

ST. JOHN PROVIDENCE

2017

Annual Research Report



# 2017 Annual Research Report



Ascension

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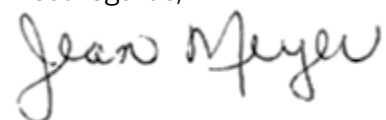
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## LETTER FROM THE PRESIDENT AND CEO

I am proud to present this 2017 *St. John Providence Annual Research Report* to our colleagues, supporters and the medical community. There is a great deal to recognize in these pages, and much to distinguish our clinical experts for their work in improving the body of knowledge in medical practice.

This issue highlights some of the many accomplishments in clinical research taking place across our healthcare system. Clinical research plays an integral role in supporting our mission at St. John Providence by providing local access to state-of-the-art treatment for all patients, regardless of circumstances. Our efforts to fully integrate research across our system fulfill our promise to serve the needs of our patients in body, mind and spirit, especially those who are poor and vulnerable. The work noted in this report will improve access, treatment and clinical outcomes for those we serve. Please join me in recognizing the many accomplishments of our physician investigators, and their dedication to this important work.

Best regards,



Jean Meyer

President & Chief Executive Officer

St. John Providence



## LETTER FROM THE VICE PRESIDENT OF RESEARCH

Welcome to the 2017 *St. John Providence Annual Research Report*. I am delighted to share with you some of the impactful clinical research being conducted across our healthcare system by our many talented and dedicated clinical investigators. Clinical research within our health care system touches upon nearly every medical specialty and affects practically every patient either as an active study participant or as the recipient of healthcare that was developed through clinical research.

Like the practice of medicine in general, clinical research is dependent upon the physician-patient relationship and the trust that our patients place in our physicians to deliver safe, effective care. Without this trust, clinical research could not happen and the practice of medicine could not advance. I hope you enjoy this celebration of research across St. John Providence!

*"The clinical research we conduct today will define the medicine we practice tomorrow."*

Sincerely,



DAVID M. SVINARICH, PHD

Vice President of Research

St. John Providence

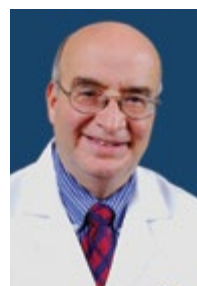






## Radiation Oncology and Colorectal Surgery

# Physicians ease surgery complications for rectal cancer patients



**Amr Aref, MD**  
Section Chief,  
Radiation Oncology  
St. John Hospital &  
Medical Center



**Amer Alame, MD**  
Colorectal Surgeon,  
St. John Hospital &  
Medical Center

For patients diagnosed with rectal cancer, the road ahead is filled with uncertainty. They may face chemotherapy, radiation, surgery, and unpleasant surgical consequences that will last the rest of their lives.

treatment for moderately advanced/advanced rectal cancer is chemotherapy and radiation followed by removal of the rectum and lymph nodes about six weeks later. After surgery, patients receive another very strong chemotherapy treatment."

This approach has good results, and for most patients, their cancer does not return to the pelvic area.

"However, our concerns are the possibility for distant metastasis, or spread of the cancer. About half of all patients are unable to tolerate the second round of chemotherapy because they are already weakened by the first chemotherapy, radiation and surgery. The second, stronger chemotherapy is important, because it reduces the chance the cancer will recur in a different part of the body," explains Dr. Aref.

A second and major concern for the physicians is the quality of their patients' lives. Co-principle Investigator and Colorectal Surgeon Amer Alame, MD, St. John Hospital & Medical Center, says removing the rectum and lymph nodes, while effective, has several drawbacks.

A team of physicians at St. John Hospital & Medical Center has worked for two years to develop a research study that could have a dramatic effect on rectal cancer management, with more pleasant long-term results.

"This may be the first study of its kind to be performed in Michigan," says Amr Aref, MD, section chief, Radiation Oncology, St. John Hospital & Medical Center, and one of the physicians leading the study. "The current

"The surgery can cause sexual, bladder and bowel dysfunction. It is like cutting and re-connecting a garden hose - when you turn the water back on it can leak, which occurs in 10 to 15 percent of patients," says Dr. Alame. "Our goal is to evaluate whether we can change the traditional treatment approach so that patients won't have these side effects."

Dr. Aref and Dr. Alame, and the departments of Radiation Oncology, Gastroenterology, Medical Oncology, and Surgery, came together to develop and test a new treatment protocol.

"Patients in our study receive the stronger chemotherapy and radiation first, prior to surgery, when they are more able to tolerate it," says Dr. Aref. "Then we look at the tumor response. If the tumor has shrunk or, in some cases disappeared, we do not need to perform the full surgery."

Instead, Dr. Alame performs an excision surgery. He says it is like using a "cookie cutter" to cut out only the affected area. By removing just the area where the tumor was located, Dr. Alame leaves the "entire tank" intact, and the rectum can still function as a reservoir.

After excision, patients typically stay overnight in the hospital, while radical surgery involves a five- to seven-day stay.

"After local excision, patients report minimal pain and have a quick recovery time. They have few complications or leakage, and at their two-week follow up appointment, are back to their regular activities with little or no change in bowel function," reports Dr. Alame.

The physicians think about one-third of patients will be candidates for the new treatment protocol.

"This study will add to the body of information available and one day, the guidelines for treating this cancer may be changed. With less surgery and fewer complications, the patients will benefit the most," says Dr. Alame.

Leadership at St. John Hospital & Medical Center showed their support for the study by covering the cost of additional testing - two MRIs and two endoscopic ultrasounds - which are not covered by insurance. The physicians who perform the tests have waived their fees, while the hospital waived technical fees, so there is no expense for patients.



"Our goal is to improve long-term quality of life and make the issues associated with the radical surgery a thing of the past," says Dr. Alame. "We are motivated and optimistic that we can make life better for patients while offering greater protection from future cancers."

Dr. Aref adds, "We are very personally invested in this study and have devoted several years to investigate this treatment protocol. We think we might be able to offer an alternative that is even better than the current treatment. This is progress."

*The trial will continue for three to four years. Patients or their physicians can call (313) 647-3100 to find out more or be considered for the study.*

### TO SUM UP:

- New treatment protocol for rectal cancer
- Chemotherapy first, then less extensive surgery, if needed
- St. John Providence is funding additional testing to make this study possible

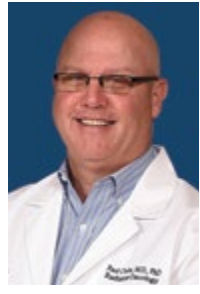
### IMPACT:

Patients with rectal cancer may need less extensive or no surgery to remove tumors, significantly reducing recovery time and unpleasant complications.



## Radiation Oncology

# Researchers uncover possible links to breast reconstruction complications



**Paul Chuba, MD, PhD**  
Medical Director and Chief,  
Radiation Oncology, St. John  
Macomb-Oakland Hospital,  
Webber Cancer Center

It is becoming more common for women diagnosed with cancer in one breast to opt for bilateral mastectomy (breast removal on both sides) and reconstruction with breast implants. It's a precaution to reduce the risk for a second cancer, and a personal choice.

A team of researchers at St. John Providence explored the complication rates connected with this approach, and offers insights that could help women and their physicians as they weigh treatment and reconstruction options.

"A large percentage of women require radiation to the affected breast after mastectomy," says Paul Chuba, MD, PhD, St. John Macomb-Oakland Hospital, Webber Cancer Center, who is leading the research team. "We have found that up to 30 percent of the time, the implant in the irradiated breast fails because of radiation, and

the woman requires one or more additional surgeries to repair it."

