POTS CLINICAL STUDY: AURORA DOCTORS SEARCH FOR CAUSE OF LITTLE-UNDERSTOOD HEART RATE ABNORMALITY

Aurora Health Care has brought together a team of specialists in cardiology, neurology and sleep medicine to study patients with postural orthostatic tachycardia syndrome (POTS) in an effort to determine what underlying mechanisms cause this condition.

Electrophysiologist Ryan Cooley, MD; neurologist Rose Dotson, MD; and electrophysiologist and clinician investigator Arshad Jahangir, MD, are leading the research effort.

Participants also will be evaluated and may receive referrals for physical and sleep therapy.

When a person with POTS stands up, his or her heartbeat speeds up but blood pressure remains about the same. The increase in beats per minute is about 30 for adults and 40 for children and adolescents when they are lying down or seated.

Blood pools in the vessels in the abdomen and limbs as long as the person is upright. The body releases hormones to constrict the blood vessels, but the vessels either react incompletely or dilate. At the same time, the heart responds by beating faster.

Lightheadedness, palpitations, exercise intolerance, fatigue, blurred vision, weakness, balance problems, headaches, shakiness, clamminess, anxiety, shortness of breath and mental fogging all can result from this exaggerated heart rate, sometimes at levels severe enough to disrupt daily professional and social activities.

Yet, little is known about what causes this syndrome in most patients, and management is partially effective at best, with no
$1 MILLION GIFT TO FUND CARDIOVASCULAR DISEASE RESEARCH POSITION

A $1 million gift to the Aurora Health Care Foundation will fund The Colton Scholar in Cardiology Research in honor of Dr. A. Jamil Tajik, providing a post-doctoral researcher the opportunity to advance understanding of cardiovascular disease such as hypertrophic cardiomyopathy (HCM).

The Colton Scholar will be a physician or investigator with research experience in the field of cardiovascular medicine as selected by a steering committee of experts. The scholar will lead one or more specific research projects focused on expanding knowledge and engaging in discovery of the mechanisms and treatment of cardiovascular disease that will lead to innovations and transformational changes in the delivery of cardiology care. He or she will work under the guidance of the Aurora Research Institute and the Aurora Health Care Foundation with mentorship from A. Jamil Tajik, MD, Arshad Jahangir, MD, and the Aurora Cardiovascular and Thoracic Service line leadership.

“This gift provides a unique opportunity to make a visible impact in Aurora Health Care’s cardiology research program,” said Cristy Garcia-Thomas, Chief Diversity and Inclusion Officer for Aurora Health Care and President of Aurora Health Care Foundation.

Dr. Tajik, president emeritus of Aurora Cardiovascular Services, is an internationally known expert in hypertrophic cardiomyopathy and other cardiovascular diseases. Since joining Aurora in 2010, he has established five multispecialty cardiac subspecialty centers at Aurora St. Luke’s Medical Center: hypertrophic and inherited cardiomyopathies, adult congenital heart disease, Marfan syndrome and aortopathies, complex valvular heart disease and pericardial diseases.

For Information about The Colton Scholar in Cardiology Research, call the Aurora Health Care Foundation at 877-460-8730.

POTS SYNDROME: AURORA DOCTORS SEARCH FOR CAUSE OF LITTLE-UNDERSTOOD HEART RATE ABNORMALITY continued from pg. 1

medications approved by the U.S. Food and Drug Administration for its treatment.

“The hope is that by discovering these mechanisms, we can optimize diagnosis and treatment approaches,” Dr. Cooley said.

The "Novel Pathophysiology-based Approach to the Management of Postural Orthostatic Tachycardia Syndrome (POTS)" study is supported by the Aurora Research Institute and the Aurora Health Care Foundation. Research is being conducted at Aurora Medical Center in Grafton, Wis.

To recommend a subject for potential enrollment in this study, contact senior certified clinical research coordinator Sue Truchan, RN, BSN, CCRC, at 262-329-8086.
CARDIOMEMS PROGRAM BRINGS RESULTS FOR PATIENTS: FEWER HOSPITALIZATIONS, ED VISITS

An electronic device the size of a dime is revolutionizing heart failure management at Aurora St. Luke’s Medical Center.

The CardioMEMS™ HF System (Abbott Vascular, Abbott Park, Ill.) is implanted into the pulmonary artery using a minimally invasive, low-risk procedure. The system allows patients to monitor their pulmonary pressure from home and alerts the physician to significant changes.

