than tripled to 2,000, tallying more than 6,000 annual patient visits.

The number of clinical trials at the center has expanded even more quickly to as many as 30 active clinical trials at any given time.

The Rocky Mountain Multiple Sclerosis Center at the Anschutz Medical Campus is one of the largest MS centers in the world, caring for nearly half of all MS patients in the Rocky Mountain region.

Rethinking MS's origins

For years, the popular thought was that MS was caused by inflammation created by T-cells. Work led by University of Colorado researcher Jeffrey Bennett, MD, PhD, and published in the journal of Clinical Neuropharmacology in 2009, turned that theory on its head by discovering that B lymphocytes played a much greater effect.

It also houses the largest MS brain bank in North America, with more than 350 brain slices of MS patients who have donated tissue for research.

While these numbers are impressive, what's more important is what they mean to the center's patients.

"What makes us stand out among centers in the world is the sheer

number of studies we can participate in effectively," says Timothy Vollmer, MD, medical director of the center who also directs the university's neurological clinical research program. "Our patients have access to treatments years before they would elsewhere."

With that access, however, comes great responsibility as MS drugs also are some of the most dangerous drugs prescribed. All UCH patients are placed on a schedule of regular check-ups to monitor their "global health" to look for—and combat—negative effects of the powerful drugs early on.

The center played a key role in developing a test that can prescreen MS patients to determine how likely they are to develop progressive multifocal leukoencephalopathy (PML) as a result of taking natalizumab (Tysabri®). The assay became commercially available in late 2011 after three years in development.

Chantil Arciniaga is one of the patients who has benefited from the center's early use of the test and access to the drug. After two years of monthly MS episodes that left her unable to walk without a cane or walker, the 35-year-old mother of three tested negative for the PML-causing virus and was put on Tysabri. The results were immediate.

"After my first infusion, my walking got progressively better until it was back to 100 percent," says Arciniaga,

who was diagnosed with MS at age 28. "I haven't had an episode in four-and-a-half years."

"MS is now one of the most treatable diseases in neurology."

More than 400,000 people in the United States have multiple sclerosis and half are expected to need wheelchairs or walkers within 15 years without advancements in treatment. However, the future is bright, says Timothy Vollmer, MD, medical director of the Rocky Mountain MS Center at the Anschutz Medical Center.

"MS is now one of the most treatable diseases in neurology," says Vollmer, an internationally recognized MS researcher who has participated in more than 130 MS clinical trials.

There are currently eight FDA-approved therapies for MS, with another three or four expected to be approved in the next two years, Vollmer says. "The most efficient pathway of the future is going to be learning how to use these therapies in combination or sequence to prevent disability."

Arciniaga says she doesn't worry about the possible side effects because she tested negative for the PML-causing virus, and she is seen every three months by doctors at the center.

"With three children, the quality of life this drug gives me greatly outweighs the risk of it," she says.

In-hospital NEUROHOSPITALIST coverage benefits IMPROVED CARE TRANSITIONS, too

What began as a way to ensure immediate intervention for acute stroke patients has led to improvements throughout the stroke care process at the University of Colorado Hospital.

Last year, UCH began using a team of neurohospitalists to ensure that acute stroke patients received the fastest possible work-up and intervention, including use of tPA or surgical intervention. That initiative has improved intervention times for acute stroke patients while relieving the burden on outpatient neurologists. An unexpected side benefit has been the improvement of care throughout the patient's stay.

"Our Joint Commission core measures for stroke patients are all above 90 percent, most of them at 100 percent," says William Jones, MD, medical director of the neurohospitalist program and co-director of the stroke program. "We've also seen a decreased length of stay."

Three neurohospitalists rotate coverage at the 400-bed hospital (which, as of mid-2013, will add another 200-some beds). The specialists have become a mainstay of the stroke team, ensuring that critical care protocols are not

overlooked. They also help ensure smooth transitions as patients are transferred from critical care onto medical units or transitioned to their next site of care at long-term facilities or their homes.

