Fall 2024

VUMC Quarterly

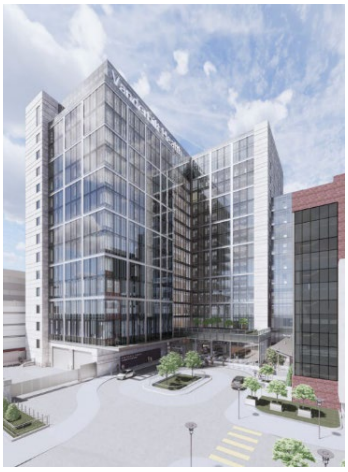
A Vanderbilt Health News Digest for the Federal Policymaker

Compiled by the Office of Federal Relations,
www.vumc.org/federal-relations

ADVANCEMENTS IN PATIENT CARE

New 470,000sqft VUMC Hospital Expansion to be Named Jim Ayers Tower

Read the full story by Nancy Humphrey on VUMC News



Vanderbilt University Medical Center will name a new 15-level, 470,000sqft patient care tower the Jim Ayers Tower in recognition of Janet and Jim Ayers' philanthropic legacy and abiding interest in improving the health care and quality of life for Tennesseans. The tower is scheduled to open October 2025.

The Jim Ayers Tower is the largest expansion to date for Vanderbilt University Hospital (VUH). The need for additional inpatient space at VUH is a result of the region's booming population growth and the hospital operating at more than 90% capacity most of the year. The tower will initially include 180 inpatient beds, with five shelled floors for additional inpatient beds in the future. The building will also include radiology services, a spacious lobby, a three-floor expansion to VUMC's Central Garage adding 600 spaces, and 44,000 square feet of operating room space in adjacent Medical Center East. (*10/22/24)*

VA Establishes Analytics Team to Improve Acute Care for Rural Veterans

Read the full story by Nancy Humphrey on VUMC News

The Veterans Health Administration (VA) is launching a new Emergency Medicine Analytics Team, or EMAT, as part of ongoing efforts to improve health care for rural veterans. EMAT will be co-directed by VUMC's Michael Ward, MD, PhD, who works closely with the VA Tennessee Valley Healthcare System to leverage data for developing new tools and processes that improve access to care for rural veterans across the nation.

"We've worked with the Tennessee Valley VA and have done research in VA emergency care for years now with a particular emphasis on disparities for veterans who live in rural settings," Ward said. "More than 80% of rural veterans don't have access to a VA emergency department or VA urgent care."

EMAT's initial activities will focus on access to acute services and the quality of emergency care. *(10/2/24)*

Laboratory Developed Test:
High-Sensitivity Test to Expedite Heart Attack Diagnosis and Treatment

Read the full story by Jill Clendening on VUMC News

A blood test now available at Vanderbilt University Hospital (VUH) and Monroe Carell Jr. Children's Hospital at Vanderbilt will lead to earlier treatment for individuals experiencing a heart attack, reduce time spent in the emergency room, and avoid unnecessary hospital admissions for those with signs or symptoms of a heart attack but who do not have this diagnosis.

The new high-sensitivity cardiac troponin T (hs-cTnT) test is more precise than the conventional troponin test previously used. It also provides results in less time, which means a heart attack can be confirmed or ruled out earlier so appropriate treatment can begin. Over the past 12 months, VUH provided approximately 45,000 conventional troponin tests for hospitalized patients, which can now be replaced with hs-cTnT.

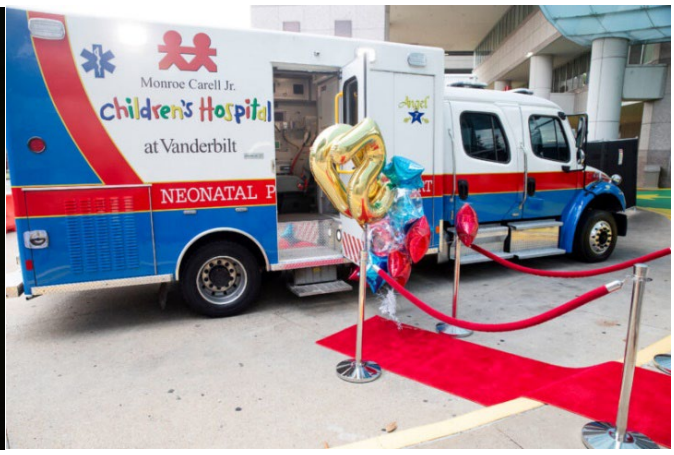
As a laboratory developed test, hs-cTnT is a great example of how academic medical center clinical laboratories can develop and deliver advances in patient care. VUMC continues to be concerned that new regulatory requirements soon to be implemented by the U.S. Food and Drug Administration will slow innovation and add significant cost and complexity to fielding new diagnostics tools for care teams. *(9/9/24)*

