

Blocking the Path to Pain, Clearing the Path to Research in Anesthesiology

Curiosity. Answering the “what ifs.” A drive for improvement. These are the qualities shared by most of the physicians in the Department of Anesthesiology who conduct research. Certainly they do their jobs very well. They provide the best possible care for patients from the moment the patients are admitted for surgery until they leave the Medical Center; they provide services for more than 18,000 procedures during surgeries; and they provide medical management for many other patients throughout the University of Tennessee Medical Center.

But our anesthesiology team doesn't stop there. They simply cannot. Their medical curiosity and high ideals won't let them. So they also conduct continual research in how to improve patient care and how to advance the science of anesthesiology beyond current standards. In our academic medical center setting, this groundbreaking research thrives—and many times, because it is conducted locally, our patients benefit first.

“I do research simply because I have clinical and basic science questions for which I would like answers,” says Robert Craft, MD, UT Graduate School of Medicine associate professor and vice chair of anesthesiology.

“I believe academic physicians should be the ones attempting to answer these questions, since we have the resources at this academic medical center and graduate school of medicine. We also have the responsibility to educate resident physicians on the methods of investigation.”

The anesthesiology research lab supports the anesthesiology faculty physicians and resident physicians who are conducting research on pain and nausea management, blood clotting, cardiovascular disease, the effects of anesthesia, and more.

“We help the physicians find answers.”

**Roger Carroll, PhD
Director of Anesthesiology Research**

“Our lab provides the bench laboratory skills and equipment to facilitate clinical research projects,” says Roger Carroll, PhD, a professor and the director of Anesthesiology Research. “We also advise on the design and execution of proposed research projects and assist with the final statistical analysis. We help the physicians find answers.”

Amanda Johnson

Examples of Anesthesiology Research

Blood-clotting

Hemorrhage associated with blood-clotting disorders, or coagulopathy, is a major cause of death and complications in trauma patients. Russ Langdon, MD, Roger Carroll, PhD, and their team are studying whether the rigidity of blood during blood clotting affects the fatality rate and how platelets in the blood during trauma can affect the need for or the risks of blood transfusion. Their study could help physicians in the Emergency Department assess coagulopathy and other disorders at an early stage during treatment of a trauma, and could indicate more effective interventions.

Cardiovascular Disease

Using data from previous studies on aspirin resistance, Robert Craft, MD, Jack Chavez, MD, and other investigators are testing the correlation of aspirin resistance in patients with a history of cardiovascular disease and the formation in their blood of an agent that constricts blood vessels. This study could help physicians more effectively treat patients who have cardiovascular disease but also experience aspirin resistance.

Anesthesia

An upcoming study, headed by Robert Craft, MD, will use positron emission tomography (PET) technology to look at the molecular and anatomical targets of anesthesia. A better understanding of the actions of anesthesia can help anesthesiologists control and increase the success of its use. This study will also provide information about the origin of human consciousness, which in turn could help explain disturbances of consciousness such as coma, autism, and schizophrenia.

Another progressive study on anesthesia is helping physicians safely use anesthetic agents during upper-gastrointestinal endoscopies and colonoscopies. Physicians Stephen Patteson, MD, Jerry Epps, MD, and others used brain-wave function to determine the depth of sedation achieved by using certain anesthetic agents for endoscopies. They found that the level of sedation is consistent with general anesthesia and that for maximum patient safety, medical professionals with formal anesthesiology training should administer the anesthetic during endoscopies.

(From front) Stephen Patteson, MD; Robert Craft, MD; Jack Chavez, MD; and Roger Carroll, PhD, gather in the Anesthesia Research Facility where they and others conduct clinical research.