To achieve breast implants, surgeons place a tissue expander between the skin and the muscles in the chest wall. Over a few visits, fluid is added gradually so the skin stretches and creates a "pocket" for the implant. In Dr. Chuba's study, the implants typically failed because radiation caused the pocket to shrink and the implant no longer fit. Some patients required multiple surgeries to repair that.

In a retrospective study conducted over a two-year period, Dr. Chuba's team investigated the factors that could have caused the implants to fail. Working with plastic surgeons, they reviewed 124 patient charts and isolated data. The nature of treatment - radiation in one breast and no radiation to the other - created a built-in control to generate comparative data.

"Radiation causes 10 times greater complication



rates," he reveals. "We found that 15 percent of women had moderate or severe complications in the breast that received radiation, compared to less than one percent in the non-irradiated breast."

But the team delved deeper when looking for causes.

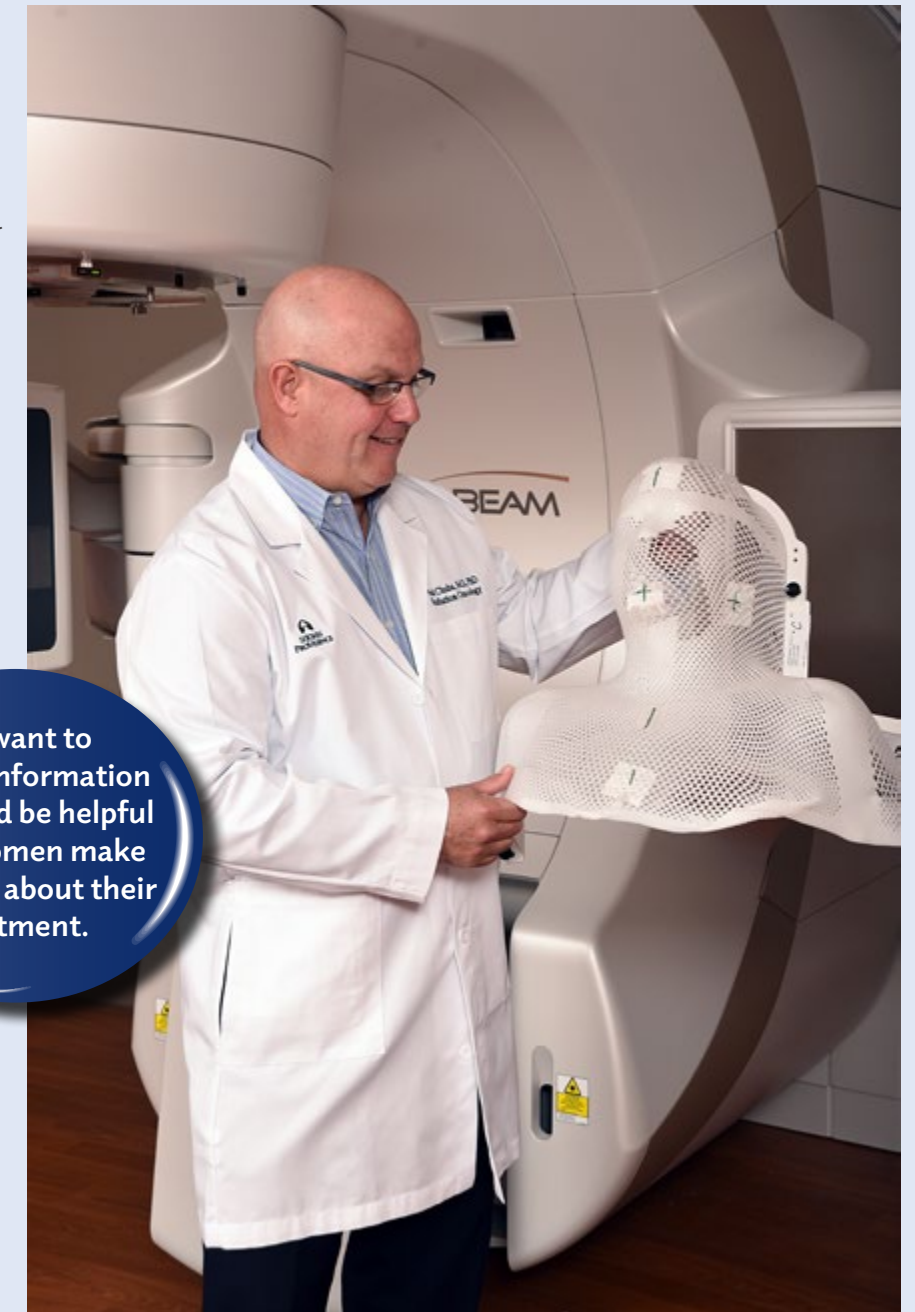
"There were so many variables, and we tried to see which factors correlated with implant failure," he says. "Our research showed another solid result: A diagnosis of depression and implant failure seemed to be connected."

Depressed patients had higher implant failure rates than non-depressed patients. Women who took any type of antidepressant or who had a history of depression or bipolar disorder had increased complication rates with healing. While it's possible the depression itself impaired the body's ability to heal, antidepressant medications and chemotherapy drugs used to treat cancer could also interact. Some drugs classified as antidepressants have been used to treat issues besides depression, such as hot flashes.

"We want to provide information that could be helpful when women make decisions about their treatment," says Dr. Chuba. "For patients with a small breast tumor, lumpectomy (removing the tumor and a small area surrounding it) and radiation offers the same cure rate as mastectomy." He also points out that data shows that mastectomy for the unaffected breast may be unnecessary.

Dr. Chuba hopes his research will lead to greater success for women who do choose mastectomy, who can use the information, together with their medical teams, to consider their own risk factors and long-term goals. He also hopes it will act as a stimulus for research and continued development of advanced breast reconstruction techniques, which could offer patients greater success and peace of mind.

We want to provide information that could be helpful when women make decisions about their treatment.



### TO SUM UP:

- Radiation causes up to 30 percent of breast implants in post-mastectomy patients to fail
- Depression and implant failure may also be connected
- Lumpectomy and radiation offer the same cure rate as mastectomy for small tumors

### IMPACT:

Women and their physicians now have more information about complications to breast implants due to radiation after mastectomy and reconstructive implant surgery.



## Cancer

# SJP team investigates quality of life for stage IV cancer patients



**Richard Berri, MD, FACS**  
Chief of Surgical Oncology and Director of the Peritoneal Malignancies program, St. John Hospital & Medical Center

As one of only a few centers in the country offering Hyperthermic Intraperitoneal Chemotherapy (HIPEC), St. John Hospital & Medical Center specialists give patients with certain stage IV abdominal cancers a treatment option that may increase their chance for prolonged survival.

Richard Berri, MD, FACS, chief of Surgical Oncology and director of the Peritoneal Malignancies program at St. John Hospital & Medical Center, returned to Detroit in 2010 after completing a surgical oncology fellowship at the world-renowned MD Anderson Cancer Center in Houston, Texas. Since returning, he has developed what is today one of the nation's highest volume, highest quality HIPEC programs.

While HIPEC itself is remarkable, what is just as remarkable is a recent study Dr. Berri and his team conducted to be sure patients were not just living longer, they were doing so with a high quality of life. "We wanted to go a step further, beyond outcomes, survival and complications, and ask patients about their quality of life after surgery," says Dr. Berri. "We went straight to the source - our patients."

Dr. Berri and his team asked 33 patients about their lives three months after surgery and HIPEC, and found that despite advanced age (some are in their 80s), and having undergone a difficult and complex surgery and recovery, they report that life is the same or better than it was before HIPEC. (*American Journal of Surgery*, 2016 March. Epub 2015 Dec 22.)

