mapping the HUMAN HEART

HEALING THROUGH DISCOVERY AND RESEARCH

McLaren Northern Michigan

HEART AND VASCULAR ANNUAL REPORT 2015

mapping the

HUMAN HEART

A heart and vascular program, to be truly great, demands a focused attention on every point along the way — from research, to diagnosis, to treatment, to lasting outcomes. McLaren Northern Michigan leads the way in advanced cardiovascular care and, as a recognized leader, continues to guide advancements in the field.

INSIDE

THE PLAN | THE JOURNEY | THE DESTINATION

Louis Cannon, MD, FSCAI, FACA, FCCP, FACC, FACP, has been repeatedly honored as a leading interventional cardiologist. Author of over 200 medical publications and two United States medical device patents, Dr. Cannon serves on strategic advisory boards for several Fortune 500 companies, as well as many medical technology companies. McLaren Northern Michigan proudly recognizes Dr. Cannon for his significant contributions to heart and vascular health.

To be a truly great cardiovascular program, to earn the recognition of peers in the field, and to maintain a reputation throughout the state and the nation, McLaren Northern Michigan fully accepts the responsibilities of leadership. These responsibilities will guide the way for future advancements in heart and vascular care.

TO OUR FRIENDS AND COLLEAGUES IN THE MEDICAL COMMUNITY

EXPERIENCE: IN RETROSPECT

An annual report is an opportunity to view the data, examine parts of the whole, and meet the individuals and the teams that make an organization work. At McLaren Northern Michigan, we are particularly interested in looking back, in examining the record of our efforts, and reviewing the decisions — and their results — that move us forward. In this report, you will find the charts, the graphs, and the statistics that informed decisions, but perhaps most importantly, the reader is introduced to our cohort, the foundation of all that we do in the pursuit of excellence.

AN INSPIRATION THAT BECAME RESPONSIBILITY

The Heart and Vascular Center at McLaren Northern Michigan is now internationally recognized for excellence, publications, and leading edge research. Research here started as a high aspiration; it is now both well-established and well-regarded, and the INSPIRATION is now a RESPONSIBILITY. We recruited top tier colleagues, pursued clinical trials and research opportunities, and continued to provide the latest technology and techniques. As a result, we are a regional leader in advanced cardiovascular care with state, national, and international recognition. Our STEMI program, with its emphasis on fine-tuned response times, has made our door-to-balloon times a standard others strive to meet. Our cardiothoracic specialists continue to surpass national benchmarks, and our electrophysiology team has successfully performed hundreds of advanced hybrid ablations as well as complex pacemaker and defibrillator implants. Although we are one of the smallest hospitals in the world to be performing TAVR (transcatheter aortic valve replacement), our data suggests that others can learn a lot from us. Our vascular treatments include nationally and internationally accepted protocols and best practices, plus individualized consultations show positive results, from surgical to medication-based.

REACHING OUT AND ACROSS THE REGION

Bringing quality health care to the entire region requires foresight and planning, in treatment, education, and prevention. Our Mobile Diagnostic Unit reaches patients for testing and follow-up appointments without the necessity of travelling to Petoskey. Outreach efforts include careful study of demographics to reach the target population for a number of heart health-related topics. Our facility, together with our affiliates, makes us a powerful advocate for all health-related issues.

EFFORT DOES NOT GO UNNOTICED

Finally, our efforts and our reputation garner attention, plus the accolades and awards that accompany it. From community recognition, to individual honors, from educating physicians around the world on the latest cardiovascular techniques to state and national commendations, our pursuit of excellence does not go unnoticed. We are McLaren Northern Michigan — some may consider us small, but no one can disagree with the impact we are making throughout the world in the treatment and care of cardiovascular diseases. We are quality. And we make a difference in heart health.

