

The New York Times and national media are currently



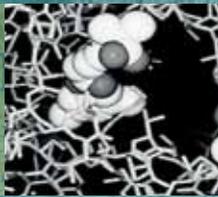
...injuries and severe burns. ... through a partnership with VCU Medical Center, ... has gained a national reputation for trauma

HealthNews



...ation for our quality. ... e were named to more US News World Report lists than any ... hospital in Central Virginia.

On hunting for Parkinson's cure



VCU's new head ... disease is unlike

...ves the ... e cause

...dria, those working with him are pursuing a range of theories and possible treatments — even a type of low-level light therapy studied

VCU Using ... Aneurysms

By Virginia Commonwealth University Medical Center
2009 - 10:40:44 AM



VCU Medical Center

Every Day, A New Discovery.®



V i r g i n i a C o m m o n w e a l t h U n i v e r s i t y

09

annual report

Our top stories of 2009 demonstrate the groundbreaking — and news-making — advancements in research, education and patient care happening here, every day.

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I am pleased to introduce the VCU Medical Center's annual report. I believe you will be inspired by the stories of critically ill patients restored to health, the national recognition of our programs and people, and the innovative research conducted by our faculty colleagues.

In fact, there were so many examples of personal triumphs and achievements at the medical center this past year, that it was a challenge to determine which ones to feature.

The VCU Medical Center continues its climb as one of the pre-eminent, comprehensive academic health centers in the nation. Our medical center includes five health sciences schools — Allied Health Professions, Dentistry, Medicine, Nursing and Pharmacy, as well as a developing public health school — along with the clinical delivery elements of the VCU Health System. With all of these components striving for excellence — every day is a new discovery of knowledge, innovation and dedication.



Thematically, this year we have showcased our increased presence and recognition on the national and international stage. We have highlighted therapeutic breakthroughs to treat intractable clinical problems, innovative programs to keep patients independent at home and international outreach efforts by our faculty and students. Individual scholarly achievements are included along with features on our multidisciplinary teams that care for patients and conduct research. The report also features new teaching and research facilities, including two that recently opened: the Molecular Medicine Research and the W. Baxter Perkinson, Jr. buildings.

There are also many examples of the successes of our educational programs that span the entire breadth of health professional and graduate sciences. For instance, we have included some of the educational programs that touch communities across the state and those that use innovative technologies for communicating to distant sites. This year was also the first full year of operations for our new Critical Care Hospital, a facility that has clearly fulfilled its destiny as the tertiary referral center for critically ill patients in the region. Finally, since evidence is the currency of achievement, you will find assorted rankings, accolades and statistics that clearly reflect one of the nation's leading academic health centers.

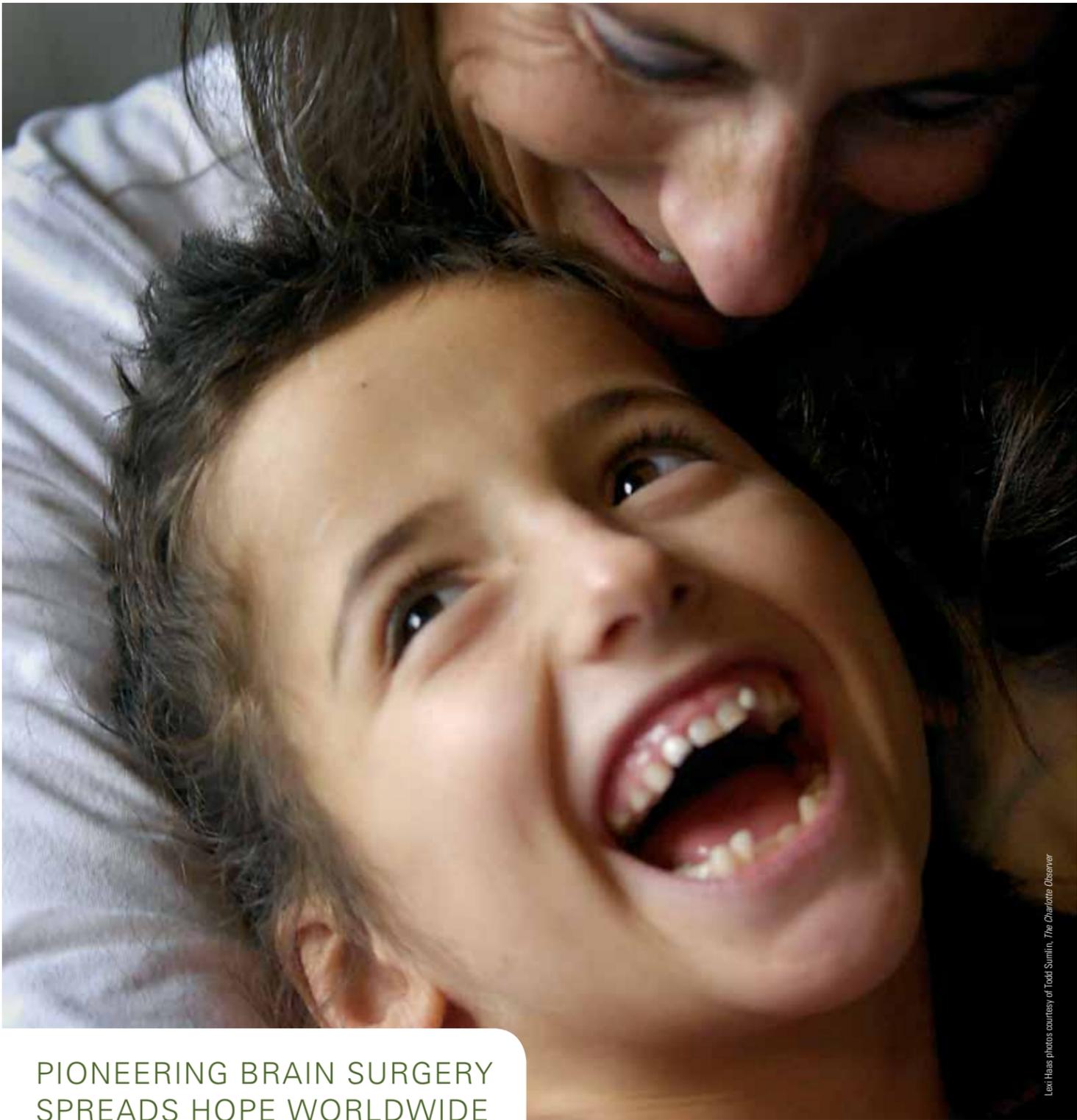
I am proud of the accomplishments of my colleagues and invite you to read their fascinating stories of achievement in this report. I am confident that you, too, will be stirred by the remarkable advances at the VCU Medical Center and the patients that were affected by its many talented physicians, nurses, dentists, pharmacists and therapists.

In sum, I am grateful for the opportunity to open this report and proud to represent the thousands of individuals who are the heart and soul of the VCU Medical Center.

Sincerely,

A handwritten signature in black ink that reads "Sheldon Retchin, M.D." The signature is fluid and cursive.

Sheldon M. Retchin, M.D., M.S.P.H.
CEO, VCU Health System
Vice President, VCU Health Sciences



Lexi Haas photos courtesy of Todd Sumlin, The Charlotte Observer

PIONEERING BRAIN SURGERY SPREADS HOPE WORLDWIDE



A deep brain stimulator that VCU Medical Center doctors implanted in the brain of a 7-year-old girl who has been wracked with disabling body spasms since infancy is giving her parents — and other parents of brain-damaged children — new hope that the therapy might work.

Since the surgery, Lexi Haas has shown small signs the stimulator is functioning as intended by disrupting the abnormal signals causing her erratic body movements and stiffened muscles — a condition called dystonia, a movement disorder like torticollis, essential tremor and Parkinson’s disease.

Lexi, who lives with her family in North Carolina, has an IQ of 160 but is unable to walk and speak. She communicates with her parents and siblings through eye and tongue movements.

Since the stimulator was activated, Lexi’s muscles have relaxed and she has been able to perform simple movements like touching her head and face — even holding objects — something she wasn’t able to do before.

VCU neurosurgeon Kathryn L. Holloway, M.D., along with a team of doctors, implanted the stimulator in July 2009 and activated it five weeks later.

The procedure is believed to be the first documented use of deep brain stimulation in a patient definitively diagnosed with kernicterus — a rare type of brain damage caused by untreated jaundice at birth. The resulting brain damage caused Lexi’s dystonia.

The Charlotte Observer chronicled Lexi’s struggles and her family’s hope with a series of articles last summer. Lexi’s story also caught the attention of ABC News, which brought national attention to kernicterus in an online story that posted the day of her surgery.

“This little girl has been trapped in her body for seven years. If we can provide some relief for her and enable her to live a more normal life, it will be tremendous,” said Steven Shapiro, M.D., a pediatric neurologist at the VCU Medical Center, who has been treating Lexi since 2004 and conducting kernicterus research for more than 25 years.

During the surgical procedure to implant the stimulator, Holloway and a team of neurologists guided tiny electrodes into Lexi’s brain to the site where the abnormal signals causing her stiffness and uncontrollable movements originate. During a second procedure, the electrodes were connected to a stimulator.

“The entire medical team has been inspired by Lexi’s courage and the courage and love of her family, and we were not going to quit until we have done the absolute best we can do for Lexi,” Holloway said. “The full benefit of the stimulator may not be realized for some time, and we’re all looking forward to seeing how she progresses.”

“The entire medical team has been inspired by Lexi’s courage and the courage and love of her family, and we were not going to quit until we have done the absolute best we can do. ...”

– Kathryn L. Holloway, M.D., associate professor, VCU Department of Neurosurgery



Kathryn L. Holloway, M.D., associate professor, VCU Department of Neurosurgery

The past year realized continued growth, innovation and recognition of excellence in our mission to provide the best medical care.

Among the nation's top hospitals ■ For the third consecutive year, the VCU Health System earned a ranking in U.S. News Media Group's 2009 publication of *America's Best Hospitals*. The VCU Health System was one of 174 medical centers named among the best out of a survey of about 4,800 hospitals and is the only medical center in Central Virginia to be ranked in the report. Specifically, the VCU Health System was noted for excellence in four specialty areas.

"Our strategic plan is about commitment to top-notch specialty programs, leading-edge research and superior workforce development," said Sheldon M. Retchin, M.D., M.S.P.H., VCU Health System CEO and vice president for VCU Health Sciences. "Having four programs ranked among the very best in America reaffirms our vision to be the pre-eminent academic health center in the nation."



From left: Todd W. Gehr, M.D., chair, VCU Division of Nephrology; David X. Cifu, M.D., VCU Herman Jacob Flax, M.D., Professor in Physical Medicine and Rehabilitation, and chair, VCU Department of Physical Medicine and Rehabilitation; Robert S. Adelaar, M.D., John A. Cardea Professor in Orthopaedic Surgery and chair, VCU Department of Orthopaedic Surgery; Vigneshwar Kasirajan, M.D., chair, VCU Division of Cardiothoracic Surgery; and George W. Vetrovec, M.D., Martha M. and Harold W. Kimmerling, M.D., Chair in Cardiology and chair, Division of Cardiology, VCU Pauley Heart Center

- **VCU Pauley Heart Center, 44th.** The VCU Pauley Heart Center is recognized nationally for its heart failure and heart-transplantation programs and was among the first in the U.S. to implant the CardioWest Total Artificial Heart, the only total artificial heart approved by the U.S. Food and Drug Administration. The Pauley Heart Center's superior perfor-

mance resulted in the VCU Health System's recognition as one of the top 100 U.S. hospitals for cardiovascular care, according to a Thomson Reuters study.

- **VCU Division of Nephrology, 44th.** The Division of Nephrology provides specialized care of patients with a variety of kidney disorders and hypertension. The VCU Health System is among the nation's most active and successful kidney-transplant hospitals. The VCU Hume-Lee Transplant Center performs more than 100 kidney transplants each year and has performed more than 2,000 kidney transplants and 100 pancreas transplants for Type 1 diabetes.
- **VCU Department of Orthopaedic Surgery, 45th.** The Department of Orthopaedic Surgery is recognized as one of the most comprehensive and experienced programs in the country. Orthopaedic specialists are dedicated to helping patients with complex acute and chronic conditions stemming from injury, arthritis and other medical conditions that affect the body's bones, joints, muscles, spine and nerves. Using a multidisciplinary approach, the orthopaedic team provides patients with the most appropriate and responsive treatment available.
- **VCU Department of Physical Medicine and Rehabilitation, 20th.** The Department of Physical Medicine and Rehabilitation is noted for its treatment of adult and pediatric traumatic brain and spinal cord injuries, return-to-work and pain management therapies, and electrodiagnostic services. The department also plays an integral role in the VCU Center for Rehabilitation Science and Engineering, or CERSE, a partnership of the Virginia Department of Rehabilitative Services and VCU's schools of Allied Health Professions, Education, Engineering and Medicine. The center provides physical medicine and rehabilitation services to address the needs of America's warriors and heroes, children and adults with disabilities, and their families.



Artificial heart implant milestone ■ The VCU Pauley Heart Center reached a milestone in artificial heart implant technology — transforming the life of its 25th patient, Joe Cox.

In the little more than three years since a cardiac surgery team at VCU performed the first artificial heart implant on the East Coast, the Pauley Heart Center has seen an 85 percent survival rate among patients who undergo the procedure, sometimes referred to as a "bridge to transplant" since it can help a patient survive until a heart transplant can be performed, and a more than 95 percent survival rate among those who are then transplanted with donor hearts.