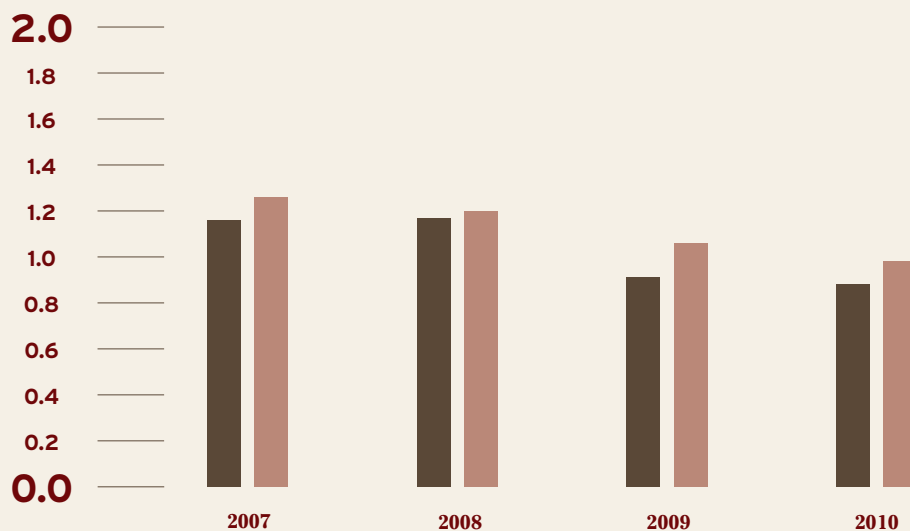
"Something we've seen happen is that everyone involved with the patient's care now feels like there's somewhere to go if they identify a problem or see something that would improve care," Jones says. "We often can help identify and implement solutions."

With the program now established, the neurohospitalist team has turned its sites on further quality improvement. They are currently working with a team of residents to track and improve discharge summaries.

"Transitions from inpatient to outpatient need to be very well coordinated to make sure patients get to the place they need to be in a timely manner," Jones says. "We're hoping this project will help identify ways to further improve care."

ISCHEMIC STROKE – MORTALITY INDEX

(compared to national averages from the University HealthSystem Consortium)



Key: ■ UCH ■ NATIONAL

GET WITH THE GUIDELINES® (GWTG) STROKE PERFORMANCE AND QUALITY MEASURES
UNIVERSITY OF COLORADO HOSPITAL IS AMONG THE “GOLD PLUS PERFORMANCE
ACHIEVEMENT” HOSPITALS.