Louis A. Cannon, MD, FSCAI, FACA, FCCP, FACC, FACP, Interventional CardioVascular Specialist
SENIOR PROGRAM DIRECTOR, HEART AND VASCULAR
PRESIDENT, THE CARDIAC & VASCULAR RESEARCH CENTER OF NORTHERN MICHIGAN

GRETCHEN LAMARCHE RN, BA, BSN
STEMI Coordinator

the

BEATING HEART

Heart health is the focus of McLaren Northern Michigan cardiologists. Interventional tests and treatments, proven drug therapies, guided lifestyle changes, and rapid response to emergency events ensure optimal patient outcomes.

"Optimal STEMI care involves more than minimizing reperfusion time. Evidence-based adjunctive pharmacology, education in healthy lifestyle changes, and attention to details are all necessary to achieve positive outcomes and to optimize the patient experience. We pride ourselves on providing every facet of STEMI care and delivering with a caring and gentle hand."

— **JASON RICCI** MD
INTERVENTIONAL
CARDIOLOGIST

STEMI Initiative Focuses on

EDUCATION AND COMMUNICATION

In a coordinated effort to improve outcomes in ST elevation myocardial infarction (STEMI) patients, McLaren Northern Michigan has revitalized its STEMI program with new initiatives and intensified focus under the direction of Interventional Cardiologist Jason Ricci, MD. "Our Heart and Vascular Center has earned a reputation for excellence through initiatives like this, and our large geographic area demands it," he explains.

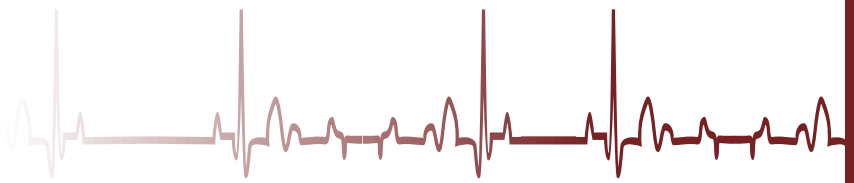
STEMI Coodinator Gretchen Lamarche, RN, BA, BSN, is tasked with synchronizing the program. "The impetus behind the STEMI program is to improve door-to-door balloon times, especially with patients from referring hospitals," she says. "To that end, we have combined current best practices with strong overall efforts in communication, education, and feedback."