"Keep in mind that these patients all had a predicted 100 percent mortality without support from the Total Artificial Heart," said Vigneshwar Kasirajan, M.D., chair of cardiothoracic surgery and head of the transplant team at VCU.

The CardioWest Total Artificial Heart is currently approved as a bridge to human heart transplant for patients dying from end-stage biventricular failure. It is the only device that provides immediate, safe blood flow through both ventricles and is the first and only FDA-approved total artificial heart in the world. The VCU Medical Center began performing the procedure in 2006.

The VCU Pauley Heart Center is among the most active of the 12 artificial heart implant centers in the U.S., according to Don Issacs of SynCardia Systems Inc. In 2009, the company named the VCU Medical Center's artificial heart transplant program one of the top four in the world and recognized it for a second straight year as a CardioWest 100% Center, meaning the medical center bridged 100 percent of its patients who received a CardioWest artificial heart to a donor heart transplant in 2008.



Seal of approval ■ The Joint Commission awarded the VCU Pauley Heart Center the Disease-Specific Care Certification for ventricular assist devices, a Gold Seal of Approval for health care quality.

To earn this distinction, a disease management program voluntarily undergoes an extensive, unannounced, on-site evaluation by a team of Joint Commission reviewers every two years.

"This certification means that the VCU Pauley Heart Center does the right things and does them well for ventricular assist device patients," said Jean E. Range, M.S., R.N., CPHQ, executive director, Disease-Specific Care Certification, The Joint Commission.

The device is a mechanical pump that works with the patient's own heart to pump sufficient blood throughout the body and is used as a "bridge to transplant."

The Joint Commission launched its Disease-Specific Care Certification program in 2002. It is the first program of its kind in the country to certify disease management programs.

"This certification means that the VCU Pauley Heart Center does the right things and does them well for ventricular assist device patients."

— Jean E. Range, M.S., R.N., CPHQ, executive director, Disease-Specific Care Certification, The Joint Commission



Peter Boling, M.D., (right) professor, VCU Department of Internal Medicine

“The house call program helped cut in half the number of days these patients spent in the hospital, saving the medical center as much as \$2 million.” – *Los Angeles Times*

PROGRAM PROVES IN-HOME VISITS CUT HEALTH CARE COSTS

Twenty-five years ago, internal medicine professor Peter Boling, M.D., started his house calls program for elderly patients who had difficulty getting to their appointments at the medical center. Some saw it as a throwback to the days when physicians drove a horse and buggy to visit their patients instead of the other way around.

In today’s ongoing health care reform debates, house calls are being discussed as an option that has the potential to save costs as well as improve care. In fact, Boling helped craft language for the Independence at Home Act that advocates home-delivered care for individuals with functional impairment, high costs and multiple illnesses.

The Aug. 25, 2009, edition of the *Los Angeles Times* details Boling’s house calls program and includes data from a study by the VCU Medical Center that looks at recently discharged patients who are seen in the program. The news article reports ... “the house call program helped cut in half the number of days these patients spent in the hospital, saving the medical center as much as \$2 million.”

The *Los Angeles Times* article, “Getting cheaper, better healthcare at home?” was picked up by the *Chicago Tribune* and was the top story in the Tuesday, Aug. 25, e-mail blast from America’s Health Insurance Plans to health plan executives. Boling’s house calls program also received coverage on “NBC Nightly News” and CBS News.

Breast imaging accreditation ■ The VCU Breast Imaging Center’s Nelson Clinic and Stony Point facilities were awarded three-year terms of accreditation in mammography by the American College of Radiology (ACR). Facilities that earn accreditation have achieved high practice standards in image quality, personnel, equipment and quality control procedures.

Both facilities are also designated Breast Imaging Centers of Excellence by the ACR for achieving accreditation in not only mammography but also stereotactic breast biopsy, breast ultrasound and ultrasound-guided breast biopsy.

Aneurysm treatment ■ John Reavey-Cantwell, M.S., M.D., an endovascular neurosurgeon and assistant professor in the VCU Department of Neurosurgery, was among the first in the country to treat a patient using an FDA-approved liquid embolic system to fill wide-necked brain aneurysms.

“By using a new liquid treatment called Onyx HD 500, we are able to use a minimally invasive endovascular procedure to treat the aneurysm from within the blood vessel,” said Reavey-Cantwell, the Richard Roland Reynolds Chair in Neurosurgery. He added, “Wide-necked aneurysms that were previously untreatable may now be treated with this new agent.”

By filling the aneurysm sac or pocket with the Onyx liquid (known to solidify in approximately five minutes), blood flow into the aneurysm is blocked, helping to prevent the aneurysm from rupturing or increasing in size.

The VCU Medical Center is one of about 25 hospitals in the country to perform this procedure as an alternative to conventional surgery.

Hand-hygiene study ■ Due to its very strong hand-hygiene program — with compliance greater than 90 percent — the VCU Medical Center was chosen as a study site to test a new hand-hygiene monitor. The device could greatly reduce the number of hospital-acquired infections nationwide since most are transmitted through contact due to poor hand-washing practices.

The wireless, credit-card-sized sensor, worn like a name badge, can detect whether health care workers have properly washed their hands upon entering a patient’s room. It is programmed to work with a small, wall-mounted sensor to detect the presence of ethyl alcohol, the most common ingredient in hand-cleansing solutions used in hospitals.

Workers place their hands near the badge to obtain a reading. Lights on the badge glow red if no alcohol is present, indicating the need to wash hands. A green light indicates alcohol is present.

Experts say nearly 2 million hospital-acquired infections occur each year, resulting in about 99,000 deaths and more than 90,000 illnesses. Research shows that simple hand washing by medical staff could cut the number of infections in half.

“Health care workers don’t deliberately avoid washing their hands; they get distracted or are so busy moving from one thing to the next they don’t remember to do it,” said principal investigator Michael Edmond, M.D., chief hospital epidemiologist and the Richard P. Wenzel, M.D., M.Sc., Professor of Internal Medicine. “Until now, the only way we’ve been able to track hand-washing habits is through direct observation. This new system continuously monitors and records data and serves as a constant reminder.”

The hand-hygiene program is part of an aggressive environmental and patient safety campaign, “Safety First, Every Day.” The goal is to make the VCU Medical Center the safest health care institution in the country with no events of preventable harm to patients, employees and visitors.

Specialized transport system ■ The VCU Medical Center introduced a high-tech mobile intensive care stretcher, or MOBI, to transport critically ill patients who need highly specialized care and equipment.

“The MOBI transport system enhances our ability to bring critically ill patients to the VCU Medical Center” via ambulance, said Wanda Miller, R.N.,

nursing director of the VCU Pauley Heart Center. “We have retrofitted and modified the MOBI to accommodate the different and specific equipment needed for a complex transport.”

Clinical demands of critically ill patients often exceed the capabilities of regular ground transportation services. MOBI was developed in collaboration with the Richmond Ambulance Authority and VCU LifeEvac to support the capabilities of a defibrillator, intra-aortic balloon pump, ventilator, transport ICU monitor, ECMO and ventricular assist devices.



Mobile intensive care stretcher

Level I trauma center ■ For a second time, the VCU Medical Center’s Division of Trauma, Critical Care and Emergency Surgery received a three-year verification from the American College of Surgeons (ACS) as a nationally recognized Level I trauma center.

“This is the highest level of verification trauma centers can receive and is a reflection of our dedication to providing exceptional performance in the care of the injured patients and the educational and research aspects of trauma care,” said Rao Ivatury, M.D., chair of the Department of Surgery’s Division of Trauma, Critical Care and Emergency Surgery.

The recognition is awarded to hospitals that demonstrate their ability to provide the highest quality of care for all injured patients. The ACS recognized 49 Level I trauma centers throughout the country.

“The station has already been used successfully. Pediatric burn care is a holistic, multidisciplinary process and the ability to complete wound care quickly and with a minimum amount of pain is essential.”

– Jacob Swenson, clinical coordinator, Evans-Haynes Burn Center

Distraction station for burn patients ■ A severe burn can be the most painful and traumatic experience, especially when the patient is a young child, incapable of understanding pain and the healing process. The VCU Evans-Haynes Burn Center has a method that may help. Through a grant from the Richmond Auto Dealers Association, facilitated by the VCU Children’s Medical Center, the Evans-Haynes Burn Center installed the Vecta Distraction Station.

The Vecta Distraction Station relaxes and engages the patient with multiple-sensory stimulation. The mobile station features fiber-optic cable lights, a bubble column with varying colors, projected imagery, soothing vibrations and pure essential oil aromatherapy with different scents.

According to Jacob Swenson, clinical coordinator for the Evans-Haynes Burn Center, this combination, paired with music, arouses multiple senses to distract the patient and allows for quick wound care with nominal pain.

To further engross the patient, an attachable squeeze ball controller lets a patient control the bubble column.

“The station has already been used successfully,” Swenson said. “Pediatric burn care is a holistic, multidisciplinary process and the ability to complete wound care quickly and with a minimum amount of pain is essential.”

The unit will be utilized in a pain research study to determine if it helps reduce the need for pain medicine required and if it decreases recovery time.

Therapy for brain injuries ■ VCU’s Department of Physical Medicine and Rehabilitation is studying a new therapy that has the potential to change treatment strategies for traumatic brain injury patients. One of the only programs of its kind in the country, the First Steps Acute Neurobehavioral and Cognitive Intervention (FANCI) program teaches patients with brain injuries about survival and treatment. FANCI is the focus of a randomized, controlled trial, which is being made possible by a five-year grant from the National Institutes of Health and the National Institute of Child Health and Human Development.

“Many people’s needs are not fully addressed by existing systems of care. FANCI aims to meet these needs by serving as a resource for brain injury survivors, family members and other caregivers,” said Janet Niemeier, Ph.D., associate professor in the School of Medicine’s Department of Physical Medicine and Rehabilitation.

According to Niemeier, more than 1.4 million people a year in the country begin confronting life with the medical, cognitive and psychosocial challenges resulting from traumatic brain injury.



Vecta Distraction Station at the VCU Evans-Haynes Burn Center

NEW COOLING TREATMENT SPIKES CARDIAC ARREST SURVIVAL RATES



Todd Van de Bussche, VCU LifeEvac clinical educator

VCU Medical Center and the Richmond Ambulance Authority improved resuscitation and survival rates dramatically for cardiac arrest patients through a new therapeutic hypothermia protocol.

The Advanced Resuscitation Cooling Therapeutics and Intensive Care Center initiative, or ARCTIC, has two goals: to restart the heart quickly following onset of cardiac arrest, and to protect the brain by training paramedics to lower a patient’s body temperature in the field and then follow up at the hospital with strategies to improve the odds of survival.

It’s the most comprehensive program of its kind in the U.S. and has resulted in an almost twofold improvement in the return of spontaneous

circulation, from 25 percent in 2001 using conventional treatments to 46 percent in 2008. In turn, the survival rate to hospital discharge improved from 9.7 percent in 2003 to 17.9 percent at the end of 2008. The national average is less than 7 percent.

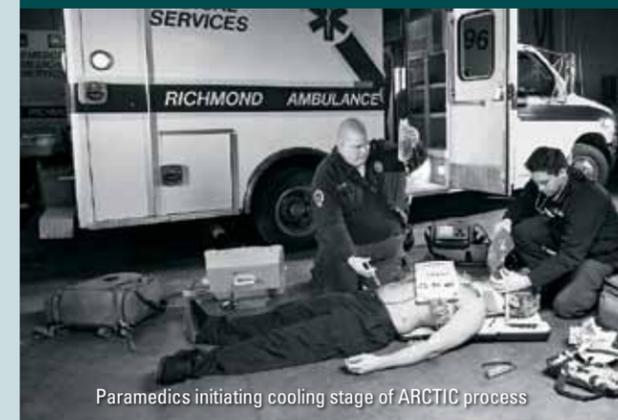
“What we now know is that we have to protect the brain and vital organs during resuscitation and after the heart is restarted, and this has led to a totally new strategy for how we treat cardiac arrest patients,” said Joseph P. Ornato, M.D., chair in the Department of Emergency Medicine at the VCU School of Medicine and operational medical director of the Richmond Ambulance Authority.

Ironically, among those who beat the odds is Todd Van de Bussche, clinical educator for VCU LifeEvac, who helped implement the protocol. As reported in the Nov. 23, 2009, *Richmond Times-Dispatch* and other Media General papers, Van de Bussche suffered a heart attack at his Stafford County, Va., home on Election Day 2008. Bad weather prevented an airlift to VCU Medical Center so a VCU LifeEvac crew transported Van de Bussche by ambulance to Richmond, administering the resuscitation cooling technique during the trip.