HIPEC is an option for select patients with stage IV gastrointestinal or gynecologic cancers that have spread

(metastasized) to other parts of the abdomen. It's most commonly used in cases of colorectal, gastric, ovarian, and appendix cancer or peritoneal mesothelioma.

After removal of tumors and affected organs, Dr. Berri closes the abdomen temporarily and fills it with a chemotherapy solution that is heated to 43 degrees Celsius. "Because heat alone kills cancer cells, combining heat and chemotherapy kills cancer cells more effectively, while preserving healthy cells. The HIPEC machine circulates the heated fluid for 90 minutes. After treatment, we re-open and re-explore the cavity to be sure all traces of cancer are gone and then reconstruct the gastrointestinal tract," he explains.

His motivation for conducting the surgery came from his patients, says Dr. Berri. "At least 90 percent ask me prior to surgery about quality of life afterward. Fortunately, now we have this data. Patients are very interested in looking at the numbers themselves."

Dr. Berri has now performed 200 consecutive debulking and HIPEC surgeries, and his results are outstanding. "We've had zero patient deaths within three months of surgery, and never had to re-operate on anyone due to complications," he says. "Our three-year survival rate for all malignancies treated is 84 percent, in most cases higher than would be expected with chemotherapy or surgery alone. Our overall complication rate is also very low - just 11 percent. That data ties in directly to the high quality of life patients are reporting."

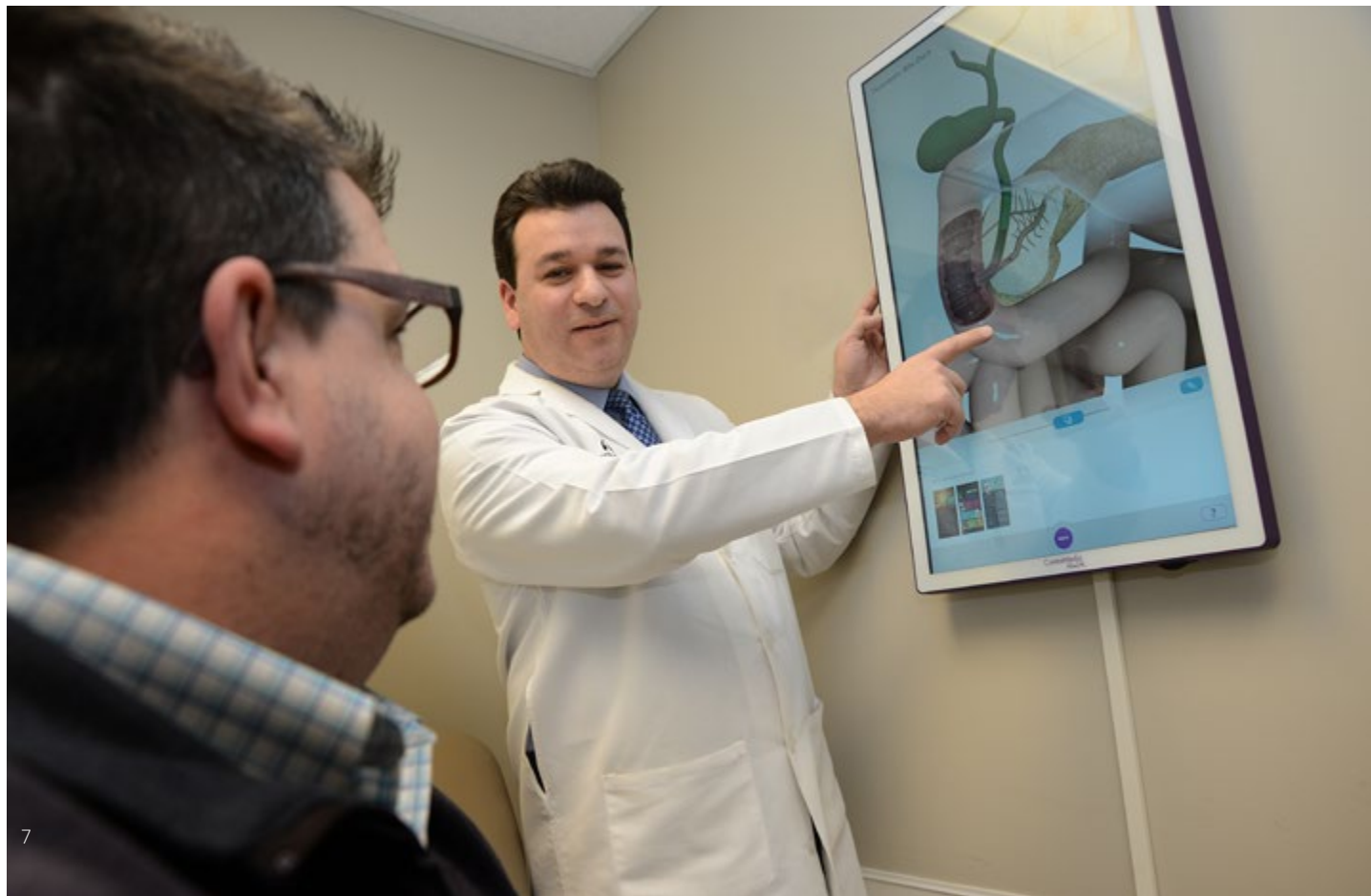
St. John Hospital & Medical Center is now one of the top five institutions in the nation when it comes to HIPEC surgical volume.

A key part of the program's success is its multidisciplinary approach. Dr. Berri has assembled a team of experts that includes a nurse practitioner and HIPEC coordinator, specialty surgeons (colorectal, thoracic, gynecology oncology, urology), medical oncologists, ICU specialists, a dedicated anesthesia team, a perfusion team, nursing staff, a geneticist, a dietician, social workers, palliative and spiritual care providers, and others.

"Together, we guide the patient through their treatment and strive to give them the best experience and outcome possible. Our team has more than five years experience performing HIPEC, and we currently treat approximately 50 patients every year. National research shows that when patients go to a high-volume center, they have better outcomes," he confirms.

The team will conduct further studies to continue measuring how long patients live and their quality of life during those years. And while current quality of life results are positive, Dr. Berri and his colleagues are not satisfied. They are already using their data to explore how they can help patients achieve even greater results.

*If you or a loved one is interested in knowing more about HIPEC, call (313) 647-3252.*



### TO SUM UP:

- St. John Providence offers HIPEC treatment for patients with stage IV abdominal cancer, and thereby extends life expectancy
- Researchers surveyed patients to measure quality of life after surgery
- Patients reported life is the same or better following surgery

### IMPACT:

Patients considering HIPEC now have data from other patients to help guide them in their treatment decisions, and physicians at SJP have set new goals for improving and extending patient lives.





## Cardiology

# Researchers evaluate blood pressure lowering options



**Shukri David, MD**  
Physician Chair,  
St. John Providence  
Health & Vascular Center  
of Excellence

When it's too high, the long-term force of blood pressure against artery walls can lead to numerous health problems.

"Over time, high blood pressure can affect your heart and kidneys and lead to stroke, heart disease, and kidney failure," says Shukri David, MD, physician chair of the St. John Providence Heart & Vascular Center of Excellence.

Patients can usually control high blood pressure with diet, exercise and medications. But for some, medications either aren't effective or have side effects the patient can't tolerate.

St. John Providence is one of only 12 locations nationwide participating in the Medtronic SPYRAL HTN - ON MED trial. The study evaluates an investigational

**SPYRAL = The investigational device used in the trial.  
HTN = Short for hypertension, or high blood pressure**

procedure that has the potential to lower blood pressure with one, two or three blood pressure medications by interrupting communication between the brain and the kidneys.

"There are very few health systems that can offer this opportunity to participate in this trial," says Dr. David, lead researcher. "Being included in this study truly distinguishes us from other local health systems."