Since adoption of this management strategy at Aurora St. Luke’s in March 2015, cardiovascular services physicians have implanted the device in 58 patients, significantly improving their management by reducing heart failure hospitalizations by 61 percent (observed readmission: 30-day, 3.8 percent; 180-day, 18 percent) and decreasing emergency department visits by 43 percent, said Nasir Sulemanjee, MD, an Aurora Advanced Heart Failure Therapies Program physician.

This also has resulted in improved overall patient satisfaction and cost savings for the hospital.

“This treatment strategy has been revolutionary for chronic heart failure management and is likely going to grow as more and more providers and patients learn about and benefit from this,” Dr. Sulemanjee said.

The CardioMEMS device is a sealed capsule containing microelectromechanical components; it has no batteries and therefore never needs to be replaced. The system is designed to last the lifetime of the patient, and, once implanted, the patient can take readings by simply turning on the unit and lying on a special pillow with an antenna in it. Within minutes, the pressure readings are wirelessly transmitted to a secure website where they can be reviewed by the patient’s provider.

If readings fall outside of pre-specified ranges, the provider will receive an alert and call the patient with appropriate recommendations regarding medication changes, Dr. Sulemanjee explained.

“Being able to see potential issues at such an early stage helps providers take action before a patient requires hospitalization,” he said.

This is the first and only U.S. Food and Drug Administration-approved monitoring solution for heart failure proven to reduce hospital admissions when used by providers to manage heart failure. The reduction is significant — a large, randomized study demonstrated a 28 percent reduction within the first six months and 37 percent over 15 months — freeing up beds in the hospital and the emergency department.

Not only does this reduce the economic burden of heart failure by reducing hospitalizations and health care costs, but it also improves the patient’s quality of life.

Patients who were admitted to the hospital for decompensated heart failure in the prior 12 months and who have ongoing NYHA functional Class III symptoms despite being on optimal medical therapy have been shown to benefit the most from this treatment strategy.

To refer a patient for evaluation, call Christina Rivera Sauld, APNP, at (414) 646-2657.
AURORA ST. LUKE’S CONTINUES TO MARK TAVR MILESTONES WITH 1,000TH PROCEDURE, NEW DEVICE

On Dec. 8, 2016, Aurora St. Luke’s Medical Center celebrated its 1,000th transcatheter aortic valve replacement (TAVR) procedure performed since it became available through participation in a clinical trial in 2011.

“From the team in the surgery suite to the administrators who invested in the best technology, this is truly a team achievement,” said Daniel O’Hair, MD, co-vice president of Aurora Cardiovascular and Thoracic Service Line and Cardiac Surgery Medical Director of the Aurora Valvular Heart Disease Center.

Dr. O’Hair performs the TAVR procedures with interventional cardiologist Tanvir Bajwa, MD, the Interventional Cardiology Medical Director for the Center.

Aurora Research Institute participated in a number of clinical trials studying the Medtronic CoreValve TAVR systems that led to various U.S. Food and Drug Administration approvals, contributing to Aurora St. Luke’s reaching the milestone of 1,000 TAVRs. Those indications include approval for use in extreme-risk, high-risk and valve-in-valve implantation patients needing larger-sized valves; patients on dialysis; and patients with low-output, low-gradient aortic stenosis.

Because the chest cavity does not need to be opened to perform the procedure, it often is an option for patients with aortic valve stenosis who are not good candidates for open-heart surgery due to age or other medical conditions. Patients spend fewer days in the hospital because TAVR is less invasive than open-heart surgery.

Aurora St. Luke’s was the first hospital in Wisconsin to perform TAVR, first via clinical trials and then with each subsequent FDA approval. The team at Aurora St. Luke’s performs 8 to 10 TAVR procedures a week, with a high success rate.

On April 3, 2017, Aurora St. Luke’s became the first hospital in Wisconsin and one of the first three hospitals in the U.S. to implant the Medtronic CoreValve™ Evolut PRO heart valve, which received FDA approval for patients with severe aortic stenosis in late March.

Aurora’s expertise with TAVR will continue: The Institute is currently involved in seven TAVR trials, with more to come this year. Six of the trials involve the Medtronic self-expanding CoreValve™ and Evolut™ R Systems, as well as Boston Scientific’s Lotus™ Valve System (REPRISE III trial). In the U.S., the Lotus Valve System is limited by federal law to investigational use; it is not currently available for use or sale.