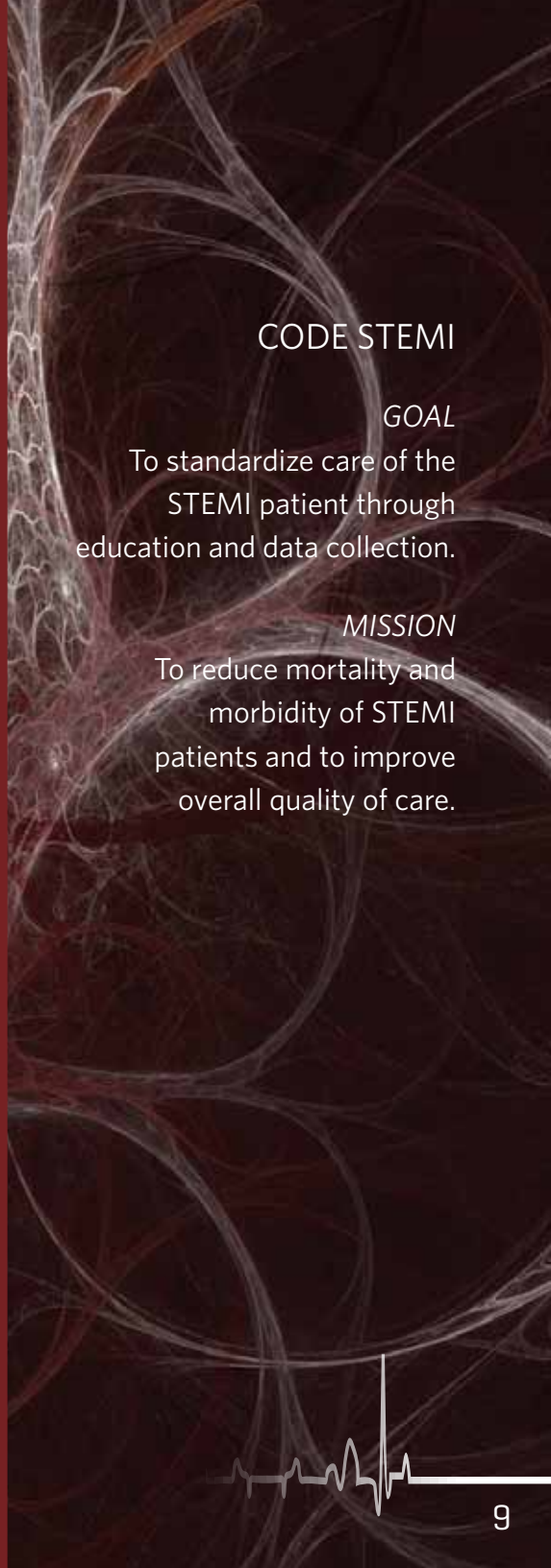
OPEN CHANNELS

Educational outreach in STEMI protocol includes emergency medical services (EMS) staff and other first responders in the field, plus emergency department (ED) staff in referring facilities such as Cheboygan, Charlevoix, Gaylord, Newberry, and Alpena, plus War Memorial in Sault Ste. Marie. Goals are based upon *Mission: Lifeline*, a project of the American Heart Association, to establish guidelines and standardize responses for both EMS and ED personnel. Ricci and Lamarche conduct educational presentations and training at facilities and EMS units, detailing preferred protocols. "We outline the data needed from our referring hospitals," she says. "We review preferred drug protocols such as adjunctive antiplatelet therapy with fibrinolysis, Plavix guidelines for lytic patients, and reperfusion therapy, for example, among other recommendations. Opening these channels of communication is proving to be beneficial with positive patient outcomes."

SHARING THE RESULTS

Perhaps most significantly, a follow-up report of individual patient data is shared with all personnel involved. The report covers the timeline and outcomes starting when the patient makes first EMS contact, presents in ED, and is stabilized and transferred to Petoskey, up to and including discharge. Director of Emergency Services and Trauma Program Manager for War Memorial Hospital Pat Hirt, RN, credits the STEMI program with improved PCI times. "In a rural area such as ours, decreasing time to reperfusion is crucial," she says. "Ongoing education of the ED staff and physicians has improved our door-to-drug times, and now we are working toward a 30-minute goal." She continues, "Gretchen Lamarche has done a great job of providing feedback to help us understand how we are meeting core measures. We are always aware of our goals, but having additional education supports improvement."





CODE STEMI

GOAL

To standardize care of the STEMI patient through education and data collection.

MISSION

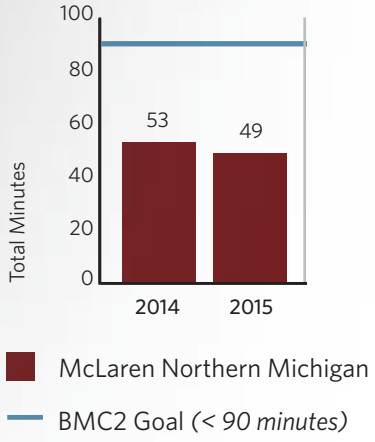
To reduce mortality and morbidity of STEMI patients and to improve overall quality of care.