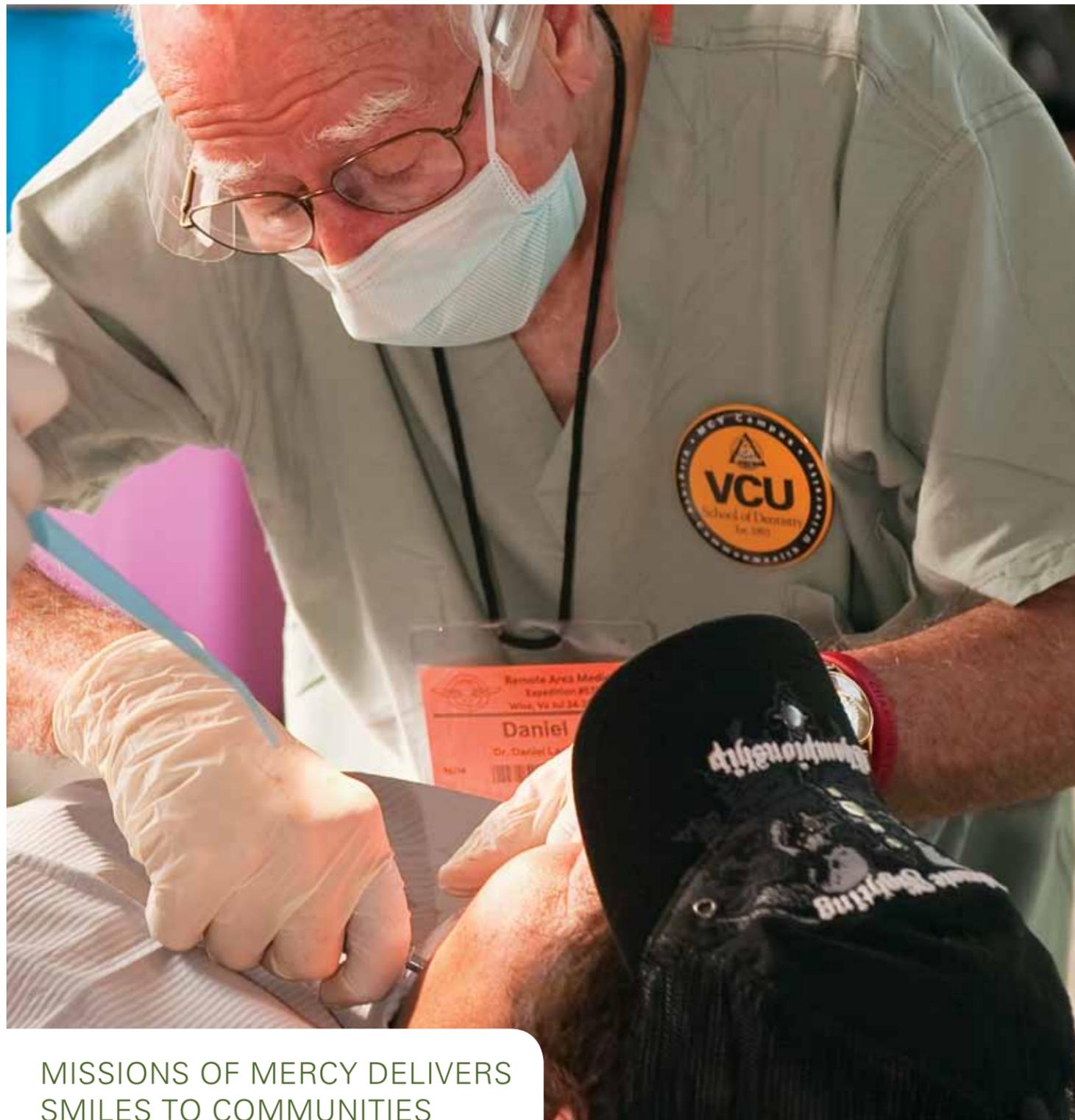
“Realistically, I should be sitting in a nursing home right now having somebody fully taking care of me,” he told the paper. Thanks to the ARCTIC program, Van de Bussche suffered no permanent damage, and was back at work full time within a month.

“Realistically, I should be sitting in a nursing home right now having somebody fully taking care of me.”

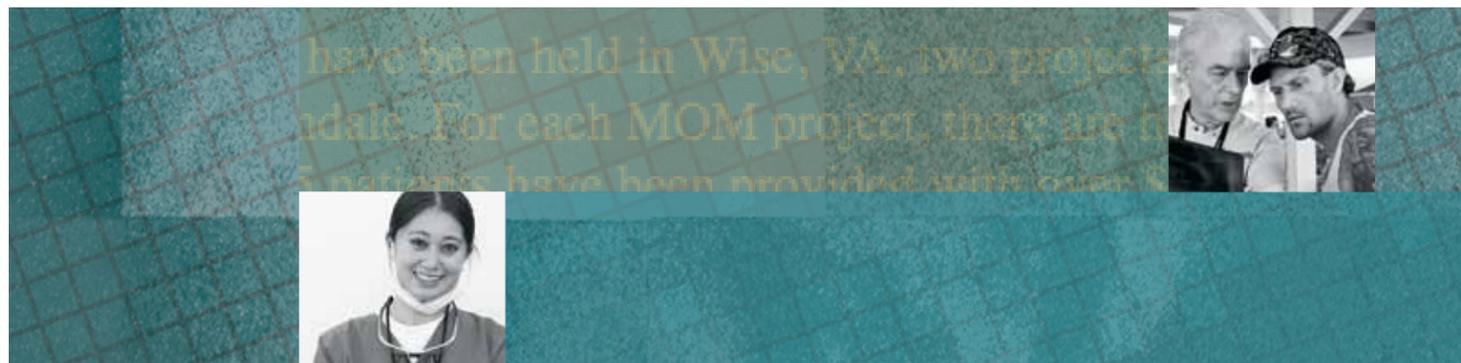
– Todd Van de Bussche, VCU LifeEvac clinical educator



Paramedics initiating cooling stage of ARCTIC process



MISSIONS OF MERCY DELIVERS SMILES TO COMMUNITIES



One of the largest factors in Virginians' ability to access dental care services is geography. While the state's large population centers may have a surplus of dentists and higher paying jobs, in rural areas the dentist-to-patient ratio can be as low as one dentist to more than 5,000 individuals.

Ten years ago, the Virginia Dental Association partnered with the Virginia Health Care Foundation and the VCU School of Dentistry and initiated Missions of Mercy (MOM) to help provide dental care for uninsured and underserved rural populations of Virginia.

From the humble beginnings of six beach chairs staffed by dental residents in Wise County's Lonesome Pine Airport hangar, the projects have grown and multiplied. In 2009, a total of 34 portable dental chairs filled an oversized tent at the Wise County Fairgrounds.

Additional missions have been hosted in many areas of the state, including the Eastern Shore, Goochland County, Northern Virginia, Norfolk, Petersburg, Grundy, Emporia and Martinsville.

During the missions, the VCU School of Dentistry plays a vital role not only in giving care, but also in providing staffing support, transportation and delivery of many volunteers including dental students, dental hygiene students, advanced education students, faculty and staff.

News of the missions resonates from the Appalachian Mountains to the pages of *The New York Times Magazine*. Virginia's MOM projects have broken records for the largest two- and three-day dental outreach clinics ever conducted in the U.S. They have served as models for other states that now conduct their own missions.

The Wise MOM project takes place each year during the last weekend in July. Students and volunteer dentists set up a field clinic that, in many respects, resembles a MASH unit. For three days, portable dental chairs, dental units, X-ray machines and sterilization facilities comprise the clinical space.

The clinic accommodates thousands of patients who start lining up the night before to ensure that they will see a dentist. Time moves quickly with an effort to provide at least one procedure for every person who seeks treatment.

"I have never met people who were so appreciative and friendly as I did at the Wise MOM project," said Oscar Vega, a VCU dental student. "Every single patient I encountered thanked me for donating my time and efforts to relieve them from pain."

"I have never met people who were so appreciative and friendly as I did at the Wise MOM project."

– Oscar Vega, dental student



Missions of Mercy, Wise County, Va.

Our faculty- and student-led outreach efforts impact the quality of patient care and raise awareness of important health topics globally as well as locally.

Top: Michelle Whitehurst-Cook, M.D., associate dean of admissions, VCU School of Medicine, with patient and medical students at the RAM Volunteer Corps' clinic

Bottom: Sallie D. Mayer, Pharm.D., M.B.A., BCPS, assistant professor of pharmacotherapy and outcomes sciences, with patient at a free clinic

Rural medical clinic ■ On July 24, 2009, a 20-member team from the VCU Medical Center began a six-hour drive to Virginia's Appalachian Mountains. They headed for the Remote Area Medical (RAM) Volunteer Corps' free health clinic, held annually at the Wise County fairgrounds, to volunteer their medical expertise for three days.

The clinic stands as one of more than a dozen across the country where RAM volunteers provide free medical, dental and vision care to surrounding communities. For the ninth year, Michelle Whitehurst-Cook, M.D., associate dean of admissions for the VCU School of Medicine, led the team to the mobile medical center. The clinic drew 2,700 patients from 16 states.

The sheer volume of patients provided students with many opportunities to participate, said second-year student Siddhartha Dante. Students helped with registering patients, triaging those who needed blood pressure and blood sugar screenings, collecting histories and physicals, and even assisting in dental procedures.



Dante said the medical school's Foundations of Clinical Medicine course prepared him for the clinic's demands: "It ensured that we were ready to perform skills, exams and interviews from the beginning."

An estimated 25,000 people have received care in the past 10 years.

Comprehensive care for city residents ■ The free clinic on Cowardin Avenue in downtown Richmond, Va., bustled with activity on Tuesday nights in the fall of 2009 as eight second-year students from the VCU schools of Medicine and Pharmacy provided care for some of the city's medically underserved populations.

Through a partnership with CrossOver Ministry, a nonprofit organization that provides health care to the uninsured of greater Richmond, students gained hands-on experience in the practice of medicine as they cared for patients and provided them the treatment to manage chronic and acute illnesses like hypertension, diabetes, arthritis and back pain.

"We've created a new teaching model for these students so that they are able to truly practice medicine, and focus on continuity of care — not just act as observers," said Steven Crossman, M.D., associate professor in the VCU Department of Family Medicine and medical director for the International/Inner City/Rural Preceptorship, through which the medical students are participating in the partnership.

"Collaborating with medical students has provided a new perspective regarding patient care, and it will definitely shape me into a better-rounded pharmacist," said Lauren Cox, a second-year pharmacy student. "In this particular setting, patient care is first and foremost, and being surrounded by such a kind and caring team of health professionals and staff has helped me realize the gravity and importance of providing quality medical care to those who need it the most."

Telemedicine program ■ Three years ago, David Lanning, M.D., Ph.D., assistant professor in the VCU Division of Pediatric Surgery, made his first trip to St. Vincent on behalf of the International Hospital for Children, a nonprofit humanitarian organization that

provides pediatric surgical, diagnostic and preventive care to the world's critically ill children. Last year, he performed his first post-op consultation with patients and physicians on the island — from Richmond, Va.

"When we're there for that week, we can do critical operations. When we leave, it's hard to relay care for these patients," Lanning said.

In 2009, he and general surgery resident Frank Margaron, M.D., developed a telemedicine program at St. Vincent, establishing a continuing line of communication between doctors at VCU Medical Center and St. Vincent physicians.

Using telemedicine capabilities "we can assist local general surgeons in caring for these children when we aren't there," said Lanning, who's assisted remotely with two pediatric operations. "In addition, a number of specialties including neurosurgery, orthopaedic surgery, cardiology, ophthalmology and others will be able to take advantage of telemedicine's potential."

Trauma management in the Amazon ■ The VCU Medical Center, working with health care providers in Ecuador, developed a system for preventing and managing trauma injuries in the Amazonian provinces of the country. Developed by the VCU Division of Trauma, Critical Care and Emergency Surgery's International Trauma System Development Program, the system was created along with a basic trauma course to educate the area's own health care workers, administrators and directors.

Michel Aboutanos, M.D., M.P.H., associate professor in the Division of Trauma, Critical Care and Emergency Surgery in the VCU School of Medicine, presented his findings at the International Society of Surgery's 43rd World Congress of Surgery in Australia, detailing the project, which began in 2005.

With assistance from Francisco Mora, M.D., a post-doctoral fellow in the VCU Department of Surgery, and Edgar Rodas, M.D., a former VCU surgical resident, both Ecuadorian natives, Aboutanos used a "patient pathway system" to trace the management of the patient from the initial site of injury to the health care posts, provincial hospitals and later to definitive referral centers.

"The local participation was impressive, and the impact will clearly be felt in the empowerment of the local physicians and health care workers in the appropriate care of the traumatized patient in Morona Santiago, Ecuador," Aboutanos said.



Polytrauma model of care ■ David X. Cifu, M.D., VCU Department of Physical Medicine and Rehabilitation chair, calls the Polytrauma Rehabilitation Center at the Hunter Holmes McGuire Veterans Affairs Medical Center in Richmond, Va., "the most stimulating clinical setting" he's ever experienced. As chief of physical medicine and rehabilitation services at the VA medical center, Cifu leads a 16-physician team that provides clinical care and education programs and conducts research in polytrauma rehabilitation.

"It is extremely inspiring to be able to apply my clinical and academic expertise for the benefit of the heroes from the armed forces and veterans," said Cifu, also the VCU Herman Jacob Flax, M.D., Professor in Physical Medicine and Rehabilitation and the national director of physical medicine and rehabilitation for the Veterans Health Administration.

One of only four facilities in the country that provides intensive rehabilitative care to America's wounded warriors, the center plays a national leadership role in clinical, training and research programs, as well as providing regional oversight of VA polytrauma and spinal cord rehabilitation sites across the region and nation. The longstanding partnership between the VA and VCU extends across a wide array of areas, including research, student, resident and fellowship training, and the spectrum of physical medicine and rehabilitation clinical care.

As a model, the programs in Richmond are also having an international impact; a number of military health care professionals from across the globe have toured the polytrauma center at McGuire, including Great Britain, the Netherlands and South Korea. The center has also received regular visits from leaders of the U.S. Department of Defense, members of Congress and scores of representatives from other areas of the federal government.