'Angel' Transport Celebrates 50 Years of Giving Critically Ill Children a Fighting Chance

Read the full story by Christina Echegaray on VUMC News

In 1961, VUMC opened one of the first neonatal intensive care units (NICUs) in the world. However, there was a need to bring critical care support to children across the region. Thus "Angel 1" was born in 1974, a bread truck converted into a special type of ambulance that was essentially an intensive care unit on wheels. This year, the transport team commemorates 50 years, more than 20,000 transports, and more than 5 million miles of helping infants and children receive the care they need. With six ambulances and 50 crew members, the program now averages about 2,000 transports annually. Monroe Carell Jr. Children's Hospital at Vanderbilt Angel Transports travel up to 250 miles and are licensed in Tennessee and Kentucky.

"We're prepared for all scenarios and run off protocols that are implemented as soon as we make patient contact. We're bringing Vanderbilt-level care to the patient in the community," said Rachel Harvill, a respiratory therapist on the transport team. The fleet includes an ambulance equipped for ECMO, or extracorporeal membrane oxygenation. ECMO is a life-sustaining mechanical system that temporarily takes over for the heart and lungs of critically ill patients, allowing their organs to rest and recover. *(9/5/24)*



Monroe Carell Jr. Children's Hospital at Vanderbilt Ranked Among Nation's Best

By Christina Echegaray

Monroe Carell Jr. Children's Hospital at Vanderbilt has again been named a state, regional and national leader in pediatric health care, achieving the title of No. 1 children's hospital in Tennessee and sharing the top spot in the Southeast, according to the latest *U.S. News & World Report* rankings.

In the newly released 2024-2025 Best Children's Hospitals report, Monroe Carell also ranked nationally in 10 out of 11 pediatric specialty programs. New this year, the report added pediatric and adolescent behavioral health to the list of pediatric specialties. Monroe Carell has made the Best Children's Hospitals list for 18 consecutive years, every year since the ranking's inception in 2007.

This is the fourth year in the regional rankings category that Monroe Carell has been recognized as No. 1 in the Southeast, sharing the spot in a three-way tie. The Southeast region includes 19 ranked pediatric facilities in nine states (Arkansas, Alabama, Georgia, Florida, Louisiana, Mississippi, North Carolina, Tennessee and South Carolina).

"To be No. 1 in Tennessee and in the Southeast is truly a testament to our teams' relentless and unwavering commitment to provide hope and healing for all children and families who need us," said Meg Rush, MD, President of Monroe Carell. "Congratulations to everyone who helps the magic happen every day in our hospital. I am so very grateful for our teams' continued dedication to delivering the very best in pediatric health care."

Learn more about Monroe Carell's ranked specialties at childrenshospitalvanderbilt.org/best. (10/8/24)

VUMC Plays Active Role in Training Today's Military Medical Personnel

By Jill Clendening

Vanderbilt University Medical Center is extensively involved in partnerships with the military that both assist individuals as they transition out of service to be civilian veterans and help active-duty military medical personnel maintain their critical skills needed during deployment. United States military medical personnel are a daily presence at VUMC as they receive skills training and work alongside their civilian counterparts through initiatives such as Strategic Medical Asset Readiness Training (SMART), Army Military-Civilian Trauma Team Training (AMCT3), and as part of educational outreach at Fort Campbell and Blanchfield Army Community Hospital (BACH) in Kentucky. These programs receive a mix of institutional support, and support from USG partners like U.S. Army Medicine, Ft. Campbell and the Mission Zero civil-military trauma training grant program administered by HHS/ASPR.