From Left to Right:
CARDIOLOGIST **DUANE SCHUIL** MD, PhD
MEDICAL ASSISTANT **SUE MANZER** MA

2015 DATA

DOOR-TO-BALLOON
45.5% LESS TIME

than BMC2 goal of 90 minutes.
McLaren Northern Michigan
experienced a median of 49 minutes.*



REGISTRY PARTICIPATION FURTHERS IMPROVEMENT

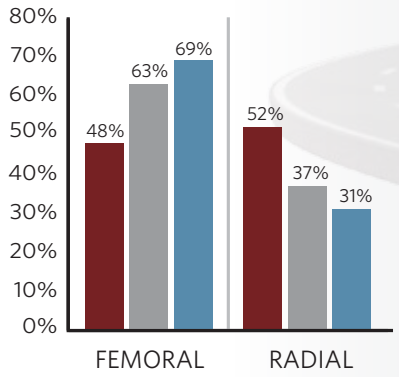
In 2015, McLaren Northern Michigan worked toward 2016 participation in the American College of Cardiology's Action Registry, an outcomes-based quality improvement program focused exclusively on STEMI patients. Action Registry participants, limited to just 1,000 facilities nationwide, benefit from real-time quarterly reporting to decrease the incidence of procedural complications, identify opportunities for improvement, and showcase areas of excellence. "The Registry's collected data shows strengths and weaknesses, and will help us to identify areas where we can grow and improve," says STEMI Coordinator Gretchen Lamarche, RN, BA, BSN. "For example, our average door-to-balloon times for 2014 and 2015 were well below the < 90- or < 120-minute goal set by *Mission: Lifeline* and the < 90-minute goal set by BMC2. Our efforts in education, communication, feedback, and data collection are paying off." She continues, "This communication alleviates Emergency Department time, allowing patients to move directly from EMS to the cath lab. Our patients come from 22 counties, and we must focus our efforts on those patient outcomes. After all, time is muscle."

** BMC2 (Blue Cross Blue Shield of Michigan Cardiovascular Consortium) Data*

Ahead of National Averages for Advanced Procedures:

RADIAL ARTERY CATHETERIZATION

Radial arterial catheterization, rapidly becoming the procedure of choice for many cardiologists nationwide, is routinely performed at McLaren Northern Michigan. Traditionally, the femoral artery was used for catheterization because of its size and proximity to the heart, but using the radial artery provides distinct advantages: it decreases internal bleeding, reduces risk of complications, lessens recovery time, and shortens hospital stays. "There are certainly cases in which the femoral approach is necessary," says Cardiologist Harry Colfer, MD, "but the radial procedure is more comfortable for patients and shows improved recovery outcomes. We are pleased to offer this procedure to our regional population."



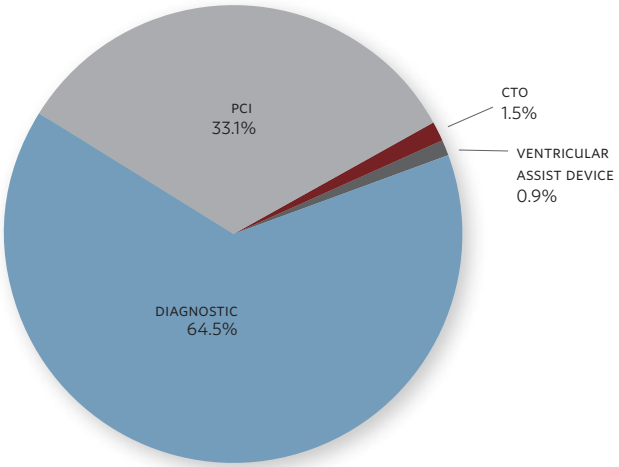
McLaren Northern Michigan
BMC2 State Percentage
NCDR®

66% MORE
Radial Procedures than U.S. Averages

"The traditional femoral approach is often chosen by physicians because it is the more familiar procedure, but here at McLaren Northern Michigan we are experienced in the radial approach. Offering radial catheterization right here at home is a definitive benefit to our patients."

— HARRY COLFER MD
CARDIOLOGIST

2015 CATHETERIZATION VOLUME



1317	DIAGNOSTIC
675	PCI
31	CTO
19	VENTRICULAR ASSIST DEVICE (IMPELLA®/TANDEMHEART®)

Impella® and TandemHeart® technology are used in high acuity patients undergoing percutaneous coronary intervention (PCI), as well as in those treated for acute myocardial infarction and decompensated heart failure. These temporary ventricular assist devices can be used as short-term heart failure solutions, allowing the heart to rest following traumatic episodes or prior to complicated procedures such as open heart surgery or heart transplant.