"We're clearly on the national and international stage," Cifu said. "We're helping to support the VA and military health care missions through our clinical expertise, research advances and educational activities."



COURSES OFFER REAL-WORLD LESSONS IN GLOBAL HEALTH CARE



In addition to providing health care services to Virginians, the VCU schools of Medicine and Pharmacy and the VCU Department of Occupational Therapy look beyond U.S. borders to assist patients in marginalized and impoverished communities overseas.

As part of HOMBRE — the Honduras Outreach Medical Brigada Relief Effort — 23 first-year VCU medical students and six pharmacy students traveled to rural Honduras and the Dominican Republic in June 2009 to provide citizens there with basic clinical care, health education and more while putting their caring and beliefs into action. Students may see as many as 300 people a day suffering from a wide variety of ailments, including upper respiratory infection, parasites and anemia.

“This does give first-year students a way to maintain that energy, enthusiasm, that sense of caring, the altruism — all those good things that most people come into medicine with,” said Steven Crossman, M.D., site leader and director of undergraduate medical education for the VCU Department of Family Medicine. “And every year, there’s a wait list — so the interest from students is there.”

For 10 days, students worked alongside physicians, nurses and pharmacists to help residents of both urban and rural sites by working with families in clinics, visiting patients in their homes, providing care in schools and initiating public health projects, such as family-based water filtration systems.

“We saw a wide range of patients, from infants to the 90-year-old elders in the community. Some health problems, like hypertension and diabetes, were familiar to us, but we also got experiences with some specific diseases, like leptospirosis and parasites, endemic to the developing world,” said second-year medical student Kathryn Zedler, who traveled with a team to the Dominican Republic capital of Santo Domingo. “Whether or not I practice abroad, I think this trip has helped solidify my desire to do primary care, especially in underserved communities.”

A two-week course in disability culture provided similar experiences for occupational therapy students who spent two weeks in Ghana, in West Africa, in June 2009, with children with disabilities and their families.

VCU team members provided training to staff at a school for children with developmental disabilities, conducted an in-service for teachers and aides on safe transfer techniques and adapted school, self-care and play materials for children with disabilities.

Like HOMBRE, the occupational therapy service-learning elective allows VCU students the opportunity to provide care to underserved populations through medical outreach and gain a new perspective on international health care.

“For the students, the trip provides an opportunity to grow as professionals and stretch themselves beyond their Western comfort zone,” said Stacey Reynolds, Ph.D., assistant professor in the Department of Occupational Therapy, who led the trip. “A two-week trip is not going to have a lasting impact in the country, but our goal at VCU is to develop and cultivate ongoing relationships that may help provide better services for people with disabilities in the future.”

“We saw a wide range of patients, from infants to the 90-year-old elders in the community.”

– Kathryn Zedler, medical student



Farmville, Va., physician Mark Ryan, M.D., family medicine preceptor, VCU Department of Family Medicine, on a house call in Santo Domingo

Enriching academic programs and high-tech training protocols prepare our health science students to become tomorrow's medical care professionals.

Competitive matches ■ VCU's School of Medicine experienced an unprecedented Match Day — the day when thousands of medical students learn which residency programs they will attend. In the past five years, VCU has seen the percentage of its students who match increase steadily. In 2009, the university exceeded the national average (93 percent) with 96 percent of its students matching with a residency of their choice. Many VCU medical students matched in the highly competitive fields of radiology (17), anesthesiology (20) and primary care (56).

“Of our 170 students who participated in the match, I was pleased to see that 56 elected to pursue primary care specialties like family medicine, pediatrics and internal medicine,” said Jerome F. Strauss III, M.D., Ph.D., dean of the School of Medicine. “As we work to reverse the forecasted physician shortage, particularly in the primary care fields, I applaud the choice that these students have made. It's one that is vital to the future of our nation's health.”

Simulation training ■ A 33-year-old male arrives in the emergency room complaining of severe stomach pains. He appears disoriented, mumbling that he is “feeling sick.” The medical team quickly springs into action, asking him questions and checking his vitals. His pupils are dilated, his blood pressure is up and he begins to convulse.

“What next? What's the diagnosis?” a voice behind the team asks. They stop what they are doing and begin to discuss the next course of action.

In this scenario, the “patient” is a wireless, portable patient simulator that closely mimics the anatomical workings of the human body. The team is a group of third-year students from the VCU School of Medicine. In this setting, they have the luxury of time. Team members can talk through the clinical scenario, bounce ideas about diagnosis and treatment off each other and get important feedback about their performance or approach. Through hands-on simulation training at the new VCU Center for Human Simulation and Patient Safety, they have room to make mistakes and learn from them.

Those experiences are just a few of the benefits of simulation training and the reason why it has become a growing trend in medical schools across the country.

“We know that adults learn best when they are challenged. It engages them and forces them to think,” said Alan Dow, M.D., assistant dean of clinical curriculum and assistant professor of internal medicine at the VCU School of Medicine. “Here we can provide students with educational experiences that are not possible during the inner workings of a typical day.”

Dow said using the simulation center is where the future of medical education is headed. “Our goal is to take this form of training and continue to build it,” he said. “We see we have some really exciting opportunities in medical training to make people better doctors — make them more effective at procedures, more effective communicators, more effective at making diagnoses.”

Triple-badge degree ■ In collaboration with the VCU School of Medicine and its Department of Epidemiology and Community Health, the VCU Institute for Drug and Alcohol Studies established the International Program in Addiction Studies. Co-created and offered by VCU, King's College London and the University of Adelaide in Australia, this triple-badge online program offers students around the globe access to a Master of Science in Addiction Studies conferred by all three universities.



Third-year medical students practicing on simulator

While providing a firm grounding in the pharmacological and psychological aspects of addiction and evidence-based treatment methods, the program's particular emphasis on substance abuse policy, public health issues, program development and program evaluation make it unique among master's level programs in the U.S. and abroad.

Distance-education for rural communities ■ Two programs in the VCU School of Allied Health Professions aim to enhance the quality of health care for medically underserved populations in Virginia's Southwest region.

The VCU Department of Nurse Anesthesia launched a distance-education outreach program in 2004 to address the need for Certified Registered Nurse Anesthetists in rural Appalachian communities. In 2009, the department received an award exceeding \$700,000 to support this ongoing initiative.

Under the grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration, Division of Nursing, “VCU will establish a second Southwest Virginia outreach site in Roanoke, Va., enabling the program to increase the number and preparation of CRNAs working in rural and underserved communities,” said Michael D. Fallacaro, D.N.S., CRNA, the grant's principal investigator and department chair.

The first cohort of VCU Roanoke nurse anesthesia graduate students began study in fall 2009 leading to a Master of Science in Nurse Anesthesia or an optional Doctor of Nurse Anesthesia Practice degree.

Also in 2009, the VCU Program in Patient Counseling initiated course offerings via synchronistic distance education at the Higher Education Center of Southwest Virginia in Abingdon, Va., and the New College Institute in Martinsville, Va.

“In both areas, there is awareness of the need for trained clergy in various hospice and hospital environments,” said D. Mark Cooper, D.Min., associate professor and chair of the program. “Since most programs required travel out of the area, there are few clergy who have the needed training.”

The Program in Patient Counseling offers a Master of Science degree, a graduate certificate or a departmental intern certificate. Participating students also earn units of credit from the Association for Clinical Pastoral Education.



Distance-education classroom

More room for research ■

VCU dedicated a \$20 million addition to the VCU School of Dentistry, Virginia's only dental school, named in honor of alumnus and former Board of Visitors Rector W. Baxter Perkinson Jr., D.D.S. The four-story, 55,000-square-foot structure connects the School of Dentistry's existing Wood and Lyons buildings and provides additional clinical operatories, classrooms, seminar rooms, labs and faculty offices, allowing the school to increase student enrollment, expand research and improve patient access to care.

A side-street entrance accommodates valet parking and offers a convenient drop-off and pickup area for patients receiving care at all of the School of Dentistry clinics. The additional classroom seating allows the school to expand the D.D.S. program from 90 to 100 students each year, with recruitment focusing on students from the underserved areas of Virginia. The dental hygiene program will increase its enrollment from 20 to 40 new students annually.

The building also increases laboratory space for the Philips Institute of Oral and Craniofacial Molecular Biology, enabling faculty members to expand their oral cancer research in partnership with the VCU Massey Cancer Center and also to further dental bioengineering research through a cross-campus collaboration with the School of Engineering.



W. Baxter Perkinson, Jr. Building



INTERNATIONAL FELLOWSHIP OUTFITS VIRUS-HUNTER-IN-TRAINING



A dual love for medicine and for international travel would not necessarily lead you to Bangladesh. During the monsoon season. To study cholera. But that is where it's taking Alison Kuchta.

"Public policy, treating people, prevention — all these aspects of international health research appeal to me," explained Kuchta, who admires physicians who have learned to hone their diagnostic skills and techniques as they work without technologies like CT scans.

The M.D./Ph.D. student flew to Bangladesh in August 2009 for a yearlong fellowship supported by the National Institutes of Health's Fogarty International Center. This exposure to the field of public health will be an essential step in her growth as a physician-scientist focused on global medicine.

With an eye toward applying science's tools of vaccine development and field trials to real-world problems, Kuchta spent the Ph.D. phase of her training in the microbiology labs of Michael McVoy, Ph.D. The professor of pediatric infectious disease studies the biology of cytomegalovirus (CMV), and Kuchta's work with his team revolved around a protein that may be important in CMV's replication.

Kuchta headed to Bangladesh and toward the bacteria that causes cholera. Usually spread through contaminated water, its severe diarrhea and vomiting result in dehydration that can bring death within hours. It is easily controllable with IV fluids and supportive therapy, but not for those who have limited access to health care in Bangladesh's low-lying, flood-prone areas.

Before she left, she heard from other Fogarty students about the 1,000-bed tent that is erected annually to treat these patients. "I'll get very good at starting IVs on dehydrated patients," she said.

Kuchta is splitting her time between the clinic, the lab and epidemiologic efforts examining the factors that contribute to this disease's hold on Bangladesh. Her work in the research lab focuses on the body's immune cell response. Kuchta explained: "There are multiple strains of cholera, and kids are very susceptible; they can get it again and again. By adulthood, they are completely resistant. But current vaccines against the disease do not infer that lifelong immunity."

Researchers hope their work with the immune system's B and T cells will deliver an improved vaccine and, ultimately, improved health.

"Public policy, treating people, prevention — all these aspects of international health research appeal to me."

— Alison Kuchta, M.D./Ph.D. student, Fogarty scholar



Each day our researchers make progress toward improving our quality of life and our understanding of the world around us.

Higher NIH rankings ■ Increased research funding in 2008 earned the VCU schools of Medicine and Nursing significantly higher positions in National Institutes of Health rankings, released in 2009. The School of Medicine moved up six positions from No. 59 in 2007 to No. 53 for 2008, out of 126 ranked schools of medicine, and the School of Nursing moved from No. 23 in 2007, to No. 19, out of 82 ranked schools of nursing — higher than any other nursing school in Virginia.

The School of Medicine was awarded nearly \$63 million in 2008 from the NIH for medical research. The School of Nursing was awarded \$2.2 million for research that focused on improving the health of the nation.

In the most recent data released, the VCU School of Pharmacy had a dramatic increase in its rankings, moving from No. 38 in 2008 to No. 21 in 2009.

Cellular energy production ■ In a study published online in *Science Express*, VCU researchers, working with an international team, reported that Stat3, a protein previously known to control the activity of genes by acting in the cell nucleus, also plays a key role in cellular energy production. The team examined oxygen consumption in cultured cells and hearts of mice and discovered that when Stat3 protein was missing, cells consumed less oxygen and produced less ATP, the key molecular form of cellular energy.

“We have described a new pathway by which generation of ATP is regulated,” said principal investigator Andrew C. Lamer, M.D., Ph.D., professor of biochemistry and molecular biology in the VCU School of Medicine, co-leader of the Immune Mechanisms Program at the VCU Massey Cancer Center and the Martha Anne Hatcher Distinguished Professor in Oncology. “This pathway could suggest new ways for Stat3 to be therapeutically manipulated to treat a variety of diseases where there are imbalances between energy generation and energy demands such as occurs in cancer and heart disease.”

This study was funded by grants from the National Institutes of Health.

Liver cancer link ■ Researchers at the VCU Massey Cancer Center have identified a gene that plays a key role in regulating liver cancer progression, a discovery that could lead to new targeted therapeutic strategies to fight the highly aggressive disease.

“The expression of AEG-1 protein gradually increases as the disease becomes more aggressive. No other genes have been shown to be upregulated in such a high percentage of patients,” said Devanand Sarkar, Ph.D., M.B.B.S., assistant professor in the Department of Human and Molecular Genetics in the VCU School of Medicine, and Harrison Endowed Scholar in Cancer Research at Massey.

In the study, published online in the *Journal of Clinical Investigation*, the team found a significantly higher expression of the astrocyte elevated gene-1, or AEG-1, protein in more than 90 percent of tumor samples from hepatocellular carcinoma patients compared to normal human liver cells.

The team received grant support from The Goldhirsh Foundation, the National Institutes of Health, the Spanish National Health Institute and the Samuel Waxman Cancer Research Foundation.

Cancer-promoting gene ■ Studying cancer-promoting genes and melanoma cells, Paul B. Fisher, M.Ph., Ph.D., the Thelma Newmeyer Corman Endowed Chair in Cancer Research with the VCU Massey Cancer Center, is leading multiple studies to advance cancer research.