Clinical Measure	Measure Description	GWTG Stroke Performance Award Goal	2007	2008	2009	2010
IV rt-PA Arrive by 2 Hr, Treat by 3 Hr	Percent of acute ischemic stroke patients who arrive at the hospital within 120 minutes (2 hours) of time last known well and for whom IV t-PA was initiated at this hospital within 180 minutes (3 hours) of time last known well.	85%	69.2%	85.7%	92.9%	91.3%
Door To IV rt-PA in 60 Min	Percent of ischemic stroke patients receiving IV t-PA at my hospital who are treated within 60 minutes after triage (ED arrival)	85%	12.5%	22.2%	33.3%	33.3%
Early Thrombolytics	Percent of patients with ischemic stroke or TIA who receive antithrombolytics by the end of hospital day two.	85%	93.3%	100.0%	98.7%	100.0%
DVT Prophylaxis	Percent of patients with an ischemic stroke, or a hemorrhagic stroke, or stroke not otherwise specified and who are non-ambulatory who receive DVT prophylaxis by end of hospital day two.	85%	97.1%	100.0%	100.0%	99.2%
Antithrombotics	Percent of patients with ischemic stroke or TIA prescribed antithrombotic therapy at discharge.	85%	96.9%	99.2%	100.0%	100.0%
Anticoag for AFib/ AFlutter	Percent of patients with ischemic stroke or TIA with atrial fibrillation/flutter discharged on anticoagulation therapy	85%	95.0%	100.0%	100.0%	100.0%
Intensive Statin Therapy	Percent of Ischemic Stroke and TIA patients who are discharged with Intensive Statin Therapy	85%	0.0%	0.0%	100.0%	28.6%
LDL Documented	Percent of ischemic stroke or TIA patients with a documented Lipid profile.	85%	81.7%	95.1%	96.5%	99.3%
LDL 100 or ND*	Percent of Ischemic stroke or TIA patients with LDL >= 100, or LDL not measured, or on cholesterol-reducer prior to admission, who are discharged on cholesterol reducing drugs.	85%	97.2%	98.7%	97.7%	97.4%
NIHSS Reported	Percent of Ischemic stroke, TIA, and Stroke not otherwise specified patients with a score reported for NIH Stroke Scale (Initial)	85%	28.9%	68.6%	54.8%	65.0%
Dysphagia Screen*	Percent of patients with ischemic, or hemorrhagic stroke who undergo screening for dysphagia with an evidenced-based bedside testing protocol approved by the hospital before being given any food, fluids, or medication by mouth.	85%	95.2%	54.9%	72.9%	87.0%
Stroke Education*	Percent of patients with ischemic, TIA, or hemorrhagic stroke or their caregivers who were given education and/or educational materials during the hospital stay addressing ALL of the following: personal risk factors for stroke, warning signs for stroke, activation of emergency medical system, need for follow-up after discharge, and medications prescribed.	85%	0.0%	67.8%	68.9%	69.2%
Rehabilitation Considered*	Percent of patients with Stroke who were assessed for rehabilitation services.	85%	91.1%	89.3%	98.7%	99.4%

SOURCE: GET WITH THE GUIDELINES R (GWTG) STROKE PERFORMANCE & QUALITY MEASURES: Get With The Guidelines® is a program that helps ensure consistent application of the most recent American Heart Association/American Stroke Association scientific guidelines for patient treatment.

University of Colorado Hospital is a recipient of the Gold Plus Performance Achievement Hospital Award for achieving 85% or higher adherence to all GET WITH THE GUIDELINES R (GWTG) STROKE PERFORMANCE ACHIEVEMENT indicators for consecutive 12 month intervals and 75% or higher compliance with 6 of 10 GWTG Stroke Quality Measures to improve quality of care and patient outcomes.

DUAL TRACKS

Still in their infancy, neurocritical ICUs' efficacy data look positive

Patients with life-threatening neurological issues can be some of the toughest to manage.

Common pneumonia or a urinary tract infection can quietly and quickly spread to the brain or spinal cord. And with these typically sedated patients, the problem may not be noticed until the damage is done.

The 10-bed neurocritical care unit at the University of Colorado Hospital (UCH), one of the first in the country, is designed to watch them. It specializes in caring for patients with brain tumors, ruptured aneurysms, traumatic brain injuries, spine disorders, complex spine reconstruction and all other types of highly complex neurological issues.

“The neuro ICU is unique in that we are running two parallel tracks at all times—the entire body just like in a traditional ICU and also anything affecting the brain and spinal cord,” says Robert Neumann, MD, PhD, medical director of the Neuro ICU at UCH and one of the first board-certified neurocritical care specialists nationwide.

While specialized neurocritical care units are still in their infancy internationally, the 10-year-old UCH unit has already seen the results this specialized focus can bring. (See accompanying chart.)

“This unit makes a huge difference in terms of success,” says Tracey Anderson, ACNP-BC, director of Neurocritical Care Program

Development. “We have sicker patients who don’t die.”