STEVEN WAYNE AVERY MULTI VESSEL DISEASE
Rudyard, Michigan, Resident

Playing golf "every other day"
at the Sault Ste. Marie Country Club.

Partnership Between Michigan's Peninsulas:

IT TAKES A TEAM

Art Van employee Steven Wayne Avery spent much of his time making deliveries to Canada from the store in Sault Ste. Marie, but on this lucky day, Avery was close-by, delivering a loveseat to a home in Rudyard. "It was just a normal work day," he says, until he collapsed with sudden cardiac arrest. "It was like when you bend over to pick something up and become light-headed after standing up too quickly." Avery was out for about 13 minutes, during which time his life was saved by the homeowners, a prison guard and a registered nurse. The couple applied CPR for the duration, taking turns when one became tired. "A typical individual might not be able to sustain CPR for that long, so it was very fortunate that both homeowners had CPR training," explains Clinical Education Specialist, Sheryl Hitsman, BSN, RN-BC. Avery was defibrillated by EMS staff, and he was awake and breathing independently when he was transported to War Memorial Hospital in Sault Ste. Marie, a McLaren Northern Michigan exclusive cardiac services partner.

After he was stabilized and transferred to Petoskey, a diagnostic catheterization and intervention by Cardiologist Duane Schuil, MD, PhD, revealed multi vessel disease. This diagnosis combined with a transient ischemic attack (TIA) post-catheterization meant that Avery was too high risk for open heart bypass surgery. Electrophysiologist Naomi Overton, MD, then implanted a pacemaker. Over the next three months, Interventional Cardiologist Jason Ricci, MD, inserted three stents. Now, Avery is feeling great and golfing every other day. "I've got to do something other than mowing the lawn," he laughs.

- **Patient Steven Wayne Avery** — SUDDEN CARDIAC ARREST
- **EMS** — TRANSPORT TO WAR MEMORIAL HOSPITAL
- **War Memorial Hospital** — PATIENT STABILIZED AND PREPARED FOR TRANSPORT
- **EMS** — TRANSPORTED TO McLAREN NORTHERN MICHIGAN-PETOSKEY CAMPUS
- **Duane Schuil, MD, PhD** — DIAGNOSTIC CATHETERIZATION/SURGICAL CONSULT
- **Naomi Overton, MD** — IMPLANTED PACEMAKER
- **Jason Ricci, MD** — CORONARY AND CAROTID STENTING
- **Patient Steven Wayne Avery** — GOLFING WITH GRANDCHILDREN

"For over 15 years, the Sault Ste. Marie community has benefited from the relationship with McLaren Northern Michigan. Our goal at War Memorial Hospital is to achieve door-to-EKG within 10-minutes to quickly evaluative at-risk patients who may be in need of transfer to Petoskey. Education is key, both internally and throughout the community." Dr. Doghmi offers an annual prevention lecture to the Sault Ste. Marie-area residents.

— WALEED DOGHMI MD
CARDIOLOGIST
War Memorial Hospital

From Left to Right:
CHRIS AKINS MD — Cardiothoracic Surgeon
MARTI LINN PA-C
JEFF FOX PA-C

a course of action

FOR EVERY PATIENT

Nationally and internationally ranked cardiothoracic surgeons use their combined skills to create individualized treatments based on established protocols and advanced research.

"Our surgical program pays close attention to innovations and advancements in cardiovascular care, specifically in procedures and devices as they become available. These efforts have made us a recognized regional heart and vascular center, and have allowed our patients close access to technology previously found only in much larger facilities."