In one such study, Fisher and Seok-Geun Lee, Ph.D., assistant professor in the VCU Department of Human and Molecular Genetics, co-lead investigators, examined how astrocyte elevated gene-1, or AEG-1, may play a key role in regulating tumor progression in neuroblastoma, a form of cancer usually found in young children. This research was supported by grants from the National Institutes of Health, the Samuel Waxman Cancer Research Foundation, the Dana Foundation and the Goldhirsh Foundation.

Gene regulators ■ In the journal *Science*, the team led by Sarah Spiegel, Ph.D., professor and chair in the VCU Department of Biochemistry and Molecular Biology and co-leader of the VCU Massey Cancer Center’s Cancer Cell Biology Program, reported that the cell nucleus, which contains the DNA that codes for all of our genes, also contains and produces S1P that is important for the regulation of certain genes. Researchers have known that the nucleus contains several kinds of lipids, but their functions have remained unknown until now.

Spiegel, the Mann T. and Sara D. Lowry Professor in Oncology, is internationally recognized for her pioneering work on new lipid mediators that regulate cell growth and cell death. She and her colleagues first discovered the role of S1P in cell-growth regulation nearly a decade ago.



In this study, supported by a grant from the National Institutes of Health, the team demonstrated that S1P regulates genes by acting like a type of cancer chemotherapeutic drug known as histone deacetylase inhibitors. Findings could lead to a new generation of drugs to fight cancer and inflammatory disease.

Pediatric brain tumor prevention ■ A team of VCU researchers is studying the underlying causes of brain tumors in children to pinpoint the genetic changes that take place in healthy cells and transform them into cancer.

Through the VCU Medical Center’s Pediatric Brain Tumor Research Program, Timothy E. Van Meter, Ph.D., assistant professor in the VCU Department of Neurosurgery, and Gary Tye, M.D., pediatric neurosurgeon at the VCU Medical Center’s Harold F. Young Neurosurgical Center, are looking at the full spectrum of genes that play a role in pediatric brain tumor progression — the leading cause of death from childhood cancer.

The VCU team collaborated with investigators from the Labatt Brain Tumor Center at the Hospital for Sick Kids in Toronto. In a study published online in *Nature Genetics*, the international team reported the discovery of a molecular pathway that becomes genetically altered, resulting in the growth of a brain tumor called a medulloblastoma. The findings may help researchers develop a therapy to target the specific pathway and block the genetic changes from occurring, possibly preventing tumor growth.

This work was supported by the American Brain Tumor Association Cherise Fleming Translational Research Grant Award from the Childhood Brain Tumor Foundation and the VCU School of Medicine Harold F. Young Neurosurgical Center.

Paul B. Fisher, M.Ph., Ph.D., (center), the Thelma Newmeyer Corman Endowed Chair in Cancer Research with the VCU Massey Cancer Center, flanked by center director Gordon D. Ginder, M.D., with Congressional Whip Eric Cantor and his wife, Diana, during a March 13, 2009, tour of Massey filmed for the CBS “Early Show”



Mary Jo Grap, Ph.D., R.N., professor, VCU School of Nursing

The School of Nursing moved from No. 23 to No. 19, out of 82 ranked schools of nursing — higher than any other nursing school in Virginia.



Molecular Medicine Research Building

Olfactory injury and recovery ■ An international team of researchers found that administering the steroid dexamethasone following olfactory nerve injury minimizes the inflammatory response and allows for improved nerve regeneration and recovery, which may help repair damage to the sense of smell after a head injury.

Richard M. Costanzo, Ph.D., professor of physiology and biophysics, otolaryngology, neurology, and anatomy in the VCU School of Medicine, together with Masayoshi Kobayashi, M.D., Ph.D., with the Mie University Graduate School of Medicine in Japan, developed mouse models to compare differences in recovery outcomes. As reported in the journal *Chemical Senses*, they found a significant decrease in the inflammatory response to injury and improved recovery following the administration of dexamethasone.

The olfactory injury models used in this study will help researchers better understand the mechanisms underlying injury and recovery processes in the olfactory system and provide opportunities to explore new therapeutic interventions. The work was supported by grants from the National Institute on Deafness and Other Communication Disorders, and the Thomas F. and Kate Miller Jeffress Memorial Trust.

Renaissance research facility ■ The dedication of the \$71.5 million Molecular Medicine Research Building in April 2009 represents the completion of a major phase of the modernization of the academic health sciences center.

The eight-story, 125,000-square-foot research facility is the latest addition to the medical center

and houses 48 principal investigators and their staffs. The open layout out of the laboratory floors encourages interaction among researchers across disciplines.

The building is one of the projects partially funded by the 2002 General Obligation Bond package approved by Virginia voters. Total state funding for the projects exceeds \$42.1 million.

“The state General Assembly and Virginia’s citizens recognize the vital role of the VCU Medical Center to provide scientific breakthroughs that lead to advances in medical care,” said Sheldon M. Retchin, M.D., M.S.P.H., CEO of the VCU Health System and vice president for VCU Health Sciences. “Our researchers are achieving the latest biomedical discoveries through federally and industry-sponsored studies — this new building is home to some of the nation’s most productive scientists.”

Reduced emergency response time ■ The right mix and proper management of emergency medical service resources is important in improving response times and saving the lives of cardiac arrest patients, according to a VCU researcher.

Laura A. McLay, Ph.D., assistant professor in the Department of Statistical Sciences and Operations Research, used discrete optimization models to determine how best to stage ambulances and employees in a way that saves the most lives.

McLay, whose research was published in the journal *IIE Transactions*, consulted with the medical community, including Joseph Ornato, M.D., chair of the Department of Emergency Medicine, medical director of the Richmond Ambulance Authority and the operational medical director of Hanover Fire and EMS.

McLay examined the role of transportation in reducing response-time intervals, exploring how non-traditional resources can be dispatched to patients to supplement ambulances, including using medically equipped SUVs.

Heart disease-depression link ■ Over time, people who suffer from heart disease may be at an increased risk for developing major depression more than vice

versa, according to a VCU study performed by a research team led by Kenneth S. Kendler, M.D., professor of psychiatry and human genetics in VCU’s School of Medicine and the Rachel Brown Banks Distinguished Professor in Psychiatry.

The findings, reported in the journal *Archives of General Psychiatry*, help explain the magnitude and nature of the inter-relationship in risk between depression and coronary artery disease.

VCU researchers worked together with researchers from West Virginia University, the University of Southern California and the Karolinska Institute in Stockholm, Sweden.

The study was supported in part by the National Institute of Mental Health, the National Institute on Aging, the Swedish Scientific Council and the Swedish Department of Higher Education.

Rising rates of antibiotic use ■ The use of antibiotics at U.S. hospitals is rising despite concerns about fueling bacterial resistance, according to a new study. A team of VCU researchers led by Ronald E. Polk, Pharm.D., professor in the Department of Pharmacotherapy and Outcomes Science and the Nancy L. and Ronald H. McFarlane Pharmacy Professor, investigated the relationships between hospital use of antibiotics and their adverse outcomes. The team collaborated with the University HealthSystem Consortium (UHC) to study how the composition and volume of antibacterial drug use impacts the rates of bacterial resistance among hospital bacteria.

Working with UHC, the team assembled the largest network of hospitals in the U.S. to aid in the investigation. The research revealed that the most commonly recommended method to measure antimicrobial drug use in hospitals is unsuitable for comparing use among facilities and that restricted availability of selected antibacterials is associated with lower rates of resistance.

Next, Polk is organizing approximately 60 of the UHC hospitals into a multihospital network to allow members to share information with the goal of creating more appropriate antimicrobial prescribing among member hospitals, leading to reduced bacterial resistance.

Male infertility gene ■ VCU School of Medicine researchers have discovered a gene involved with the production of sperm that may contribute to male infertility.

One in six couples trying to conceive a baby is affected by infertility, according to the American Fertility Association — and in about half of these cases, sperm defects are often found to be the main or contributing cause.

In the study, published online in the *Proceedings of the National Academy of Sciences*, the team reported that male mice lacking a protein called meiosis expressed gene 1, or MEIG1, were sterile as a result of impaired spermiogenesis — the process that encompasses changes in the sperm head and the formation of the tail.

According to Jerome F. Strauss III, M.D., Ph.D., dean of the VCU School of Medicine, and Zhibing Zhang, M.D., Ph.D., assistant professor in the VCU Department of Obstetrics and Gynecology, the team also found that MEIG1 associates with the Parkin co-regulated gene protein, or PACRG protein, and that testicular PACRG protein is reduced in MEIG1-deficient mice. PACRG is thought to play a key role in assembly of the sperm tail, and the reproductive phenotype of PACRG-deficient mice mirrors that of the MEIG1-mutant mice.

“In addition to having an impact on fertility, the discovery identifies a new target for drug discovery for a much needed reversible male method of contraception,” Strauss said.

This work was supported by a grant from the National Institutes of Health.

Michael Miles, M.D., Ph.D., (right) professor, VCU Department of Pharmacology and Toxicology, with a group touring the Molecular Medicine Research Building



ON THE HORIZON

Gea-Ny Tseng, Ph.D.
Professor of physiology and biophysics, VCU School of Medicine

Working with an international team of investigators to study heart cells to determine the underlying causes of abnormal heart rhythms, in hopes to help researchers develop drug therapies to treat patients with acquired or congenital arrhythmias; funding from National Heart, Lung and Blood Institute

Susan G. Kornstein, M.D.
Professor of psychiatry, and obstetrics and gynecology, VCU School of Medicine, and executive director, VCU Institute for Women’s Health

Conducting a national study of a new treatment method for premenstrual dysphoric disorder, a severe and debilitating form of premenstrual syndrome; funding from National Institute of Mental Health



MASSEY'S EXPERIENCE AND EXPERTISE
TRANSLATES INTO NEW TREATMENT OPTIONS



In 1989, the VCU Massey Cancer Center Bone Marrow Transplant Program successfully performed its first procedure. In 2009, the program celebrated its 20th anniversary as a regional leader and national player in the field of bone marrow transplants. It ranks as one of the fastest growing programs in the nation, having doubled the number of transplants performed in three years.

Bone marrow transplants — often called stem cell transplants — are a complex treatment for patients with blood cancers, such as leukemias, lymphomas or multiple myeloma. Since new blood cells are produced in the bone marrow — the soft tissue inside the bones — transplants can utilize several different methods to replace diseased stem cells with stronger, healthier cells.

“Because of research, there’s been a tremendous growth in the treatment options available to patients,” said Harold Chung, M.D., associate professor of internal medicine at the VCU Medical Center and one of the program’s physician-researchers. “We are able to save more lives today than we were 20 years ago as a result.”

Massey became a National Marrow Donor Program transplant center in 1992 and more recently earned the honor as a Blue Distinction Center — one of just 70 nationwide — in recognition of the program’s depth of experience and good outcomes with patients. In addition, Massey has developed and participated in national clinical trials for diseases that previously could not be treated effectively.

Amy Thomas, from Kilmarnock, Va., participated in one such clinical trial in 2007. Diagnosed with acute myeloid leukemia on Feb. 3, 2007, she joined a trial two days later at the VCU Medical Center. The trial entailed a new treatment option combining high-dose chemotherapy with stem cell transplant. Thomas said her physician, J. Christian Barrett, M.D., assistant professor of medicine in the Department of Internal Medicine, felt the trial offered her the strongest chance for a cure. “This was also an opportunity to help others,” Thomas said, “whether I made it or not.”

Thomas reached her goal of remission, where she has remained for more than 30 months. She said the combination of great doctors and nurses, advanced medical technology obtained through research, the love and support of family and friends, and divine intervention helped her through her ordeal. “Each played a significant role in my reaching remission, and I’m here today sharing progress, celebrating hope,” Thomas said.

“We are able to save more lives today than we were 20 years ago ...”

– Harold Chung, M.D., associate professor,
Department of Internal Medicine



Through sponsored research, we transform our understanding of illness and disease and uncover new therapies and cures.

Multidisciplinary microbiome study ■ Humans are home to millions of normally harmless microbes. Like many other body sites, the vagina is colonized by complex communities of protective bacteria and other microorganisms. These communities of microbes — referred to as microbiomes — profoundly impact health via effects on the local microenvironment. Recently, the National Institutes of Health launched the Human Microbiome Project building on new technologies that permit rapid characterization and quantification of these complex microbial communities. As part of the project, VCU received a four-year, \$11.5 million grant that will bring together researchers from multiple disciplines across VCU's campuses. The team will study the relationship of

genetics, disease and altered physiological states such as pregnancy, menopause and diabetes to the composition of the vaginal microbiome.

Three researchers share co-principal investigator duties on the grant: Cynthia Cornelissen, Ph.D., professor, Department of Microbiology and Immunology; Lindon Eaves, Ph.D., distinguished professor of human genetics and psychiatry, Department of Human and Molecular Genetics and co-director of the Virginia Institute for Psychiatric and Behavioral Genetics; and Jerome F. Strauss III, M.D., Ph.D., dean, School of Medicine.

Biobehavioral center of excellence ■ The VCU School of Nursing expanded its interdisciplinary biobehavioral nursing research capacity thanks to a \$2.3 million grant from the National Institute of Nursing Research, part of the National Institutes of Health. The five-year grant supports the development of a P30 Center of Excellence in Biobehavioral

Approaches to Symptom Management to facilitate the work of independent researchers in a mature environment for clinically focused research.