The UCH neurocritical care unit, which runs an average daily census of 17, deploys more frequent ultrasound and MRI scans, lower thresholds for intracranial pressure treatment, and more aggressive medical management protocols than are typical in more general ICUs. Infections, for instance, may be fought with multiple drugs to prevent the spread into the heart, brain or spinal cord. The UCH neurocritical care unit also is expert at cooling patients to control intracranial pressure and brain injury. “Most hospitals may cool a patient for 24 hours; we cool them for weeks to mediate damage,” Neumann says.

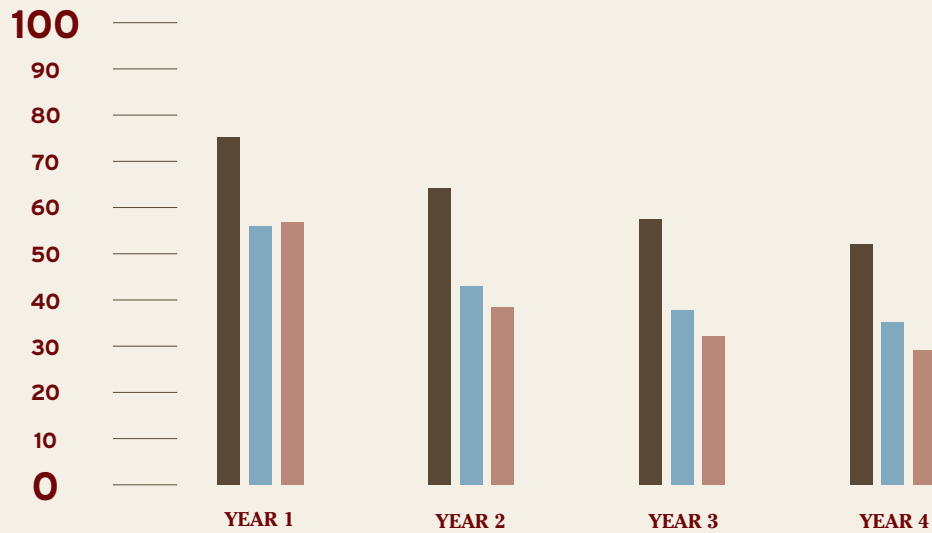
INTRACEREBRAL HEMORRHAGE—MORTALITY INDEX

(compared to national averages from the University HealthSystem Consortium)



NEURO ONCOLOGY *survival*

CENTRAL NERVOUS SYSTEM CANCER 5-YEAR SURVIVAL



AJCC 6TH EDITION, COMBINED 2003-2004 DATA

Key: ■ UCH ■ STATE ■ NATIONAL

Hospital WINS major NIH GRANT for BRAIN DISORDER RESEARCH

The University of Colorado School of Medicine became one of just 25 sites nationwide to be named to join a newly created neurological research consortium.

The Network for Excellence in Neuroscience Clinical Trials (NeuroNEXT) was developed by the NIH's National Institute of Neurological Disorders and Stroke to speed up the development of new treatments in Phase II clinical trials for neurological disorders.

“We’ve seen the success (of this type of program) in oncology where researchers can rapidly improve outcomes for patients with cancer by collaborating and operating under one IRB,” says Timothy Vollmer, MD, director of the university’s neurological clinical research program.

The university received a seven-year, \$1.7 million grant through the competitive selection process. It is the only center in the vast Rocky Mountain region selected as a consortium member.



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UNIVERSITY OF COLORADO HOSPITAL is the Rocky Mountain region's *LEADING ACADEMIC MEDICAL CENTER*. It is recognized as the highest-performing academic hospital in the United States for delivering quality health care by the University HealthSystem Consortium, and is ranked as the best hospital in the Denver metro area and one of the best in the country by U.S. News & World Report. UCH is best known as an innovator in patient care and often as one of the first hospitals to bring new medicine to the patients' bedside. The hospital's physicians are affiliated with the University of Colorado School of Medicine, part of the University of Colorado system. Based on the expansive Anschutz Medical Campus in Aurora, CO, the hospital is where patient care, research and education converge to establish the future of health care delivery.