The Aurora Valvular Heart Disease Center was among four programs profiled by the Advisory Board in its recently released report, “Enhancing TAVR Program Value.” The publication outlines strategies for enhancing both the long-term sustainability of TAVR programs and the outcomes.

“Being held up by the Advisory Board as a progressive TAVR practice is a great honor, recognizing our center as a leader in the field,” Dr. Bajwa said.

GRAFTON TEAM CELEBRATES 500TH ROBOT-ASSISTED SURGERY

At Aurora Medical Center in Grafton, William B. Tisol, MD, thoracic surgeon, and his team completed their 500th robot-assisted case using the Intuitive da Vinci® Surgical System on April 10.

Dr. Tisol leads the busiest robot-assisted thoracic surgery program in Wisconsin at Aurora Medical Center in Grafton. The center’s robotic system was upgraded to the state-of-the-art Intuitive da Vinci® Xi™ Surgical System in 2014.

Surgeons and surgical teams from throughout the Midwest and as far away as California come to Grafton to observe robot-assisted thoracic surgery.

With a high-definition 3D view of the surgical field, fully wristed instruments with an extended range of motion, and controls that allow precise movements, robot-assisted thoracic surgery offers patients an option with the potential to reduce pain and shorten recovery times.

Dr. Tisol uses the robotic system for procedures such as pulmonary lobectomies, esophagectomies, mediastinal mass resections, diaphragm plications, hiatal hernia repairs and Heller myotomies.

“The surgical robot allows us to deliver the same high-quality cancer outcomes to patients while allowing them to more quickly recover and return to their professional and recreational activities,” he said.

To learn more about the robot-assisted thoracic surgery program at Aurora Medical Center in Grafton, call 262-329-8150.
Two years ago, Aurora Health Care introduced a new, noninvasive therapy for angina. Today, it remains the only provider of enhanced external counterpulsation (EECP) in Wisconsin. Omar Cheema, MD, oversees this novel program, which aims to provide relief to people who aren’t responding to medications and aren’t good candidates for surgical revascularization. “Many patients say they experienced a reduction in symptoms after EECP, and that the benefits continue to be felt months and years later,” Dr. Cheema said. “This is an adjunct therapy that allows treatment without surgery, coronary catheterization or other invasive approaches.”

**What it is:** Enhanced external counterpulsation is a noninvasive therapy that uses fundamental hemodynamic principles to treat cardiovascular disease. EECP is approved by the U.S. Food and Drug Administration for treatment of angina, both stable and unstable, and chronic heart failure.

**Who benefits:** Patients are referred by their cardiologist when they are not amenable to coronary intervention or surgery and still experience angina.

**Measures of success:** At Aurora, patient surveys reveal an improvement in quality of life and exercise tolerance, as well as reduction of angina events and emergency room visits for angina. Published studies conducted elsewhere indicate that about 75 percent of patients who receive EECP experience significant improvements in their symptoms and about 20 percent will need to undertake EECP again at some point in the future.

**Patient experience:** One-hour treatment sessions take place five days a week for seven weeks. The patient lies on a padded table and pneumatic cuffs are placed on the waist, thighs and calves. Three electrodes are placed on the chest. The cuffs inflate and deflate once per heartbeat to a pressure of about 200 mm Hg.

**How does it work:** EECP treatment pushes blood in the lower extremities toward the heart, delivering the blood with each beat as the heart relaxes. The cuffs deflate when the heart pumps, opening the vessels in the leg and making it easier for the heart to pump blood. It is believed EECP may encourage collateral vessels to develop and enlarge, creating a natural bypass to provide blood flow to the heart and provide relief from angina symptoms.

**Contraindications:** Presence of aortic valvular stenosis, aneurysm, some arrhythmias and other physical impairments that make cuff compression undesirable.

## EECP AT AURORA

**Where is it offered?** Aurora St. Luke’s Medical Center in Milwaukee has the only EECP program in the state.

**Program supervisor:** Omar Cheema, MD

**Treatment staff:** Nursing staff at Aurora St. Luke’s Stress Lab

**For information:** Contact the Stress Lab at 414-649-6000.
KENOSHA MEDICAL CENTER OPENS INTERVENTIONAL LABORATORY, PERFORMS 100 PROCEDURES IN FIRST THREE MONTHS

A urora Medical Center Kenosha’s Interventional Cardiology Laboratory reached a milestone in March, with staff completing the 100th procedure since it opened in December.