In the Spyral HTN - ON MED study, researchers modulate the nerves that send messages from the brain to the kidneys using radiofrequency impulses.

"Most people don't realize that the kidneys actually play an important role in controlling blood pressure," explains Dr. David, "but the nerves that coordinate control of the kidney by the brain can become over-active. When this occurs, the brain continues sending inappropriate messages to the kidneys to raise blood pressure when it is, in fact, already elevated, resulting in high blood pressure.

"We modulate the overactive nerves within each artery with a procedure performed through a tiny tube. This may help balance overactive nerve signaling and potentially reduce the number of medications required to overcome health problems related to high blood pressure. It's a minimally invasive procedure that typically takes less than an hour," he says. The investigational procedure is performed at Providence-Providence Park Hospital, Southfield.

In this international clinical study, none of the patients will know if they actually had the procedure until their 12-month follow up visit. Researchers will then be able to accurately and safely measure whether the procedure lowered blood pressure without patients knowing if anything had changed. Throughout the study, participant blood pressures will be closely monitored and controlled.

Dr. David is working together with Susan Steigerwalt, MD, a hypertension specialist and sub-investigator of the trial at the University of Michigan. The study is double-blinded, meaning neither patients nor physicians managing the patients' blood pressure know who had the procedure and who did not. Only Dr. David, who performs the procedure, and his team know which patients received the investigational treatment. Dr. Steigerwalt evaluates patients before the procedure, and monitors their blood pressure afterward.

"It's a very interesting and exciting study," says Dr. David. "If successful, this would create a new way to help manage high blood pressure, and could potentially reduce or eliminate medications for some patients. Research studies like this are how we get there."

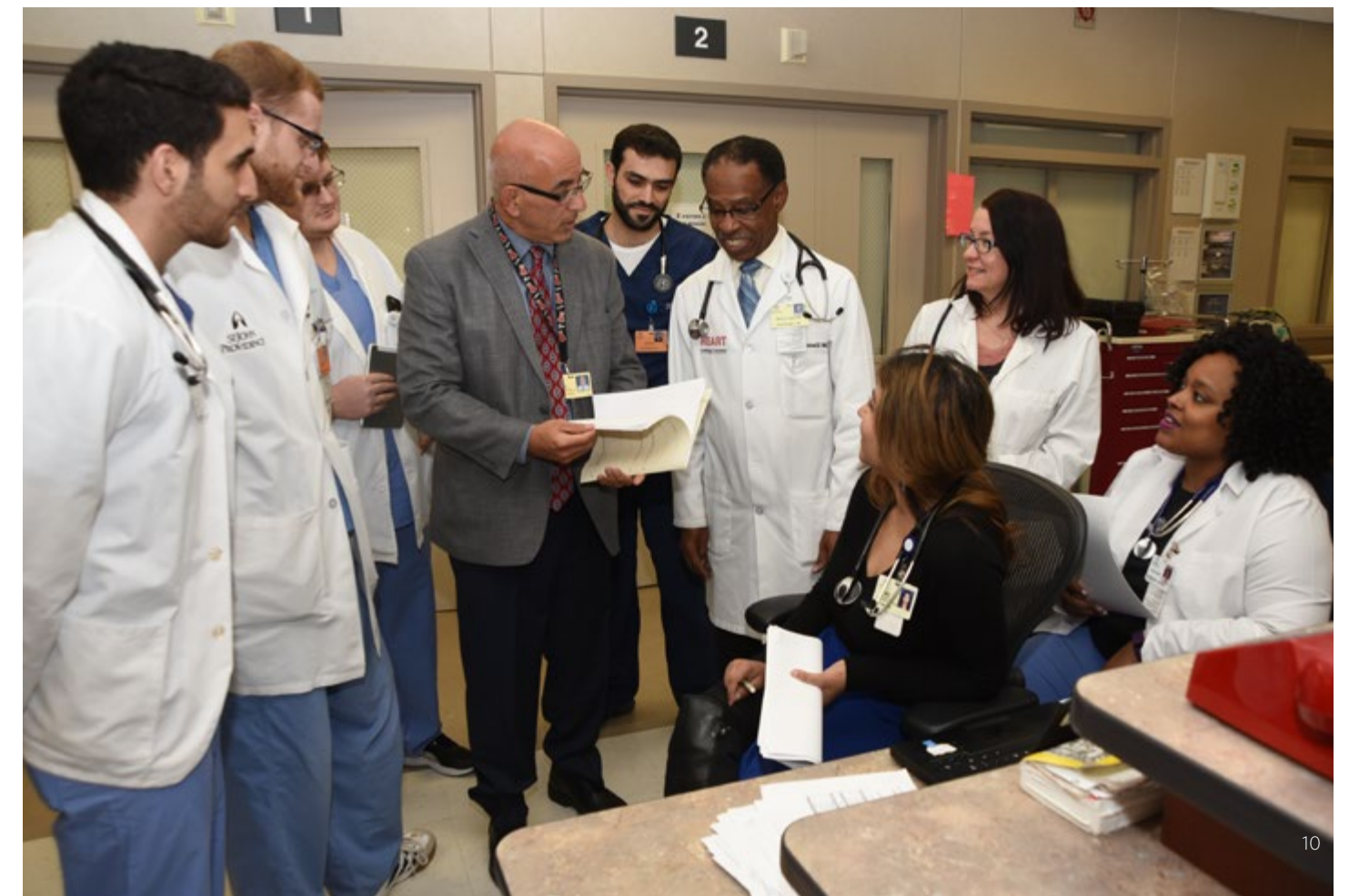
For more information, contact Jean Kelly, (248) 849-3369 or [jean.kelly@ascension.org](mailto:jean.kelly@ascension.org).

### TO SUM UP:

- A surgical alternative to high blood pressure control
- Interrupts overactive signaling from the brain to the kidneys
- St. John Providence is one of only 12 research study locations nationwide

### IMPACT:

Some patients could manage high blood pressure with surgery, eliminating or reducing their need for medications.







## Cardiology

# TAVR study could change heart disease treatment for all patients



**Thomas LaLonde, MD**  
Chief of Cardiology,  
St. John Hospital &  
Medical Center



**Tom Davis, MD**  
Director, Structural Heart  
Program, Peripheral  
Vascular Intervention and  
Cardiac Research  
St. John Hospital &  
Medical Center



**Sanjay Batra, MD**  
Chief of Cardiac Surgery  
St. John Hospital &  
Medical Center

Up to 1.5 million people in the United States suffer from severe aortic stenosis, or narrowing of the heart's aortic valve. Just walking a few feet can be exhausting. They typically experience life-limiting symptoms that include fatigue, faintness, dizziness, chest pain, chest tightness and shortness of breath. For most, average life expectancy is two years or less.

Since 2011, St. John Hospital & Medical Center has been part of a national trial investigating a new, non-surgical treatment for patients with this fatal condition. Until recently, an implant placed through open surgery was the only treatment option available. This meant breaking the patient's chest bone and a long recovery of at least two months. Unfortunately, some patients aren't healthy enough for this difficult surgery.

"By participating in these studies, we have been able to offer another option - transcatheter aortic valve replacement (TAVR) - to patients with failing aortic valves," says Thomas LaLonde, MD, chief of cardiology at St. John Hospital & Medical Center and co-principle Investigator of Medtronic CoreValve® System Low Risk Trial.

TAVR doesn't involve opening the patient's chest. Most patients have no visible incisions, can sit up in a chair the day of surgery, and go home after a two- to four-day

hospital stay. After another week, most can return to their normal activities. Best of all, results are as good as or better than traditional surgical valve replacement.