Learn more about military-civilian collaborative programs at VUMC through the Vanderbilt Military Affairs Committee (VMAC) website: https://www.vumc.org/military-civilian-programs/vmac (11/8/24)

7 hospitals

1,741 licensed beds

Vanderbilt University Hospital
Monroe Carell Jr. Children's Hospital at Vanderbilt
Vanderbilt Psychiatric Hospital
Vanderbilt Stallworth Rehabilitation Hospital
Vanderbilt Wilson County Hospital
Vanderbilt Bedford Hospital
Vanderbilt Tullahoma-Harton Hospital

180+ Clinics

43,000 Employees

Middle Tennessee's largest non-government employer

13 Rural Health Center Clinics

3.3 M
Annual patient visits

213,000
Emergency department visits

80,000
Hospital discharges

809 Organ transplants

3,400
LifeFlight air transports

2,200
Employed clinicians

1,200+
Resident physicians

226,314
Telehealth appointments

Vanderbilt Health Affiliated Network connects **66 hospitals and 7,000 clinicians** across Tennessee to share best practices and transform health care delivery.

$527.7 million

National Institutes of Health grant funding for **Vanderbilt University School of Medicine**.

10th highest in the U.S.

Middle Tennessee's only

Level I Trauma Center and Burn Center for adults and children

Level IV Neonatal Intensive Care Unit

NCI-designated Comprehensive Cancer Center

Nearly $1 billion*

in **total community benefit and investment** including **patient financial assistance, medical research, health professional education, community grants** and unreimbursed costs for **government health programs.**

* Fiscal 2023

LEADING EDGE RESEARCH

VUMC Researcher Contributions to ARPA-H Projects

The Advanced Research Projects Agency for Health (ARPA-H) was created in 2022 to support high-risk, high-reward projects with the potential to transform health care. VUMC researchers are involved in several ARPA-H projects announced in 2024:

- At-home drug delivery system to combat preterm labor—Jennifer Herington, PhD, an assistant professor in neonatology, will receive up to $3.3 million to develop treatments to stop spontaneous pre-term labor. There are currently no FDA-approved drugs to stop spontaneous pre-term labor. One potential drug intervention is limited to 24-72 hours of treatment due to serious side effects. Dr. Herington's strategy is to reduce off-target side effects by attaching the drug to an antibody that delivers a smaller dose right to where it is needed, allowing for longer and more effective treatment windows. If successful, this intervention could help reduce the number of children born premature with serious medical complications.

- Health AI evaluation tool—Hallucinations and fabrications from AI chat bots have been well documented and are particularly concerning when it comes to applications in health care. An ARPA-H award for up to $7.3 million will help teams led by Susannah Rose, PhD, and Zhijun Yin, PhD, develop the Vanderbilt Chatbot Accuracy and Reliability Evaluation System (V-CARES) to detect AI hallucinations, omissions, or otherwise inaccurate answers. "Research like this is essential to developing AI solutions that…people can trust and rely upon in practice," said Peter Embí, MD, chair of biomedical informatics and co-chair of the VUMC AI Discovery and Vigilance to Accelerate Innovation and Clinical Excellence (ADVANCE) Center.

- AI-driven cancer data extraction—Daniel Fabbri, PhD, and Christine Micheel, PhD, are co-principal investigators on an award providing up to $1.9 million for AI-guided chart abstraction in oncology. "Our goal is to reduce the time for clinical chart abstraction by 90% while maintaining human-level accuracy," said Fabbri. "This could dramatically accelerate cancer research and improve patient care."

- Surgical robots for prostate cancer—An ARPA-H award for up to $12 million supports a collaboration between VUMC, Vanderbilt University, Johns Hopkins University, and the University of Utah to develop an autonomous surgical robot capable of removing prostate cancer without human intervention. Duke Herrell, MD, professor of urology, is leading the surgical aspects of the project. "Creating a system that can learn from human surgeons — and continue to improve performance — will be a game changer," Herrell said. "Our vision is not to replace surgeons, but to vastly expand the work they do."