“Through this grant, the VCU School of Nursing will strengthen its position as a leader in biobehavioral research,” said Nancy F. Langston, Ph.D., R.N., FAAN, dean of the nursing school.

The center will support the work of several beginning nursing researchers who will explore the symptoms and impact of fatigue in a variety of patients, including women with fibromyalgia, women with breast cancer, pregnant women, women with risk for cardiometabolic illness and individuals with sickle cell disease.

Safer thrombosis therapy ■ Deep vein thrombosis and pulmonary embolism, two life-threatening thrombotic disorders, affect approximately 3 million patients in the U.S. annually. Heparin, the most common drug treatment, indirectly inhibits two critical enzymes in the coagulation process, thrombin and factor Xa. However, heparin therapy can cause a number of side effects, primarily bleeding complications. In addition, the anticoagulant drug cannot completely nullify the clot-bound enzymes. Umesh Desai, Ph.D., professor of medicinal chemistry in the VCU School of Pharmacy, received a \$1.5 million NIH-National Heart, Lung and Blood Institute grant to discover a drug that directly reduces the function of thrombin and factor Xa. Such a drug could lower bleeding episodes and provide a more effective, safer anticoagulation therapy for cardiovascular disorders.

Schizophrenia detection markers ■ The VCU School of Pharmacy's Center for Biomarker Research and Personalized Medicine received a \$4.5 million grant from the National Institute of Mental Health to detect schizophrenia methylation markers that could lead to better drug therapies to fight the devastating mental illness.

Because methylation is directly related to gene expression and can shed a unique light on disease mechanisms, DNA methylation studies represent a particularly

promising complement to traditional genetic studies, said principal investigator Edwin Van den Oord, Ph.D., pharmacy professor and director of the center.

DNA methylation is a process that changes how genes work through chemically modifying DNA. Methylation markers are accessible at the stable DNA level, making them easy to use in clinical settings to improve diagnosis and individualize drug treatment. The first stage of the project involves a whole-genome search for methylation markers associated with schizophrenia.

Innovative tools to fight infectious disease ■ An award by the Bill & Melinda Gates Foundation recognized VCU as a center of excellence in the study of important infectious diseases. The foundation's \$100,000 Grand Challenges Explorations grant supports an innovative global health research project conducted by Luiz Shozo Ozaki, Ph.D., associate professor in VCU Life Sciences' Center for the Study of Biological Complexity. He will be working with Gail Christie, Ph.D., professor in the Department of Microbiology and Immunology, and will first test the tool with malaria. If efficient results are found, they will adapt it to other diseases that are transmitted through an invertebrate vector such as Lyme disease.

The project was one of 76 grants announced in the third funding round of Grand Challenges Explorations, an initiative to help scientists around the world explore bold and largely unproven ways to improve health in developing countries. The grants were provided to scientists in 16 countries on five continents. The initiative is highly competitive, receiving almost 3,000 proposals in this round.

Organ donation consent ■ In the U.S., deceased patients provide the major source of donor organs, but consent from family members remains relatively low. No more than 60 percent of the families of donation-eligible individuals consent, and there is a critical need to increase organ and tissue donations.

The VCU School of Medicine received a \$3 million grant from the National Institutes of Health to test a new intervention that could increase the rate of consent to solid organ donation.

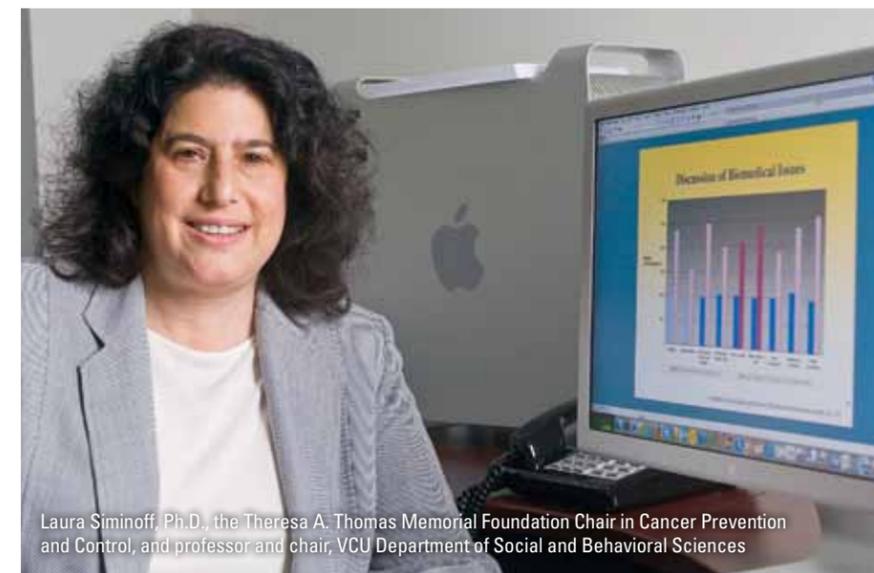
Laura Siminoff, Ph.D., a nationally recognized expert on health communication and decision-making in disease treatment, is leading the five-year grant designed to test the efficacy of a two-part Early Referral and Request Approach intervention by assessing hospital procurement barriers and by teaching effective communications skills to workers at organ procurement organizations. The study will include eight organ procurement organizations, located throughout the U.S., and their coordinators who request organ donation.

Siminoff is professor and chair of the VCU Department of Social and Behavioral Sciences, the associate director of the Cancer Prevention and Control Program at the VCU Massey Cancer Center and the Theresa A. Thomas Memorial Foundation Chair in Cancer Prevention and Control.

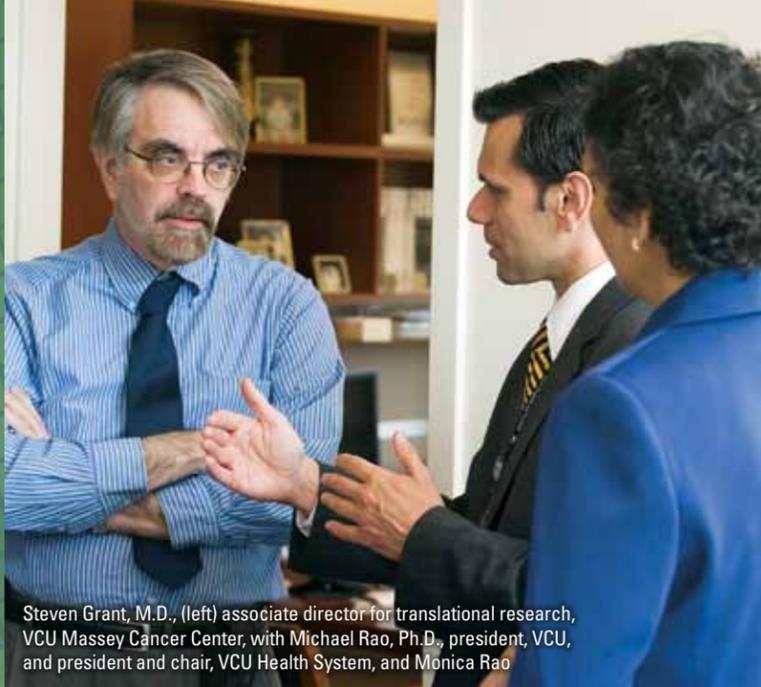
The VCU School of Medicine received a \$3 million grant from the National Institutes of Health to test a new intervention that could increase the rate of consent to solid organ donation.



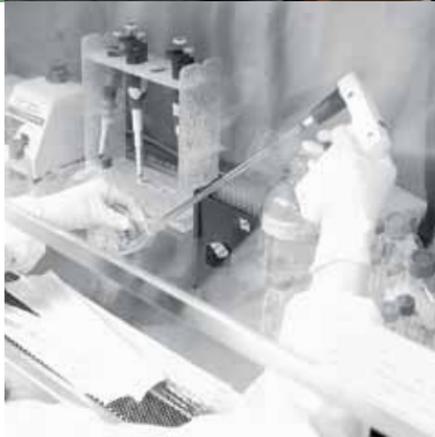
Daniel Baugh, graduate student, in the Center for Biobehavioral and Clinical Research laboratory



Laura Siminoff, Ph.D., the Theresa A. Thomas Memorial Foundation Chair in Cancer Prevention and Control, and professor and chair, VCU Department of Social and Behavioral Sciences



Steven Grant, M.D., (left) associate director for translational research, VCU Massey Cancer Center, with Michael Rao, Ph.D., president, VCU, and president and chair, VCU Health System, and Monica Rao



Cancer cell inhibitors ■ Steven Grant, M.D., professor of medicine and associate director for translational research at the VCU Massey Cancer Center, and his research team received a National Cancer Institute renewal grant totaling approximately \$1.25 million to develop a more selective approach to the treatment of multiple myeloma, an incurable, malignant disorder of the bone marrow involving plasma cells.

The award builds on work from Grant's laboratory demonstrating that exposure of human multiple myeloma and leukemia cells to agents known as Chk1 inhibitors disrupts the ability of these cells to arrest progression through the cell cycle and to repair DNA damage.

This series of events leads to the dramatic activation of a compensatory survival-signaling cascade, which is frequently dysregulated in cancer. Previously, Grant and his team showed that interruption of the pathway by pharmacologic inhibitors dramatically induces programmed cell death in multiple myeloma cells exposed to Chk1 antagonists.

Grant, the Shirley Carter Olsson and Sture Gordon Olsson Endowed Chair in Oncology, said this process appears to be restricted to cancer cells, such as myeloma or leukemia cells, but spares their normal, healthy counterparts.

A VCU Massey Cancer Center team received a National Cancer Institute renewal grant totaling approximately \$1.25 million to develop a more selective approach to the treatment of multiple myeloma.

Community conversations about research ■ The National Institutes of Health awarded the VCU School of Medicine a highly competitive Challenge Grant in Health and Science Research totaling nearly \$1 million to learn about the Richmond, Va., community's opinions and interest in research. The findings from the two-year project will be used to advance clinical, social behavioral and translational research in the area.

Led by Elizabeth Ripley, M.D., professor in the Department of Internal Medicine and the Nephrology Professor, the team will engage community members in conversations and activities to explore research needs and interests and to develop better two-way communication mechanisms for community-based participatory research projects. The team also will create a multilayered network of community-university partnership opportunities for research.

Survival rates for lung cancer patients ■ Lung cancer is the leading cause of death in both men and women in industrialized countries and accounts for an estimated 28 percent of all cancer deaths in the U.S. The majority of lung cancers have a median survival of less than a year, and surgery is not an option for most patients, said Charles Chalfant, Ph.D., associate professor in the Department of Biochemistry and Molecular Biology.

He has identified key mechanisms involved in the life cycle of non-small cell lung cancers that make them sensitive to chemotherapy and likely targets for developing new anti-cancer therapies.

On the strength of this work, he recently received a highly competitive Research Career Scientist Award from the U.S. Department of Veterans Affairs. Only eight awards were granted this year and, of those, only two were to basic scientists.

The five-year award is renewable over the course of Chalfant's career if he maintains a productive research program, and allows him to expand his operation at the McGuire Veterans Affairs research facility, opening new funding opportunities for post-doctoral researchers in his lab.

Reduced chemotherapy side effects ■ VCU researchers received a \$1.46 million grant to evaluate the usefulness of an electrical stimulation device to alleviate some of the side effects of chemotherapy in women undergoing treatment for breast cancer.

The National Cancer Institute-funded clinical study, led by VCU Massey Cancer Center researcher Debra Lyon, Ph.D., will examine the effects of cranial electrotherapy stimulation (CES) for ameliorating psychoneurologic symptoms, such as depression, anxiety, fatigue and pain, and sleep disturbances in women with early-stage breast cancer. CES is a non-invasive, portable and easily standardized modality that has been approved by the U.S. Food and Drug Administration as a drug-free treatment for depressed mood, anxiety, pain and insomnia.

According to Lyon, the study may have valuable implications for management of multiple common, distressing cancer symptoms and has the potential to reduce the discomforts of chemotherapy, thereby enhancing the quality of life in patients.

Alternative addiction treatment ■ Yan Zhang, Ph.D., assistant professor in the VCU Department of Medicinal Chemistry, received a \$1.1 million NIH-National Institute of Drug Abuse grant to discover mu opioid receptor-selective antagonists as pharmacological tools and potential therapeutics to treat drug abuse and addiction and alcoholism.

Many opioid agonists are currently available for clinical use as analgesics; however, many of these opioid agonists have side effects including respiratory depression and may lead to addiction and dependence.

Zhang and his research team will use the five-year grant to develop novel ligands that can be used to treat central nervous system diseases, including opioid addiction and alcoholism with fewer side effects.

Pressure ulcer prevention ■ Pressure ulcers and ventilator-associated pneumonia, or VAP, commonly occur as iatrogenic, or inadvertent, complications in the critically ill, resulting in increased morbidity, mortality and health care costs. In mechanically ventilated patients, strategies to prevent these complications conflict. Recommendations to reduce pressure ulcer risk place patients in backrest positions of less than 30 degrees while interventions to reduce VAP risk place patients in backrest positions of greater than 30 degrees.

Although it is well documented that higher backrest elevations reduce VAP, there is little empirical evidence that describes the effect of these higher backrest positions on factors affecting pressure ulcer formation and tissue integrity.

Mary Jo Grap, Ph.D., R.N., professor in the VCU School of Nursing, received a \$1.46 million grant from the National Institute of Nursing Research to study the effect of backrest elevation on skin integrity in the critically ill. The three-year study aims to increase understanding of pressure levels and duration that result in tissue injury in these patients.



