

Saving Your Breath

Experts at UMKC's Asthma Clinical Research Center are collaborating to find new research outcomes and better treatments for asthma sufferers.

by Ann Muder

When Linda Gregory ordered tickets to see a concert, her first consideration wasn't how close she'd be to the stage, it was how close she'd be to an aisle.

"When you have asthma, you think differently in social situations," she says. "Will I have my rescue medication? Is the place going to have an accessible area where I can leave?"

Gregory, who at 51 has had asthma for 15 years, says that she has to be very careful of her surroundings. Smoke or other strong odors can trigger an attack of wheezing, coughing and shortness of breath.

When Gregory saw an advertisement for an asthma trial conducted by the Asthma Clinical Research Center at the University of Missouri-Kansas City School of Medicine, she called to volunteer.

"A research study is a good way for people like myself to get care for their asthma and to also feel like they're doing something helpful," she says.

Gregory is one of about 200 Kansas City asthma patients who have participated in research studies conducted by the Asthma Clinical Research Center (ACRC), sponsored by the



American Lung Association (ALA) and in collaboration with Truman Medical Center and Children's Mercy Hospital. One of only 20 asthma clinical research centers nationwide, UMKC is part of a research network that includes Duke University Medical Center and Washington University School of Medicine. The network is the largest of its kind, conducting clinical trials on a large number of subjects to provide information important to the health care of asthma patients.

A Lifelong Mission

UMKC first began the ACRC in 1999 after receiving a \$750,000 five-year grant from the American Lung Association. UMKC received the designation primarily because of the research of Gary Salzman (M.D. '80), professor of medicine and director of the ACRC.

Salzman, who has suffered from asthma since he was a child, became interested in asthma research to help patients like himself improve the quality of their lives.

"Asthma is a disease that responds well to treatment," he says. "With the proper treatment, I think the potential for improvement in asthma is dramatic."

After graduating from the UMKC School of Medicine, Salzman completed an internal medicine residency and a fellowship in pulmonary medicine. Through the 1980s and 90s, he conducted research involving how to best treat asthma. One such study looked at a type of spacer, called an aerochamber, which is used with an inhaler, and found that it improved delivery of medicine to the lungs with fewer side effects.

Today, as director of the ACRC, Salzman takes part in large multi-center clinical trials that research the best treatment for asthma patients. "By working together with other centers, researchers are able to complete medical trials more quickly than if they were working alone," Salzman says.

"If you did research in just one or two centers, it would take a long time to get enough subjects," he says. "By working with other centers, the research that may have taken five years can be completed in one year."

The network of centers enables researchers to study a more diverse population, from suburban, inner-city and rural areas to different ethnic groups, allowing them to look at how subgroups respond to different treatments.

Progress for Patients

In one of the first studies, researchers at the ACRC looked at whether the influenza vaccine was safe to give to adults and children with asthma. Many asthma patients don't receive a flu vaccination, often because they're concerned it will make their asthma worse. The study was conducted at 19 centers and involved about 2,000 research subjects. After the one-year study, the researchers concluded that the flu vaccine is safe for asthmatics, regardless of severity of asthma. Based on the research, it is recommended that all

"Asthma is a disease that responds well to treatment. With the proper treatment, I think the potential for improvement in asthma is dramatic."

-Gary Salzman, M.D.

asthmatics be given a flu vaccination to prevent viral infections that could trigger severe asthma attacks.

In another study, UMKC and 18 other centers tested the drug theophylline, a pill-form asthma treatment that is less costly than other medications. They found that it was just as effective in controlling asthma as the drug montelukast, which is commonly prescribed for asthma.

Salzman's hope is that by identifying alternative medications like theophylline, more asthma attacks can ultimately be prevented.

"We're looking for more affordable drugs, particularly for individuals who can't afford traditional treatments," Salzman says.

Currently, researchers are looking at the role of gastroesophageal reflux disease, or heartburn, in triggering asthma. According to Salzman, the theory is that acid from the stomach not only gets in the back of the throat, but also in the lungs, making asthma worse. The study involves 400 subjects who are being tested to see if treating heartburn improves asthma symptoms.

Real Results

These studies can help bring newer and more effective treatments to the research participants as well as Kansas City residents, 14 percent of whom have had asthma at some point in their lives, according to a 2004 study.