— **J.D. TALBOTT** DO
CARDIOTHORACIC SURGEON

Preparing for New Technology:

THE SUTURELESS VALVE

Patients with aortic valve disease have a new alterative thanks to the approval of the Edwards Lifesciences INTUITY sutureless valve, a stent-mounted prostheses, in use by European doctors since 2007, and in Canada since 2011. In the United States, Mayo Clinic led the trials and acted as a participating site, followed by FDA approval. McLaren Northern Michigan cardiothoracic surgeons began preparing to incorporate sutureless valve procedures in 2015 for implementation following FDA approval in 2016. "We are ONE OF ONLY FOUR HOSPITALS IN MICHIGAN and the ONLY HOSPITAL NORTH OF GRAND RAPIDS selected to begin implanting this valve," explains Cardiothoracic Surgeon J.D. Talbott, DO.

The technology has a number of advantages that make it appropriate for a greater number of patients.

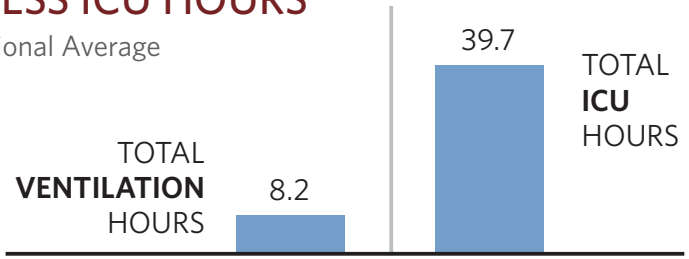
- Instead of 15 – 18 permanent sutures, the new technique requires only three temporary sutures, as the valve itself does not require sutures to stay in place.
- Sutureless valve replacement significantly shortens the operative time, thus resulting in decreased blood use, ICU time, infections, and renal failure.
- Sutureless valve replacement may reduce or eliminate fatigue, shortness of breath, and other aortic valve disease symptoms.

"In anticipation of FDA approval, we prepared throughout 2015 to begin incorporating sutureless valves in 2016," states Dr. Talbott. "This technology means that our patients have another option in addressing aortic valve disease."