'Off-The-Shelf' CAR-T Therapy Shows Promise for Relapsed Multiple Myeloma

Read the full story by Tom Wilemon on VUMC News

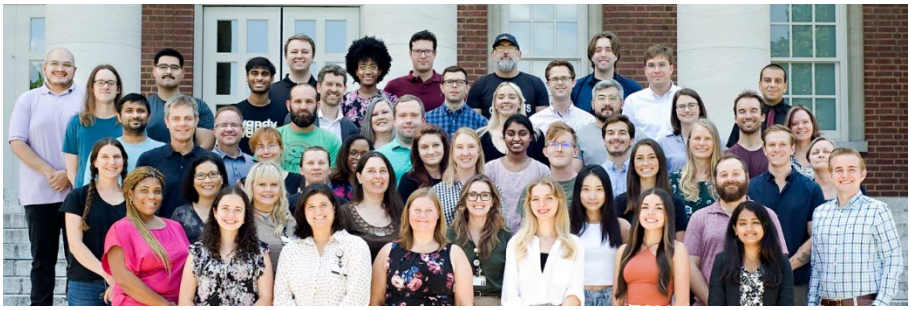
Early results from an ongoing phase 1 clinical trial show that 91% of patients with an aggressive form of multiple myeloma responded to an investigational "off-the-shelf" chimeric antigen receptor T cell (CAR-T) therapy. CAR-T therapies are a new class of cancer treatment that normally involve taking a patient's own white blood cells and engineering them to attack cancer. This engineering process can take weeks to months, but the new "off-the-shelf" CAR-T therapy shortens the treatment lead-time to an average of one day, which is critical for patients with fast growing cancers. The FDA granted a regenerative medicine advanced therapy designation made possible by the 21st Century Cures Act to accelerate development. *(10/4/24)*

VUMC Joins National Effort to Prevent Another Pandemic

Read the full story by Bill Snyder on VUMC News

Recently, the Vanderbilt Vaccine Center (VVC) received a three-year grant providing $13 million per year from the NIH to accelerate development of vaccines and therapeutic antibodies for potentially pandemic pathogens. The research focuses on finding common areas of vulnerability between strains of different viruses so that a single antibody cocktail can neutralize multiple strains and be ready for clinical trials right at the beginning of an outbreak.

In early 2020, VVC isolated monoclonal antibodies that could neutralize SARS-CoV-2 viruses in a record 25 days. The VVC is now investigating antibodies for virus groups including bunyaviruses, picornaviruses, arenaviruses, hantaviruses, and eastern equine encephalitis virus. In June 2024, VVC launched a first-in-human trial with NIH funding to test an antibody targeting enterovirus D68, which causes severe respiratory disease and sometimes debilitating polio-like symptoms. Also in June, the VVC began a "sprint" sponsored by the U.S. Department of Defense (DOD) to discover neutralizing antibodies against hantaviruses, for which there currently are no approved vaccines or specific treatments. "We have long stated that antibodies and vaccines for emerging infections should be generated and tested prior to large outbreaks, not after disaster has occurred," said James Crowe Jr., MD, director of the VVC.



The Vanderbilt Vaccine Center receives funding from multiple NIH, DOD and other federal awards. *(9/13/24)*

VUMC Discovery Aids Effort to Stop a Deadly Virus in Rwanda

Read the full story by Bill Snyder on VUMC News

Human testing of a neutralizing antibody discovered by researchers at the Vanderbilt Vaccine Center (VVC) has begun in Rwanda following an outbreak of deadly hemorrhagic Marburg Virus Disease (MVD). Developed by San Diego-based Mapp Biopharmaceutical Inc., the potential treatment, called MBP091, was derived from a human monoclonal antibody isolated by VUMC researchers 12 years ago from the survivor of a Marburg virus infection. A close cousin of Ebola, the Marburg virus is transmitted by fruit bats and by exposure to body fluids from infected individuals. There currently are no approved treatments or vaccines for MVD, which has a roughly 50% fatality rate.

As of Oct. 15, Rwanda health officials had reported 62 confirmed cases of MVD and 15 deaths. The outbreak, which began in the East African nation in late September, has now been contained, according to the Indo-Asian News Service.