Yan Zhang, Ph.D., assistant professor, VCU Department of Medicinal Chemistry



Richard Wenzel, photos courtesy of Mark Mitchell

VCU INFECTIOUS DISEASE EXPERT SPREADS THE WORD ABOUT H1N1



One of the biggest news stories of 2009 focused on the H1N1 swine influenza epidemic, and Richard P. Wenzel, M.D., M.Sc., professor and then-chair of the Department of Internal Medicine, suddenly found himself at the center of the non-stop news coverage. He became the go-to guy for numerous media outlets desperate for the latest information on the disease.

At the height of the Mexican H1N1 pandemic, Wenzel, the Dr. William Branch Porter Chair in Infectious Diseases, traveled to Mexico City to review policies, procedures and infection-control activities in critical care units in the city's hospitals. Based on the visit, CBS produced a one-hour documentary, "The Anatomy of a Pandemic," that aired on the Discovery Health Channel and the Science Channel in May 2009. The same month, Wenzel wrote an article, "H1N1 in Mexico: Lessons Learned," about his experiences in Mexico for *The Huffington Post* and was featured in a story by *The New York Times* medical correspondent Lawrence K. Altman, M.D., "Many Swine Flu Cases Have No Fever."

In the Aug. 11, 2009, edition of *The New York Times*, Altman called upon Wenzel for lessons learned in the fight against H1N1. In his column, "The Doctor's World," Altman wrote: "Few experts can match the personal overview that Dr. Richard P. Wenzel, chairman of the department of internal medicine at Virginia Commonwealth University in Richmond, has had of the swine flu virus's activity in the United States, Mexico and four South American countries. At the invitation of former trainees in those countries and aided by some travel support from industry, he has visited them to observe cases, advise on control measures and critique their data."

On air, Wenzel joined National Public Radio's swine flu czar Richard Knox to tackle listeners' questions on the NPR Health Blog in October 2009.

The immediate past president of the International Society for Infectious Diseases, Wenzel has been recognized for his pioneering contributions in the field of infectious diseases with the 2010 Maxwell Finland Award.

"Few experts can match the personal overview that Dr. Richard P. Wenzel ... has had of the swine flu virus's activity in the United States, Mexico and four South American countries."

– Lawrence K. Altman, M.D.,
medical correspondent, *The New York Times*



Oct. 15, 2009, news conference at the VCU Medical Center to kick off the Virginia Department of Health's statewide media campaign and vaccination program for the H1N1 flu virus

National recognition of our specialty care, faculty expertise and work force development underscores our commitment to the communities we serve.



New leadership

The VCU Board of Visitors announced the appointment of Michael Rao, Ph.D., president of Central Michigan University (CMU), as VCU's next president and president and chair of the VCU Health System, effective July 1, 2009.

Since 2000, Rao had served as president and professor at CMU, a public doctoral research institution with 28,000 students in Mount Pleasant, Mich.

During his tenure and despite state budget cuts, CMU significantly increased faculty positions and research productivity, developed academic programs and improved performance. Under his leadership, CMU gained approval to establish a medical school and M.D. degree program, partnering with large health care systems.

In addition to focusing on the university's mission to foster student success, his priorities include focusing on cancer research, treatment, prevention and control; strengthening the university's national academic profile; and increasing sponsored research.

Dr. Rao recognizes that these goals are resource-intensive. To that end, he proposes resource diversification, explaining that VCU cannot be too dependent on any one revenue source, including public funding.

"It is very clear that VCU is an institution of opportunity with great momentum," Rao said. "I am excited to work with all its stakeholders to carry that momentum forward as we fulfill an important mission as a leading urban research university, with high-quality, well-integrated academic programs and a pre-eminent academic medical center."

From left: John D. Ward, M.D., president, MCV Physicians; Jerome F. Strauss III, M.D., Ph.D., dean, VCU School of Medicine; Michael Rao, Ph.D., president, VCU and VCU Health System; John F. Duval, CEO, MCV Hospitals, VCU Health System; Sheldon M. Retchin, M.D., M.S.P.H., CEO, VCU Health System and vice president for VCU Health Sciences

Several departments and units in the VCU Medical Center also saw new leadership in 2009:

James P. Bennett Jr., M.D., Ph.D.

Chair, Department of Neurology
Bemiss Endowed Chair
Founding director, VCU Parkinson's Disease and Movement Disorders Multidisciplinary Research and Clinical Center

Cathy J. Bradley, Ph.D.

Chair, Department of Healthcare Policy and Research

Laurence J. DiNardo, M.D., F.A.C.S.

Chair, Department of Otolaryngology, Head and Neck Surgery
Peter and Julia Pastore Professor in Otolaryngology

John Nestler, M.D.

Interim chair, Department of Internal Medicine
William G. Blackard Professor in Endocrinology

Bruce K. Rubin, M.D., M.Engr., M.B.A.

Chair, Department of Pediatrics
Jesse Ball duPont Distinguished Professor in Pediatrics

Deborah T. Zimmermann, R.N., M.S.N.

Chief nursing officer and vice president of patient care services, VCU Health System

Professional appointments

American Academy of Dermatology ■ Evan Farmer, M.D., clinical professor of dermatology and pathology, was elected vice president of the academy.

Veterans Health Administration ■ The administration appointed Michael Hagan, M.D., Ph.D., a VCU Massey Cancer Center physician-scientist specializing in radiation oncology, to serve as its national director of Radiation Oncology Services and help standardize and improve patient care in the VA's national network.

North American Society for Psychosocial Obstetrics and Gynecology ■ Susan G. Kornstein, M.D., professor of psychiatry and obstetrics and gynecology and executive director of the Institute for Women's Health and the Mood Disorders Institute, was elected president.

American Cancer Society ■ Celeste Powers, M.D., Ph.D., anatomic pathology division chair in the Department of Pathology, took the helm as editor-in-chief of *Cancer Cytopathology*, published by the American Cancer Society.

National Institute of Environmental Health Sciences ■ Jerome F. Strauss III, M.D., Ph.D., dean of the School of Medicine, was appointed to the institute's External Clinical Advisory Council.

U.S. Department of Veterans Affairs ■ The department appointed Richard P. Wenzel, M.D., M.Sc., the Dr. William Branch Porter Chair in Infectious Diseases and professor of internal medicine, to chair its National Research Advisory Council. The council's main role is advising on the nature and scope of research and development sponsored and conducted by the Veterans Health Administration.

VCU HEALTH SCIENCES



Cecil B. Drain, Ph.D., CRNA, FAAN, dean, VCU School of Allied Health Professions



Ronald J. Hunt, D.D.S., M.S., dean, VCU School of Dentistry*



Nancy F. Langston, Ph.D., R.N., FAAN, dean, VCU School of Nursing



Jerome F. Strauss III, M.D., Ph.D., dean, VCU School of Medicine



Victor A. Yanchick, Ph.D., dean, VCU School of Pharmacy



David C. Sarrett, D.M.D., M.S., associate vice president, academic affairs, VCU Health Sciences

* Dr. Hunt is stepping down as dean in 2010. Dr. Sarrett will fill the interim dean role.

High honors

Best for working moms ■ *Working Mother* magazine named the VCU Health System as one of the nation's 100 best companies of 2009 for working mothers, marking the fifth time the health system has received the honor.

Among its numerous initiatives, the VCU Health System gained recognition in several areas, including its dedication to the advancement of women. Females make up 80 percent of the VCU Health System's workforce and nine of 16, or 56 percent, of its top executives are women, up from 50 percent last year.

Working Mother also recognized the VCU Health System's innovative flexible work programs, enhanced paternity and maternity leave policies, leave share, full pay for employees in active military service, on-site child care and adult care programs, and Employer Assisted Housing Program.

"Despite fiscal challenges, VCU Health System not only maintained our level of work/life programs and benefits — without cutting a single one — we even added some that were designed to help employees who may have been feeling especially stretched," said Maria Curran, vice president of human resources for the VCU Health System.

Top nonprofit ■ For a third time, the National Association for Female Executives (NAFE) named the VCU Health System one of the five top nonprofits in the country.

NAFE's annual Top Companies for Female Executives initiative names those at the forefront of diversifying the gender of boardrooms across the country, and honors five nonprofit organizations as offering excellent work environments for women, including the VCU Health System.

In 2009, the VCU Health System also was recognized by *Nursing Professionals* magazine as a Top 100 Hospitals to Work For.

Stroke care award ■ The VCU Medical Center received the American Stroke Association's Get with the Guidelines – Stroke Silver Performance

Achievement Award. The award recognizes the medical center's commitment and success in implementing a higher standard of stroke care by ensuring that stroke patients receive treatment according to nationally accepted standards and recommendations.

The medical center has developed a comprehensive system for rapid diagnosis and treatment of stroke patients admitted to the emergency department, which means always being equipped to provide brain-imaging scans, having neurologists available to conduct patient evaluations and using clot-busting medications when appropriate.

The best doctors ■ VCU Medical Center physicians continue to shine in the local and national spotlight. Nearly 35 of our physicians, more than from any other health care facility in Richmond, were recognized as Top Docs for Women, as chosen by their peers in the April 2009 issue of *Richmond* magazine.

On a broader scope, 84 of the medical center's doctors appear on the 2009-10 Best Doctors in America list. This widely respected list, created by Best Doctors Inc., results from polling of more than 45,000 physicians in the U.S. Doctors in more than 400 subspecialties of medicine appear on this year's list.

"Our physicians have shown, once again, that they are experts in their fields, garnering national and international reputations for excellence," said Sheldon M. Retchin, M.D., M.S.P.H., CEO of the VCU Health System and vice president for VCU Health Sciences. "This list is a product of validated peer review, in which doctors who excel in their specialties are chosen. Only about 5 percent of the doctors in the country earn a spot on this prestigious list."

The dream team ■ An eight-member, multidisciplinary forensic nurse team — led by the VCU Department of Surgery's Michel Aboutanos, M.D., M.P.H. — received the 2009 Virginia Chapter of the International Association of Forensic Nurses Dream Team Award.

The honor recognizes outstanding interagency collaboration based on collaborative spirit, willingness to share information and to support one another in their roles, and their interdisciplinary respect and desire to work as a team to improve the overall outcome. The goal is to provide the best possible care to victims of violence.

Crystal Nelson, M.D., third-year resident, VCU Department of Psychiatry, with her daughter



ACHIEVEMENTS

Robert S. Adelaar, M.D.

Chair, Department of Orthopaedic Surgery, School of Medicine, and the John A. Cardea Professor in Orthopaedic Surgery

2009 Distinguished Orthopaedist Award from the Southern Orthopaedic Association

Juan Carlos Arango-Lasprilla, Ph.D.

Assistant professor, Department of Physical Medicine and Rehabilitation, School of Medicine

Division 45 2009 Emerging Professional Award from the American Psychological Association

Robert Balster, Ph.D.

Professor, Department of Pharmacology and Toxicology, School of Medicine, and the Luther A. Butler Professor in Drug and Alcohol Studies

2009 Nathan B. Eddy Award from the College on Problems of Drug Dependence

Sandra Barker, Ph.D.

Professor, Department of Psychiatry, and director, VCU Center for Human-Animal Interaction, School of Medicine

Bill Balaban Endowed Chair of Human-Animal Interaction

Harry D. Bear, M.D., Ph.D.

Walter Lawrence, Jr. Distinguished Professor in Oncology and professor and chair, Division of Surgical Oncology, School of Medicine

Distinguished Investigator Lifetime Achievement Award from the National Surgical Adjuvant Breast and Bowel Project

Joann N. Bodurtha, M.D., M.P.H.

Professor, Department of Human and Molecular Genetics, School of Medicine

2009 Outstanding Achievement Award from the Association of University Centers on Disabilities

Michael D. Fallacaro, D.N.S., CRNA

Chair, Department of Nurse Anesthesia, School of Allied Health Professions

Researcher of the Year from the American Association of Nurse Anesthetists Foundation

Joseph L. McClay, Ph.D.

Research assistant professor, Department of Pharmacotherapy and Outcomes Science, School of Pharmacy

2009 NARSAD Young Investigator Award from the National Alliance for Research on Schizophrenia and Depression

Joseph Ornato, M.D.

Chair, Department of Emergency Medicine, School of Medicine

2009 June Daugherty Public Spirit Award from the Sudden Cardiac Arrest Association

Rita H. Pickler, Ph.D., R.N., PNP-BC, FAAN

Acting associate dean for research and scholarship and professor of family and community health nursing, School of Nursing

2009 Award of Excellence in Research from the Association of Women's Health, Obstetric and Neonatal Nurses

Ron Polk, Pharm.D.

Professor, Department of Pharmacotherapy and Outcomes Science, School of Pharmacy, and the Nancy L. and Ronald H. McFarlane Pharmacy Professor

2009 Miller Award from the American College of Clinical Pharmacy

Domenic A. Sica, M.D.

Professor, Department of Internal Medicine, School of Medicine, and Transplantation Professor in Nephrology

2009 MCV Physicians Distinguished Clinician Award

Jerome F. Strauss III, M.D., Ph.D.

Dean, School of Medicine

*March of Dimes award for preterm birth research
Rector's Medal from the University of Chile*

Ben Van Tassel, Pharm.D.

Assistant professor, Department of Pharmacotherapy and Outcomes Science, School of Pharmacy

2009 Outstanding Paper of the Year Award from the American College of Clinical Pharmacy Practice and Research Network

Richard P. Wenzel, M.D., M.Sc.