"Once new treatments are identified through the studies, asthma patients in Kansas City will be one of the first groups to have access to those treatments," Salzman says.

In addition, participants in the study often see an improvement in their asthma, regardless of whether they receive the actual medication or a placebo. Participants receive free check-ups from a research nurse as well as free medication. They also learn how they can monitor their own lung function at home through the use of a peak flow meter, a device measuring air flow out of the lungs that can also show if a patient's airways are narrowing hours or even days before an asthma attack.

Making a Difference

Gregory participated in the heartburn study last winter and spring. She visited the center regularly where the staff would test her blood in the lab and measure her breathing on a spirometer. She says her asthma improved because of the regular visits with the research nurse.

"I was doing better overall," she says. "There's someone there to coach you, to check in with you, and find out if something is going on." The staff also reminds patients of ways to control their asthma, even something as simple as remembering to take an extra inhaler when they go out.

By educating patients about their asthma and discovering new treatments, the staff hopes to find ways to improve patients' control of the disease. "The goal is to allow patients to resume normal activity levels, participate in sports and not have to miss school because of asthma," Salzman emphasizes.

In addition, researchers are looking at asthma patients' genes to learn more about the disease. In many studies, the researchers collect genetic material to discover how genetic codes correlate with the treatment results.

Even though a cure is still years away, Salzman notes that deaths from asthma are on the decline, probably due to advances in asthma research. In 1996, asthma deaths in the United States totaled 5,667. In 2003, that number was down to 4,099.

In the meantime, UMKC will continue to play a role in the ACRC network for at least the next three years. In 2004, UMKC received another five-year \$750,000 grant from the ALA. Salzman says plans for the future include expanding the network to include more centers across the nation as well as continuing to look at all factors of asthma, including genetics, social status and environmental factors.

"We want to improve the quality of life for those with asthma and lay the groundwork to find cures for asthma in the future," Salzman says.

UMKC WELCOMES NATIONALLY RECOGNIZED ASTHMA EXPERTS



Two nationally recognized asthma/allergy experts joined the UMKC School of Medicine faculty in the fall of 2005. Kevin J. Kelly, M.D., chair, department of pediatrics, was named pediatrician-in-chief at Children's Mercy Hospitals and Clinics, and associate dean for Children's Mercy Programs at the School of Medicine. Lanny Rosenwasser, M.D., joined the faculty as professor of pediatrics at the School of Medicine and the Dee Lyons/Missouri Endowed Chair of Pediatric Immunology Research at Children's Mercy.

Kelly previously served as associate dean for clinical affairs and chief of Allergy/Immunology at the Medical College of Wisconsin in Milwaukee. He also served as the chair and chief medical officer for Children's Specialty Group at the Children's Hospital of Wisconsin.

While in Wisconsin, he led a study to develop an innovative Web-based tracking system for asthma patients who are seen in multiple hospital emergency rooms. Kelly says the system could serve as a model for a national central database, which would give caregivers necessary information about asthma patients' medical histories and chronic asthma severity when providing emergency care.

"The goal would be to have more appropriate intervention that could help reduce emergency visits for asthma patients," Kelly says. "Eventually this type of electronic system could be in place for every patient and every disease, so that any place they show up, we can find out what condition they have and what medication they're taking."

Rosenwasser came to UMKC after more than 15 years of researching the genetics of asthma. He was previously the Stephen and Marjorie Raphael Chair in Asthma Research and professor in the Division of Allergy and Clinical Immunology at National Jewish Medical and Research Center in Denver. At UMKC, he is continuing his research looking at the gene variations in asthma patients and how genes are activated with inflammation of the airways. "By studying the gene pathways," he says, "we hope to identify who's at greatest risk for developing asthma and who will respond positively to different medications."

In addition, Rosenwasser is working with Gary Salzman (M.D. '80) on a study to find out if stress and emotion can make asthma worse. The study, a collaboration between UMKC, the University of Kansas, and Children's Mercy Hospital, is funded by the MacArthur Foundation and the National Institutes of Health. Researchers will look at brain activity of asthma patients using an fMRI (functional Magnetic Resonance Imaging) to quantify how stress can affect asthma.

"We're trying to get a better understanding of the mechanisms of asthma, both from the standpoint of an immune reaction as well as stress," Rosenwasser says. "Understanding this better can lead to better treatments for asthma and allergy."