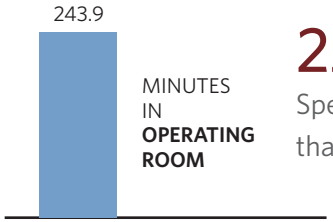
OPERATIVE AND POSTOPERATIVE INFORMATION

55.4% LESS VENTILATION HOURS AND 44% LESS ICU HOURS

than STS National Average



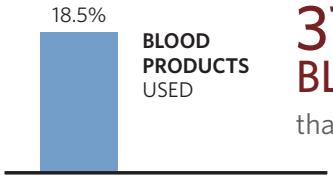
OR DURATION



22% LESS TIME

Spent in the Operating Room than STS National Average

BLOOD PRODUCT USAGE



37.7% LESS BLOOD PRODUCTS

than STS National Average

SOURCE: Isolated CABG Procedure Data Summary

McLaren Northern Michigan

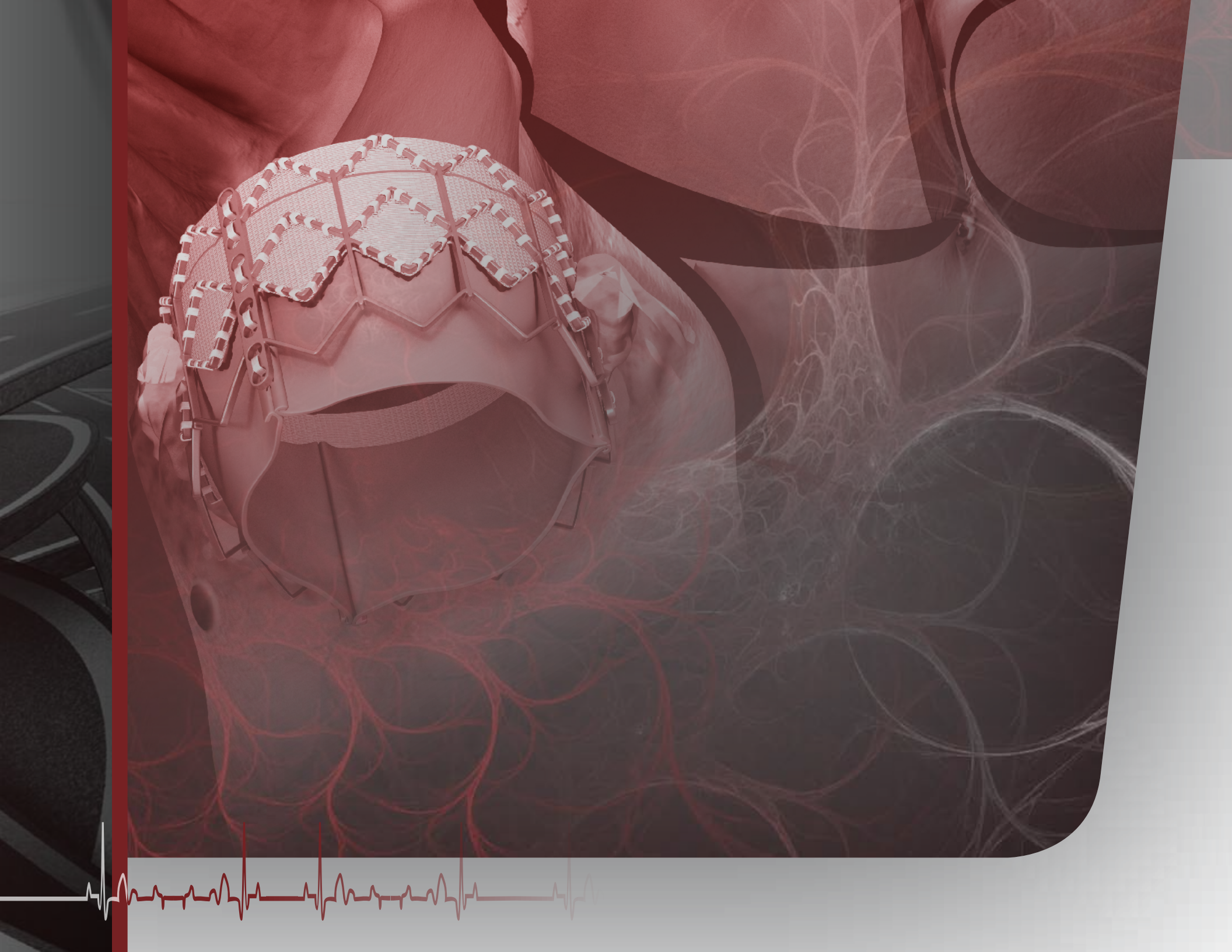
Founded in 1964, The Society of Thoracic Surgeons (STS) is a not-for-profit organization representing over 6,800 surgeons, researchers, and health care professionals worldwide, dedicated to ensuring the best possible outcomes for surgeries of the heart, lung, and esophagus, as well as other surgical procedures within the chest. The society mission is to enhance the ability of cardiothoracic surgeons to provide the highest quality patient care through education, research, and advocacy. — sts.org

2015 SURGICAL COMPLICATIONS FOLLOWING OPEN HEART SURGERY

0.8%
INFECTION

0%
PNEUMONIA

0.8%
RENAL FAILURE



treating complex

HEART DISEASE

Complex heart disease for those at greatest risk requires innovative diagnostic techniques, advanced treatment modalities, and dedicated specialists — all at the center of the Structural Heart program.

"At McLaren Northern Michigan, we are committed to developing a state-of-the-art structural heart program...I am proud to be part of McLaren Northern Michigan and their commitment to bring life-changing advances to northern Michigan."