Professor, Department of Internal Medicine, School of Medicine, and the Dr. William Branch Porter Chair in Infectious Diseases

2010 Maxwell Finland Award from the National Foundation for Infectious Diseases



MEDICAL RESPIRATORY TEAM SERVES AS A BEACON OF CARE



When the Critical Care Hospital opened in 2008, the bar was raised on the quality of critical care patients would receive at the VCU Medical Center. The new, state-of-the-art facility, with its innovative, advanced design and technologies, would provide the environment in which our health care professionals could take patient care to new heights.

And that's just what they did. As one shining example, the Medical Respiratory Intensive Care Unit, located on the hospital's fourth floor, earned the Beacon Award for Critical Care Excellence, placing it among the top ICUs in the nation.

The Beacon Award, which is presented by the American Association of Critical-Care Nurses (AACN), honors critical care units that achieve the highest quality patient outcomes possible and demonstrate excellence and innovation.

"The MRICU team is an extraordinary group of individuals who together provide outstanding care to some of the sickest patients anywhere," said Curt Sessler, M.D., medical director for the MRICU. "The Beacon Award is one of the most important awards that an ICU team can receive, and receiving it is wonderful recognition of the great work that the MRICU team has done. I have experienced first-hand how dedicated all of the nurses and staff are to delivering top-quality care and have observed the tremendously supportive leadership. This combination leads to important recognition, like the Beacon Award, and of even greater value, exemplary patient care."

The AACN evaluates units on specific criteria, including: leadership and organizational ethics; staff training, education and mentoring; creating and promoting healing environments; nurse recruitment and retention programs; and evidence-based research and practices.

The MRICU is a 20-bed unit specializing in the care of critically ill adult patients with nonsurgical respiratory and/or medical disease. The leadership team includes Sessler, Audrey Roberson, M.S., R.N., CPAN, nurse clinician, Joanne Emerson, B.S., R.N., nurse manager, and Lauren Goodloe, Ph.D., R.N., director of medical and geriatric nursing.

"Our MRICU team has a long-standing reputation in the critical care community, locally and nationally, for our patient care delivery and the implementation of evidence-based practice and research to promote improved patient outcomes," Roberson said. "This recognition is only possible because of the work environment we have, as shown through our positive collaborations with our colleagues." The MRICU is not the first Beacon Award to be bestowed upon the VCU Medical Center — the Surgical Trauma ICU was honored with the award in 2008.

"I think having several ICUs recognized is a very strong endorsement of the high quality of care that we give our patients and the supportive environment that we have here at the VCU Medical Center," Sessler said.

"The MRICU team is an extraordinary group of individuals who together provide outstanding care to some of the sickest patients anywhere."

— Curt Sessler, M.D., MRICU medical director



Curt Sessler, M.D., MRICU medical director, with patient

CRITICAL CARE HOSPITAL

Built with a focus on quality care and patient safety, the Critical Care Hospital opened October 2008 and quickly garnered a national reputation for excellence.

Award-winning NICU design ■ The Neonatal Intensive Care Unit in the Critical Care Hospital has been gaining recognition as one of the most state-of-the-art facilities for newborns in the country. Its latest accolade comes from GE Healthcare

Maternal Infant Care, which presented the unit with its 2009 Imagination at Work award.

Representatives from GE Healthcare presented the award to Gary Gutcher, M.D., neonatologist and professor of pediatrics, and Sharon Cone, R.N., nurse manager, who accepted it on behalf of the NICU staff in June 2009.

“GE’s guiding principle, ‘Imagination at Work,’ is inherent in the design of the NICU, from the rubber floors and acoustical ceilings that reduce noise to the overhead and auxiliary lighting that can be adjusted based on the gestational age of the infant,” said Dan Strauch, director of Strategic Marketing for GE Healthcare Maternal Infant Care.

Created with input from VCU Medical Center staff and based on years of research into the developmental needs of premature and critically ill newborns, each room of the 40-bed NICU sets the stage for a positive healing environment for patients as well as their families.

“I call these ‘single-family’ rooms because it is integral in the care of any critically ill newborn to get the family engaged from the start,” Cone said. “We wanted to create an environment that was not

only functionally efficient for medical staff, but also would encourage interaction between parents and their baby in a calm and comforting way.”

Established in 2007 by the Maternal Infant Care Division of GE Healthcare, the Imagination at Work award recognizes innovation and exceptional dedication in the delivery of care in neonatal medicine through the concept and design of neonatal intensive care units.

Region’s first hybrid OR ■ The VCU Medical Center is the first in the mid-Atlantic region to have a fully equipped hybrid surgical suite dedicated to the full spectrum of treatments for neurovascular disease, such as stroke, carotid disease, aneurysms and other vascular malformations.

John Reavey-Cantwell, M.S., M.D., a fellowship-trained endovascular neurosurgeon, leads the VCU neurovascular program and said, “I perform traditional neurosurgical operations for aneurysms and other vascular diseases. I am also one of about 75 doctors in the U.S. with subspecialty training in endovascular neurosurgery.”

Located in the Critical Care Hospital, the hybrid surgical suite accommodates both endovascular surgeries as well as other traditional neurological surgeries. The minimally invasive endovascular method employs an advanced angiography machine in the hybrid suite to perform these procedures. Using X-ray guidance, the bi-plane machine provides views from two different angles simultaneously. It also provides a 3-D model of aneurysms with great accuracy.

“This machine is the most cutting-edge piece of equipment available,” said Reavey-Cantwell, assistant professor in the VCU Department of Neurosurgery and the Richard Roland Reynolds Chair in Neurosurgery. “Only a couple of hospitals in the entire country have this setup. With this equipment, the Critical Care Hospital hybrid surgical suite is one of the most state-of-the-art neurosurgical operating rooms ever designed and built.”



Caroline Spalding, R.N., clinical nurse, with patient in the Neonatal Intensive Care Unit at the Critical Care Hospital



John Reavey-Cantwell, M.S., M.D., (left) the Richard Roland Reynolds Chair in Neurosurgery, VCU Department of Neurosurgery, in the Critical Care Hospital’s hybrid operating room



Critical Care Hospital

“The Critical Care Hospital is much more than a structure of brick and mortar; it is a symbol of hope, healing and medical breakthroughs.”

– John D. Ward, M.D., president, MCV Physicians

“The Critical Care Hospital is a major advance for the VCU Health System. It has received national acclaim for its design and application of technology in our care processes. It will serve well the people of our commonwealth for decades into the future.”

– John F. Duval, CEO, MCV Hospitals, VCU Health System

FINANCIAL REPORT

VCU HEALTH SYSTEM VOLUME

Fiscal year	2005	2006	2007	2008	2009
Inpatient discharges	30,134	30,539	31,778	31,865	32,484
Adjusted discharges	46,528	47,750	50,675	50,984	54,285
Emergency Department visits	77,148	81,364	79,259	78,048	81,774
Outpatient clinic visits	442,107	454,674	458,513	482,892	514,326
Total surgeries	17,912	18,043	17,782	18,345	18,798
Virginia Premier member months	1,077,760	1,221,886	1,314,248	1,452,675	1,610,815

VCU HEALTH SYSTEM FINANCIAL STATEMENT*

(in thousands for fiscal year ending June 30, 2009)

Total operating revenue	\$1,561,026
Nonoperating revenues and expenses	(\$51,438)
Salaries, wages and benefits	\$599,796
Supplies	\$196,304
Purchased services and other expenses	\$147,593
Depreciation and amortization	\$51,869
Medical claims expense	\$467,925

* includes VCU Health System components: MCV Hospitals, MCV Physicians, Virginia Premier Health Plan, Carolina Crescent Health Plan, University Health Services (UHS)

VCU MEDICAL CENTER STUDENT ENROLLMENT*

Fiscal year	2005	2006	2007	2008	2009
School of Allied Health Professions	904	964	990	1,036	1,096
School of Dentistry	454	454	452	465	489
School of Medicine	1,156	1,180	1,239	1,262	1,318
School of Nursing	830	922	1,005	967	968
School of Pharmacy	542	569	572	617	603

* includes on-campus and off-campus enrollments

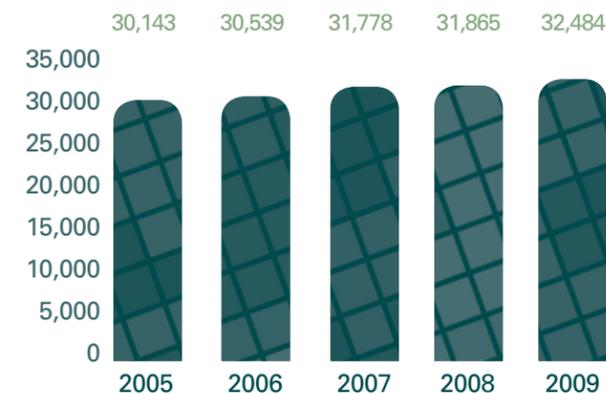
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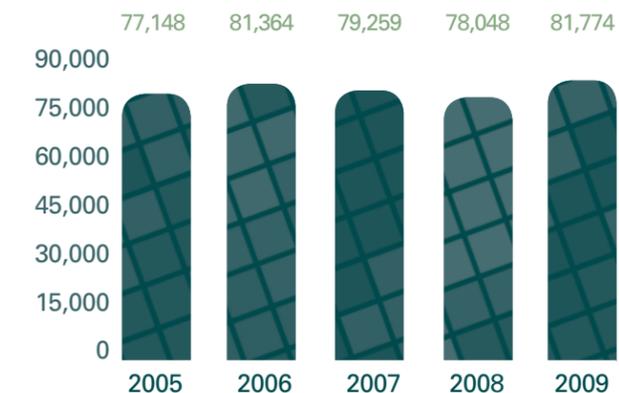
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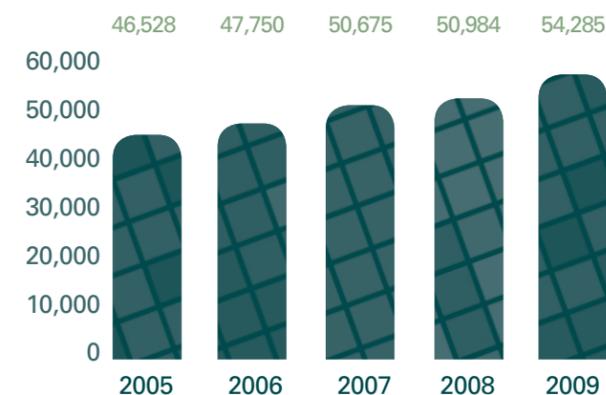
INPATIENT DISCHARGES



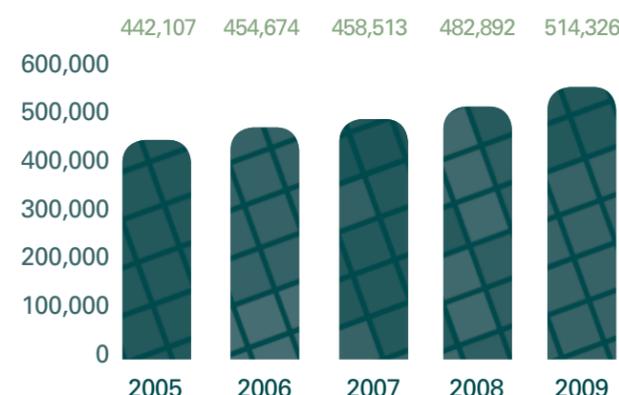
EMERGENCY DEPARTMENT VISITS



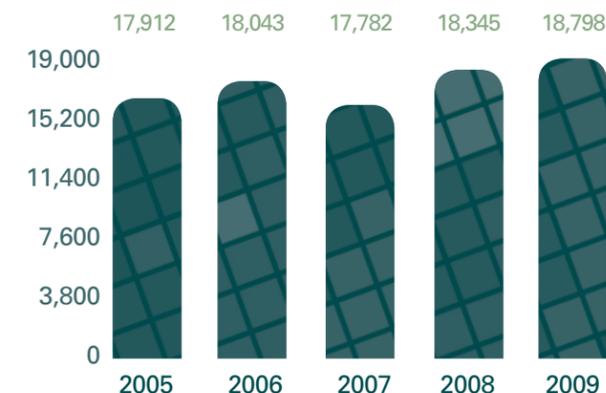
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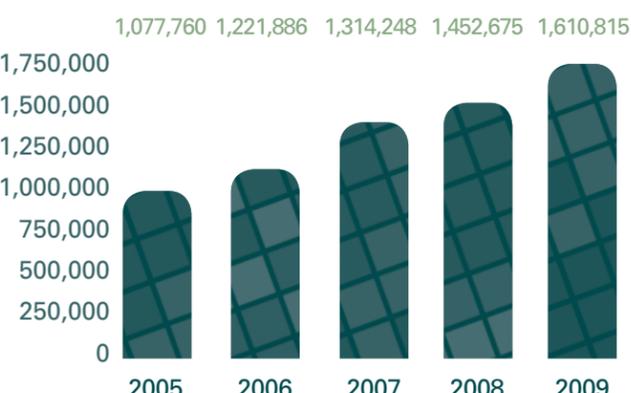
OUTPATIENT CLINIC VISITS



TOTAL SURGERIES



VIRGINIA PREMIER MEMBER MONTHS



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Virginia Commonwealth University Medical Center
1012 East Marshall Street
P.O. Box 980549
Richmond, Virginia 23298-0549
(866) 828-3627 • www.vcu.edu/medcenter