While previous studies focused on patients who were not good candidates for open surgery, the physicians hope the current study will pave the way for TAVR to become an approved treatment alternative option for all patients, regardless of risk. Co-Principle Investigators are Tom Davis, MD, director of the Structural Heart Program, Peripheral Vascular Intervention and Cardiac Research, and Sanjay Batra, MD, chief of Cardiac Surgery, both at St. John Hospital & Medical Center.

"Right out of the gate, when this technology became available, we had the vision that this would be the treatment of choice for patients with aortic stenosis. We actively sought to get into the original trial, and were the last of 44 original sites to be included. We knew we were very fortunate. It was important for physicians St. John Hospital & Medical Center to become experts in performing this procedure so that we can offer this state-of-the-art technology to the complex patients here in southeast Michigan," says Dr. LaLonde.

Through the minimally invasive TAVR procedure, the interventional cardiologist and cardiac surgeon work together to replace the diseased aortic heart valve without removing the diseased valve. "A wire frame and artificial aortic heart valve are inserted through an artery in the leg and guided to the diseased valve in the heart.

Once in position, we expand the wire frame and the new valve opens and takes over for the patient's diseased valve, explains Dr. Davis.

The procedure has been a tremendous success for many patients. According to Dr. LaLonde, "One patient was 97 years old, and couldn't walk to the bathroom without getting short of breath. She had the procedure on a Tuesday and told us she felt better immediately afterward. She went home that Friday to her own house and is doing great. She was overjoyed to be a part of the trial."

St. John Providence has been involved across the spectrum of all previous TAVR trials with the Medtronic CoreValve® Evolut® R System, and is one of only three study sites in Michigan to be involved in the "Low Risk" trial. SJP physicians have treated more than 250 patients with TAVR through these studies.

"This very exciting study will enable us to determine whether TAVR will be a viable alternative to open heart surgery for a broader patient population. Patients involved in the previous TAVR studies had superior results to open heart surgery at one, two and four-years post-procedure. This could potentially change aortic stenosis treatment for all patients, regardless of surgical risk," says Dr. LaLonde.

For more information, call the St. John Providence Valve Clinic, (855) 98-valve (8-2583) or contact Renee Bess, BS, CCRP, study coordinator, at [renee.bess@ascension.org](mailto:renee.bess@ascension.org).

This very exciting study will determine whether TAVR will be a viable alternative to open heart surgery for a broader patient population.



### TO SUM UP:

- Aortic stenosis causes life-limiting symptoms
- TAVR is a non-surgical treatment option and an alternative to open heart surgery
- Surgeons open the failing valve with a wire frame and insert an artificial valve in the patient's diseased valve

### IMPACT:

This research study could make TAVR available to all patients, not just those who cannot tolerate open surgery.



## Cardiology

# Saving heart muscle after a heart attack



**Thomas LaLonde, MD**  
Chief of Cardiology,  
St. John Hospital &  
Medical Center



**Shukri David, MD**  
Physician Chair, St.  
John Providence Heart  
& Vascular Center of  
Excellence

If you've ever had a heart attack or know someone who has, you probably remember that even when a patient recovers, the heart muscle is damaged. During a heart attack, areas of the heart are deprived of oxygen. The

muscle dies and in some cases, entire sections of the heart are affected. The damage can lead to heart failure, abnormal heart rhythms, leaking heart valves, and even a hole in the heart.

Two Ascension sites were selected for a study investigating super-oxygenated blood therapy, an innovative treatment that could reduce damage to a patient's heart after a heart attack. Shukri David, MD, physician chair of the St. John Providence Heart & Vascular Center of Excellence, is leading the study at Providence-Providence Park Hospital, Southfield and

Novi. At St. John Hospital & Medical Center, Chief of Cardiology Thomas LaLonde, MD, is the principle investigator.

"Ascension was chosen as one of very few centers to participate in this national study because of the skills and talent of the physicians and nurses in our Interventional Cardiology program," notes Dr. David.

Halfway through the trial, more patients had already been treated at Ascension than at any other site. Enrollment will be complete when 100 patients have been treated nationwide.

Called the Ther-Ox IC-HOT (Evaluation of Intracoronary Hyperoxemic Oxygen Therapy) study, this trial is the first of its kind. It goes beyond traditional angioplasty and stenting, which doctors perform immediately after a heart attack to open blockages and increase blood flow to the heart. "The goal of IC-HOT is to facilitate repair of the heart muscle using oxygen-rich blood and restore the heart's ability to pump. Earlier studies have shown it can reduce the damaged area of the heart muscle by as much as 26 percent" reveals Dr. LaLonde.



"We mix a solution of highly oxygenated saline with the patient's blood and deliver it through a catheter to the targeted area of the heart," says Dr. David. "It's a complex process and requires additional training and specialized technology."

After receiving super-saturated oxygen therapy, patients have had less swelling, improved healing and better recovery of heart muscle. Long term, Dr. David and Dr.

Lalonde say it could result in fewer deaths from heart attacks.

"We measure the patients' injury patterns while they're in the hospital recovering, and again 30 days later. So far, all the patients we have treated have done well and experienced reduced scarring of the heart muscle," says Dr. David. "We are pleased that we can offer this opportunity at St. John Providence."



### TO SUM UP:

- Heart attacks permanently damage heart muscle
- Super-oxygenated blood therapy could reduce damage after a heart attack
- Two Ascension sites were chosen for this national study

### IMPACT:

Following a heart attack, patients could receive super-oxygenated blood therapy to reduce damage to the heart muscle and improve long-term recovery.





## Lipidology and Gastroenterology

# Physicians in the right place, at the right time



**James Maciejko,**  
MS, PhD, FACC  
Lipidologist,  
St. John Hospital &  
Medical Center



**Hernando Lyons,**  
MD  
Pediatric  
Gastroenterologist,  
St. John Providence

In May 2015, four brothers ages nine through 17 were referred to James Maciejko, MS, PhD, FACC, a lipidologist at St. John Hospital & Medical Center, by his colleague, Hernando Lyons, MD, a St. John Providence pediatric gastroenterologist.

They had extremely high cholesterol levels, liver enlargement, and elevated liver enzymes, which indicate an inflamed or injured liver. The boys had worsening liver disease without a known cause, and medications weren't helping.

"I examined the boys, evaluated them, and ruled out other causes for their high cholesterol," says Dr. Maciejko. "I sent blood samples to Children's Hospital in

Seattle, Wash., where they could test for the presence of a key enzyme – lysosomal acid lipase – which the body needs to control cholesterol metabolism. We learned that the children were missing this enzyme, which points to an extremely rare condition: Lysosomal Acid Lipase Deficiency."

These were the first cases of the disease reported in Michigan, and the first time ever that all four siblings of the same parents were diagnosed with this rare genetic condition. Only 135 cases are known worldwide.

Without any available treatment options, Dr. Maciejko went to work to find out how St. John Hospital & Medical Center could help the family.

"I searched for any experimental trials in progress intended to treat this disease. I found that a clinical trial was being conducted that tested the use of a lysosomal acid lipase replacement enzyme, the enzyme their bodies weren't making," he says.

While the trial was just what Dr. Maciejko wanted for his

patients, the Massachusetts-based company sponsoring the study was in phase III, and St. John Hospital & Medical Center wasn't an approved site.

"We changed that quickly. Within a few months, we were approved and set up the study for the boys at St. John Hospital & Medical Center," he says.

After about 12 weeks of treatment, testing revealed almost normal liver enzymes; cholesterol levels were coming down. In time, the LDL and HDL cholesterol levels and triglycerides returned to normal. "All four boys feel well and are doing great," he reports.

Every two weeks, the family comes from Port Huron to the hospital for intravenous (IV) infusion of the enzyme. It takes four or five hours, and they're back on their way home.