VUMC's collaboration with Mapp Biopharmaceutical to develop monoclonal antibody therapies for Marburg and Ebola infections began in 2014. Five years later, Mapp contracted with the Biomedical Advanced Research and Development Authority (BARDA), part of the Administration for Strategic Preparedness and Response (ASPR) of the U.S. Department of Health and Human Services, to advance MBP091 through the completion of a Phase 1 clinical trial. *(10/28/24)*

Study Demonstrates Effective Early Intervention in Preventing Childhood Obesity

Read the full story by Christina Echegaray on VUMC News and research article in JAMA Pediatrics

New research shows that combining a digital intervention with in-person behavior counseling is an effective way to prevent early childhood obesity. The Greenlight Plus study was a randomized trial of 900 children from six medical centers across the United States and was led by investigators at Monroe Carell Jr. Children's Hospital at Vanderbilt and Vanderbilt University Medical Center, including Bill Heerman, MD, director of general pediatrics, and Russell Rothman, MD, professor of internal medicine, pediatrics and health policy. The aim was to test whether text-messaging and web-based interventions to parents could prevent obesity in the first two years of a child's life.

Children whose parents received both digital interventions and counseling exhibited healthier growth patterns compared with counseling alone. "These findings underscore the critical importance of early intervention in preventing obesity and its related health issues later in life," said Dr. Heerman.

This research was supported by funding from the Patient Centered Outcomes Research Institute (PCORI) and the NIH/NCATS Center for Advancing Transitional Sciences program. *(11/3/24)*

Blockbuster Obesity Drugs Also May Slow Kidney Disease

Read the full story by Bill Snyder on VUMC News

The blockbuster GLP-1 obesity drugs also may reduce the progression of kidney disease, a study led by researchers at Vanderbilt University Medical Center suggests. In a gene-association study of more than 350,000 participants in the Million Veteran Program, a research initiative of the VA, higher expression of the glucagon-like peptide-1 receptor gene was associated with a lower risk of kidney disease progression.

"These findings are exciting because they suggest GLP-1 receptor agonists could have broader kidney-protective effects than initially thought," said the paper's first author, Jefferson Triozzi, MD. These drugs "could become part of the guideline-directed medical therapy to prevent kidney disease progression beyond the context of diabetes," added the paper's corresponding author, Adriana Hung, MD, professor of Medicine at VUMC and medical director of dialysis services at the Nashville VA Medical Center.

This research has received support from VA and the NIH. (10/25/24)

Basic Research: Clue to Salt-Sensitive Blood Pressure Found

Read the full story by Bill Snyder on VUMC News

VUMC scientists led by Annet Kirabo, DVM, PhD, found a signaling pathway implicated in the development of cancer also contributes to salt sensitivity of blood pressure (SSBP), an independent risk factor for cardiovascular disease and death.

Previous research from Dr. Kirabo found that salt increases immune cell activity that results in inflammation and damage to healthy tissues. The new study identified two proteins that are responsible for inappropriately activating immune cells in response to salt. Deleting the JAK gene in mice prevented salt-induced high blood pressure, suggesting that FDA-approved JAK inhibitors could potentially be repurposed to help some patients with blood pressure. This research has received support by the NIH. *(10/21/24)*

Study Seeks to Improve Brain Health in Children with Type 1 Diabetes

Read the full story by Jessica Pasley on VUMC News

Children with Type 1 diabetes are at increased risk for neurocognitive complications. VUMC has been selected as one of 11 clinical centers in the U.S. to evaluate children newly diagnosed with Type 1 diabetes for neurocognitive outcomes.

"This project has the potential to influence standards of clinical care for children with Type 1 diabetes and to pinpoint critical periods for prevention and intervention to improve brain health and function," said Lori Jordan, MD, PhD, director of VUMC's Pediatric Stroke Program and part of the Vanderbilt study arm team. "An important element of our project includes looking at diverse racial, ethnic and socioeconomic groups." Enrollment at VUMC will through the Pediatric Diabetes Program (PDP) at Monroe Carell Jr. Children's Hospital at Vanderbilt. "The PDP follows a diverse group of nearly 3,000 children with diabetes; 85% of these patients have Type 1 diabetes," said Jordan. "Each year, the program sees about 275 new-onset Type 1 diabetes cases. With a long history of clinical Type 1 diabetes research, we are well positioned to contribute to the multicenter, longitudinal cohort study."

This study is supported by the NIH. *(10/16/24)*

VANDERBILT UNIVERSITY MEDICAL CENTER

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