Conducting 30 to 40 procedures per month, on average, the AMCK cardiology team primarily performs cardiac catheterizations and percutaneous coronary interventions. About 90 percent of procedures are performed on an outpatient basis.

Patients requiring myocardial revascularization continue to be referred to Aurora St. Luke’s Medical Center in Milwaukee.

“The successful opening of the Kenosha lab was made possible by the exceptional team collaboration among the Racine-Kenosha-Northern Illinois cardiology providers, Aurora cardiology service medical group leadership and the leadership team at AMCK,” said Prakash Shah, MD, who performed the first procedure in the new lab.

The cardiology team at AMCK includes Dr. Shah, Anthony LoCurto, MD, and Ali Khan, MD, and will grow this summer with the addition of AMCK interventional lab medical director Setu Trivedi, DO, and interventional cardiologist Dajun Wang, MD.

“We have the unique position of having very experienced cardiologists in Dr. Prakash Shah and Dr. Ali Khan to provide this service locally for the Racine-Kenosha-Northern Illinois communities,” said Ramagopal Tumuluri, MD, interim medical director for the lab.

Kenosha County is 1 of 14 counties in the state of Wisconsin with a high prevalence of heart disease, and community stakeholders have identified heart disease as a major concern for the area. Several community agencies, including AMCK, are engaged in multiple efforts related to cardiac disease prevention.

The Kenosha lab is projected to serve about 400 patients within the first year. Operational hours are Monday through Friday, and Kelly Magee, manager for interventional cardiology, leads the support team. The team underwent training at the Aurora St. Luke’s catheterization lab.
Atrial fibrillation and heart failure are two of the most common and expensive cardiac dysfunctions encountered in the U.S. Aurora Health Care is advancing the diagnosis and treatment of these disorders through the creation of risk stratification and therapy pathways designed to benefit patients potentially before a medical complication or hospitalization.

“The idea is to use evidence-based risk stratification tools to identify high-risk patients proactively, engage them with education, perform diagnostic testing and introduce therapy early, when necessary,” explained electrophysiologist Indrajit Choudhuri, MD.

To that end, Aurora has assembled a multidisciplinary team that has been working for more than a year to apply principles of disease management to these two complex diseases.

“The ultimate goals are to reduce risk, improve quality of care and provide that care in a more timely and appropriate manner that may also be more financially responsible and efficient — and by achieving this, to improve health care outcomes and reduce events such as death, hospitalization and the development of complications from the disease state,” Dr. Choudhuri said.

Primary care physicians and cardiac specialists throughout the Aurora network, which includes 30 counties in eastern Wisconsin and northern Illinois, will take part in educational sessions to learn the new risk stratification tools and care pathways, as well as metrics and documentation tools that will make the process more expedient for the provider.

This will enable them to screen patients — even those who haven’t yet suffered a major cardiac medical event — for the likelihood they have or will develop heart failure or atrial fibrillation, and then make sure those at high risk are properly screened and directed to appropriate lifestyle changes, medications and other therapies.

The program is being vetted by primary care doctors and specialists in a few pilot regions and is expected to be implemented system-wide by 2018.

In addition to leading the project, Dr. Choudhuri has partnered with his colleague, Vinay Thohan, MD, Director of Advanced Heart Failure Therapies, and the two are serving as the physician experts for atrial fibrillation and heart failure, respectively. Disease management methodology — identifying broad, evidence-based measures to improve health care outcomes in a large group of people — will be applied to other heart and vascular disease processes (stable ischemic heart disease and perivascular disease, for example) in the future.

“‘The purpose of the initiative is to intelligently leverage resources to standardize the care of, and risk stratify populations of, patients with heart failure and atrial fibrillation.’”

Vinay Thohan, MD

---

**BY THE NUMBERS**

- **8,692**: New atrial fibrillation cases diagnosed by Aurora Health Care in 2016
- **33,770**: Total number of patients with atrial fibrillation in the Aurora Health Care network in 2016
- **8,871**: New heart failure cases diagnosed in 2016
- **24,022**: Total number of patients with heart failure in the Aurora Health Care network in 2017
Advanced medical services are available at Aurora's 15 hospitals and 155 clinics located throughout eastern Wisconsin and northern Illinois.