The FDA approved the treatment in December 2015 and gave it a new name: Kanuma. For the family, it was a lifesaver. Patients who begin to have symptoms as infants typically die by their first birthdays. Those whose symptoms appear during early childhood usually die by age 30 of liver failure or cardiovascular disease. Unfortunately some only live to be nine or 10 years old. Heart attack, stroke and cardiovascular disease are brought about by the high levels of cholesterol in the blood.

"Enzyme replacement treatment is essentially a cure," says Dr. Maciejko. "As long as patients continue receiving the enzyme, they should avoid catastrophic liver disease or cardiovascular disease and continue to live active, fulfilling lives."

Dr. Maciejko is sharing his knowledge of this extremely rare disease with physicians from around the world. He and Dr. Lyons conferred with other physicians in Munich, Germany, at the first-ever international conference on Lysosomal Acid Lipase Deficiency.

He is also working with Alexion, the company that manufactures Kanuma, and the FDA to increase awareness, and has travelled to the University of Texas, Yale, the Cleveland Clinic, Emory University, UCLA and USC to give talks to pediatricians and specialists.

Through collaboration with a geneticist at Mt. Sinai Health System in New York City, Dr. Maciejko is anticipating an entire genome analysis on all four boys. The goal is to identify mutations in other genes that affect cholesterol and shed light on how the disease functions.

Because it is so difficult to diagnose, Dr. Maciejko suspects the disease often goes undetected and is not as rare as previously thought. Symptoms are an enlarged liver, which can actually be felt, and high liver enzymes, cholesterol and triglycerides in the blood. But only genetic testing can determine a definite diagnosis of Lysosomal Acid Lipase Deficiency.

"As a clinician and researcher, I was in the right place at the right time for the family. I had learned about Lysosomal Acid Lipase Deficiency as a fellow at the Mayo Clinic 30 years ago and gave a 10-minute presentation to the other fellows about the disease. I

doubted I would ever see it in my career," he recalls, "but when I saw the brothers from Port Huron, for whatever reason, I remembered the presentation I gave, and it prompted me to test for it."

The family has a sense of relief – and a feeling of hope. Instead of anticipating liver transplants and the deaths of all four of their children over the coming years, they are living life like any other family with teenage boys.

The oldest has started college and is in the pre-med program at Oakland University. The brother with the most advanced liver disease has grown five inches since his diagnosis. They're active, participating in sports and school, and according to Dr. Maciejko, are "all very bright kids."

Thanksgiving dinner, according to their mother, is no longer a time when she wonders if this could be the last one. "I'm so glad we could do this for this family," he says. "It was here at St. John Providence where we saved their lives."

After about 12 weeks of treatment, testing revealed almost normal liver enzymes.

### TO SUM UP:

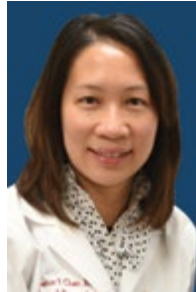
- St. John Providence physicians discovered a rare liver disease in four Port Huron siblings
- Without a key enzyme, affected children suffer from liver failure and rarely live past 30
- Quick enrollment in a clinical trial was life saving for these patients

### IMPACT:

By sharing their findings, these St. John Providence patients and physicians are enhancing Lysosomal Acid Lipase Deficiency research and education, potentially leading to more diagnoses and treatment worldwide.



# Finding relief for Ménière's disease



**Eleanor Chan, MD**  
Neurotologist, St. John  
Providence and Michigan  
Ear Institute

Imagine experiencing episodes of dizziness, hearing loss, ringing in the ear and ear fullness that can last several hours. While this condition, known as Ménière's disease, affects a small percentage of the population, St. John Providence Neurotologist Eleanor Chan, MD, encounters it frequently at the Michigan Ear Institute.

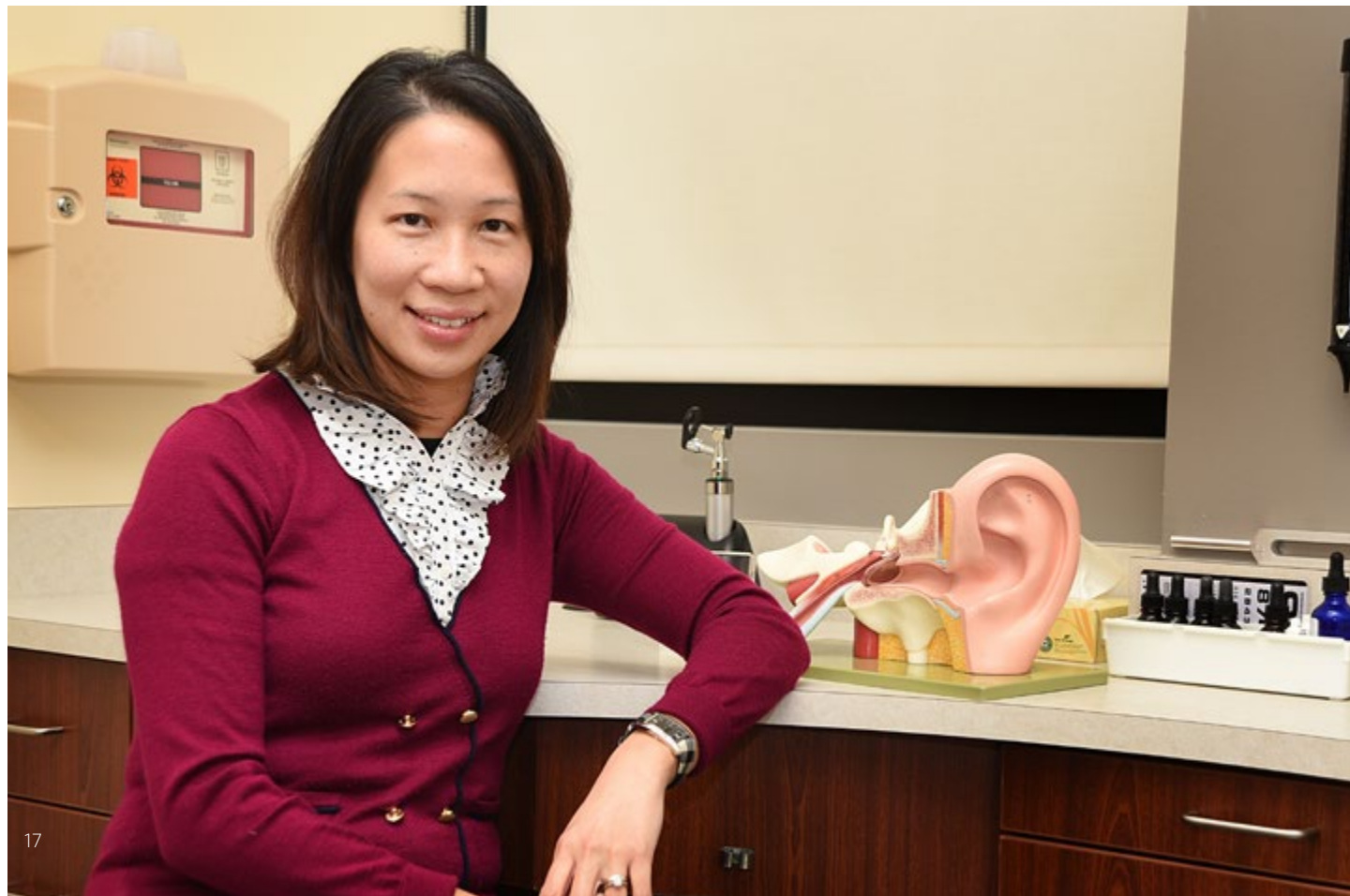
"We're not exactly sure what causes Ménière's disease, but the underlying problem appears to be connected to a buildup of fluid within the inner ear," she reveals. "The worst symptom for most sufferers is the vertigo - the feeling of dizziness or spinning - that can be functionally incapacitating during an episode."

There is no cure or FDA approved medication for Ménière's disease, but a research study offers a major step toward treating the disease. Dr. Chan is participating in the Otonomy OTO-104 clinical trial

to evaluate the effectiveness of a steroid medication, dexamethasone, on vertigo in patients with Ménière's disease.

"We numb the patient's ear with a local anesthetic, then inject the steroid through the ear drum into the middle ear. The steroid can be absorbed into the inner ear through a fine membrane called the round window. Steroids in the inner ear seem to reduce our patients' vertigo attacks. Dexamethasone is a common steroid, but this particular formulation is combined with a special polymer, enabling it to last longer in the ear," she explains.

Patients in the trial are randomized through an algorithm to one of two groups: The treatment group receives the steroid medication, and the other, a placebo injection. Patients report their symptoms daily in a telephone diary, and the Providence Research Team helps collect and record clinical data. The study is double-blinded, so neither patients nor the research team know who received the actual drug versus placebo.



Dr. Chan has been involved with the Otonomy OTO-104 clinical trials over the past several years, and the study is currently in its third phase. She's looking forward to examining the more detailed feedback she will receive at its conclusion.

"We have already seen definite positive trends," says Dr. Chan. "Patients have fewer episodes of vertigo and the dizziness tends to be less severe."

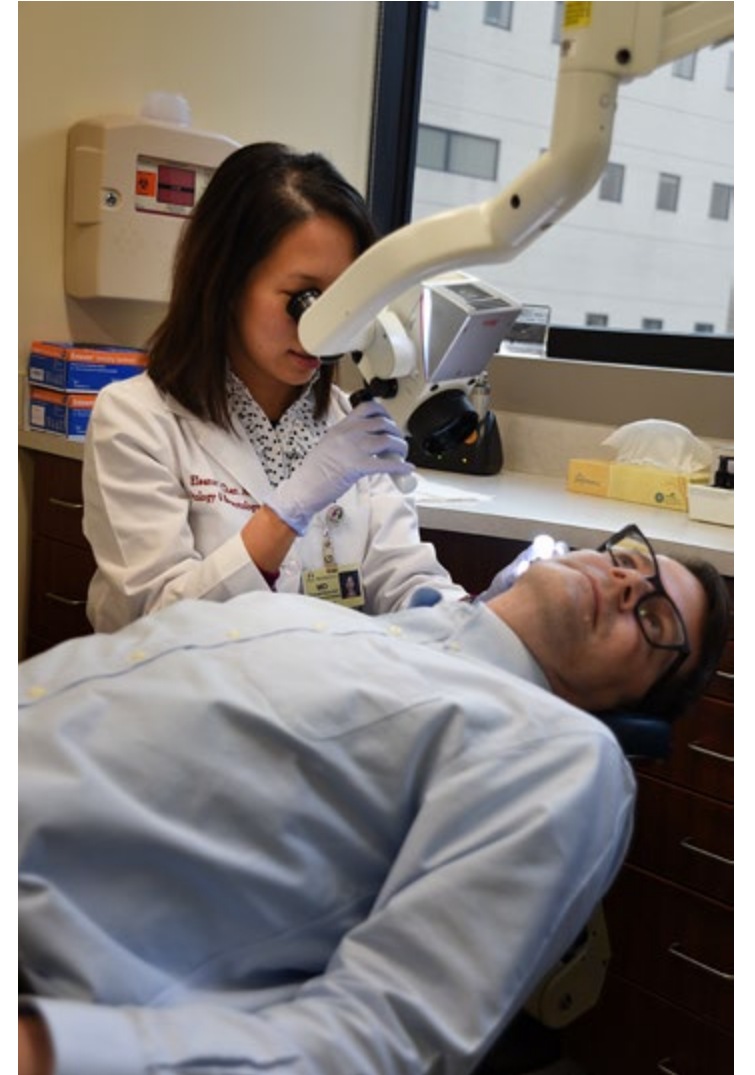
The promising results achieved from the earlier phases of the study have led the FDA to approve the treatment as an open-label study, which means patients who were enrolled in the phase 3 trial can receive two more doses of the active drug.

Additionally, local administration of steroids to the inner ear appears to cause minimal side effects.

Prior to this clinical trial, there have been few well-designed studies on Ménière's disease. Physicians advise patients to make lifestyle changes, such as cutting down on sodium, sugar, caffeine and alcohol, and prescribe a diuretic, or water pill, to help reduce fluid in the inner ear. While these approaches do result in some improvement, patients are far from cured. Some experience only temporary relief and others require surgery.

"This disease is challenging because the symptoms can be so variable from patient to patient, and periodic flare-ups do not follow a regular, predictable pattern. A diagnosis of Ménière's disease is life-changing despite current treatments, and can lead to long-term hearing loss and disability. Through the Otonomy clinical trial, we

can offer our patients a favorable alternative to currently available treatments, which could translate into an improvement in their quality of life," says Dr. Chan.



### TO SUM UP:

- Ménière's disease causes symptoms including vertigo, or dizziness
- There is no cure
- Steroid injections may reduce episodes of vertigo in Ménière's patients

### IMPACT:

Positive results from this treatment have already been seen; if approved, steroid injections could significantly improve quality of life for these patients.





## Internal Medicine

# Uncovering hypercalcemia in hospitalized patients



**Sarwan Kumar, MD**  
Internal Medicine,  
Crittenton Hospital  
Medical Center

If you've never heard of hypercalcemia, you're not alone. The condition is a higher-than-normal level of calcium in the blood, and even those who have it may not be aware or have any symptoms.

Sarwan Kumar, MD, Internal Medicine, together with third-year resident Mahila Naseer, MD, and a team of Crittenton Internal Medicine investigators, discovered that when patients have their blood tested during hospitalization for another condition, hypercalcemia can be overlooked.

After the team reviewed more than 7,600 patient charts, they found that 153 of those patients had calcium levels above the normal range. Normal calcium is measured at 8.3 to 10.2 mg/dL. About one-quarter of the patients in the study were just a little on the high side, with levels

between 10.3 and 11 mg/dL and no noticeable symptoms.

"Only 28 percent of the 153 were documented and further evaluated for the problem," Dr. Kumar reveals. "We discovered that hypercalcemia is more common in hospitalized patients than noted in the published literature, and far higher among hospitalized patients than in the general population."

Patients with hypercalcemia, like those in the study, are usually admitted to the hospital for a different reason. Through the study, they discovered that when lab work is done and calcium levels test above the normal range, the electronic medical record does not alert physicians. Most patients don't realize their blood calcium level tested higher than normal.

Dr. Kumar explains, "Patients with slightly elevated calcium levels usually don't have any symptoms. The test results aren't prominent in the medical record, and

physicians may not mention it to patients, who are in the hospital for a different, more immediate problem."

Ideally, a patient would follow up with their primary care physician for further testing after they leave the hospital. Hypercalcemia is a significant health concern for two reasons:

"First, it is often a symptom of a serious, underlying medical condition," says Dr. Kumar, "and this warrants more testing with a primary care physician. It can be an early signal of cancer, endocrine problems, and parathyroid disease."

Second, hypercalcemia by itself can lead to pancreatitis, abdominal pain, kidney stones, bone pain, muscular weakness, and problems with heart and brain function. Without treatment, calcium levels continue to rise.

"We think the prevalence of hypercalcemia may be underestimated and we are striving to change this. If patients do have an underlying disease, we can detect it sooner, which is always an advantage for treatment," he points out.

Dr. Kumar and the team of investigators are now working to publish research results and educate physicians about documentation and follow-up for patients with high calcium levels. After education and documentation have taken place, Dr. Kumar's goal is to re-evaluate with an additional study to determine the impact.

### TO SUM UP:

- Hospitalized patients are sometimes not informed of elevated blood calcium levels
- The condition can signal a serious, underlying medical condition
- Patients with hypercalcemia should have further testing

### IMPACT:

Working to publish results and educate physicians, the St. John Providence research team's discovery could lead to greater awareness and follow-up for patients with hypercalcemia.





## Infection Prevention

# Researchers study STDs and antibiotics in the ED



**Karen Jones, MPH, RN, CIC**  
Infection Preventionist,  
St. John Hospital &  
Medical Center

In a two-month period, 1,103 patients visited the St. John Hospital & Medical Center Emergency Department (ED) to be tested for gonorrhea or chlamydia, two sexually transmitted diseases (STDs). Typically, providers examine patients and collect genital or urine samples to determine if there is an infection, but must often prescribe an antibiotic before receiving the definitive test results. Current testing methods can take up to 48 hours.

“The challenge for ED physicians is deciding whether to treat with antibiotics during the ED encounter or wait,” says Karen Jones, MPH, RN, CIC, who conducted a research study together with co-investigator and director of Research Susanna Szpunar, MPH, PhD, St. John Hospital & Medical Center. Through a chart review, Jones and Dr. Szpunar determined how many of the 1,103 patients tested positive for gonorrhea or chlamydia and were prescribed antibiotics.

Most patients – 77 percent – who were treated with antibiotics did not, in fact, test positive for gonorrhea or chlamydia. Only 150 of the 440 patients who received antibiotics actually needed them.

Jones emphasizes that unnecessary antibiotic use increases the risk for antibiotic resistance and complications related to their use. However, if the provider does not prescribe an antibiotic at the time of the ED visit, it may be difficult or impossible to reach patients and ask them to come back in for treatment.

“Left untreated, the patient continues to spread the disease. These STDs can also cause serious health complications,” she points out.

The study received national attention when it was selected to be highlighted and promoted at a national infection prevention conference and published through MedScape. *Glamour* magazine and professional pharmacy and microbiology publications also picked up on the study and published articles.



“As a nurse and advocate of public health, my primary message is to urge patients to see a primary care doctor if they think they have an infection. An STD is usually not a true medical emergency, but many patients don’t know where else to go. A doctor’s office, clinic, or urgent care center are all much better choices. People need to know where to access care in Detroit,” she says.

Jones has more than 15 years of experience as an ED nurse. She is now an infection preventionist and works to help prevent unnecessary antibiotic use.

“In the past two years, I’ve seen more and more drug-resistant strains of bacteria, especially in patients who are already hospitalized with one or more medical conditions. Antibiotic resistance means we have fewer medications to treat patients. We need to think about all the places patients may receive antibiotics and only prescribe when necessary,” she says.

Jones found that certain pieces of a patient’s medical history and physical are associated with actual gonorrhea and chlamydia infection, indicating a high likelihood of infection. Using that data, a decision-making algorithm for healthcare providers may be a more effective and streamlined approach to treating these suspected STDs in the ED. Rapid testing methods are another way to target antibiotic use for patients with true infection.

“Appropriate gonorrhea and chlamydia treatment in the ED would cut down inappropriate antibiotic use, and make a significant impact on reducing antibiotic resistant strains of bacteria,” she says.



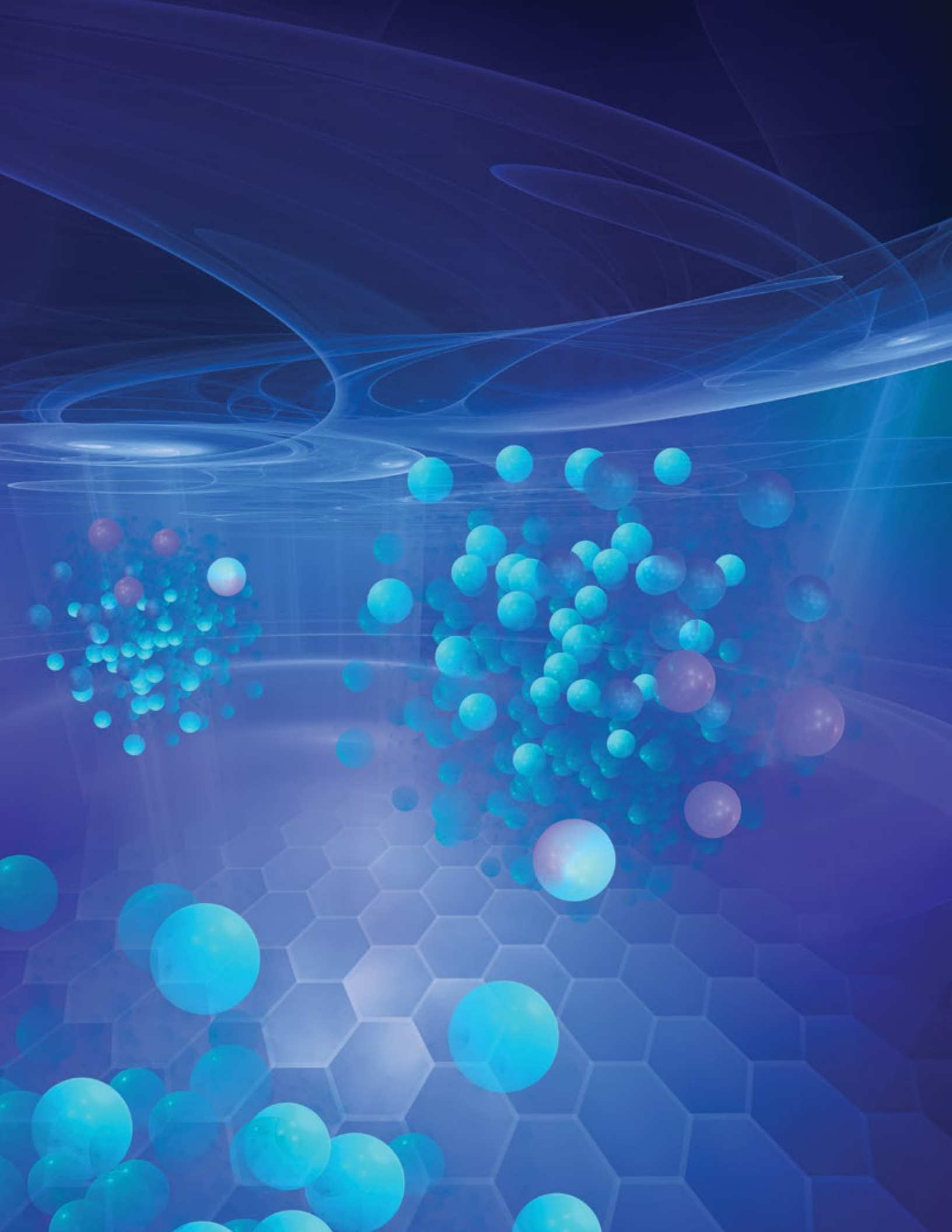
### TO SUM UP:

- Patients visit the St. John Hospital & Medical Center ED for suspected sexually transmitted diseases
- Most receive antibiotics but do not actually need them
- Unnecessary antibiotic use increases antibiotic resistance

### IMPACT:

By uncovering a source of unnecessary antibiotic use, researchers can develop more precise methods for antibiotic use and reduce antibiotic-resistant strains of bacteria.





2017  
Annual  
Research Report





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Together, we are dedicated to providing  
compassionate, personalized care in our community.

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