— **JASON RICCI** MD
INTERVENTIONAL
CARDIOLOGIST

Structural Heart:

LEADING THE WAY

Because complex heart disease often means caring for the sickest of the sick, the structural heart program at McLaren Northern Michigan uses innovative diagnostic techniques and advanced treatment modalities. An expert team of cardiologists, cardiovascular surgeons, and specialists work collaboratively to develop and implement treatment plans, including minimally invasive procedures, like TAVR, for patients who are high risk or who are not candidates for open heart surgery.

"Our heart and vascular team has been a leader in the minimalistic approach and in performing such procedures under conscious sedation," explains Interventional Cardiologist Jason Ricci, MD. "Eliminating traditional general anesthesia avoids complications from mechanical ventilation and expedites discharge, often as early as the next day."

Advanced cardiac procedures treat atrial septal defect (ASD), ventricular septal defects (VSD), patent foramen ovale (PFO), closure of perivalvular leaks, and patent ductus arteriosus (PDA) to name a few. On the forefront:

- Upcoming commitments to provide MitraClip® for severe degenerative mitral regurgitation in 2016, and
- Initiation of the Watchman™ program in early 2017 for left atrial appendage occlusion in non-valvular Afib patients who are at high stroke risk and are poor candidates for anticoagulation.

Percutaneous approaches are one of the fastest growing domains in cardiology, with significant technological advances in the last several years. "At McLaren Northern Michigan, we are committed to developing a state-of-the-art structural heart program," explains Dr. Ricci. "This dedication will only continue to grow as new technologies are on the horizon."

SAFE TRIAL:

A Prospective, Multicenter, Single Arm, Real-World Registry Assessing the Clinical Use of the Lutonix 035 Drug Coated Balloon Catheter in Arteries of the Superficial Femoral Artery (SFA) and Popliteal Artery (PA) (SAFE-DCB U.S. Registry)

OBJECTIVE: To assess clinical use, safety, and outcomes of the Lutonix 035 DCB catheter to prevent arterial blockage without possibility of stent fracture.

DESCRIPTION: Percutaneous Transluminal Angioplasty (PTA) involves insertion of a catheter into a femoral artery. Once in place, a tiny balloon is inflated to press against the narrowing or blocked artery to try to open the blockage and allow more blood to flow. Insertion of a drug eluding balloon eliminates stent fracture concerns, and prevents future blockage.

TRIAL NAME	SAFE
LEAD INVESTIGATOR	JASON RICCI, MD
START DATE	APRIL 2015
END DATE	OCTOBER 2021
ENROLLED PATIENTS (as of 12/31/15)	10
SPONSOR	BARD
CONDITION	PERIPHERAL ARTERIAL DISEASE, PERIPHERAL VASCULAR DISEASES, ARTERIAL OCCLUSIVE DISEASES

NAOMI OVERTON MD
Electrophysiologist

with every beat

OF THE HEART

Advancements in non-invasive and minimally-invasive procedures can effectively alter the heart rhythm, improving outcomes and improving lives of northern Michigan patients.

"We pay close attention to advancements in electrophysiology, and we are committed to accessing the very best in new technology and procedures. McLaren Northern Michigan is an important regional heart and vascular center, in part, because we always strive to provide the best and latest advancements for our patients."

— **NAOMI OVERTON** MD
ELECTROPHYSIOLOGIST

Advancements in Electrophysiology:
A NEW DIMENSION

While electroanatomical mapping is not new to the treatment of atrial fibrillation, a new generation of basket-mapping catheters is changing the results, with both increased speed and enhanced accuracy. Previously, mapping was a slow, manual, labor-intensive procedure, susceptible to inaccuracies. Under the best circumstances, hundreds of data points might be detected, but resolution was often less than optimal. "New mapping systems are fantastic," says Electrophysiologist Naomi Overton, MD. "Instead of hundreds of data points, we now get thousands." She adds, "Think of the tip of your finger for comparison. These newer tactile force sensors mirror the sensitivity of your fingertip — almost like your finger is gauging the catheter force." Moreover, tactile force sensors produce real-time images in a matter of seconds.

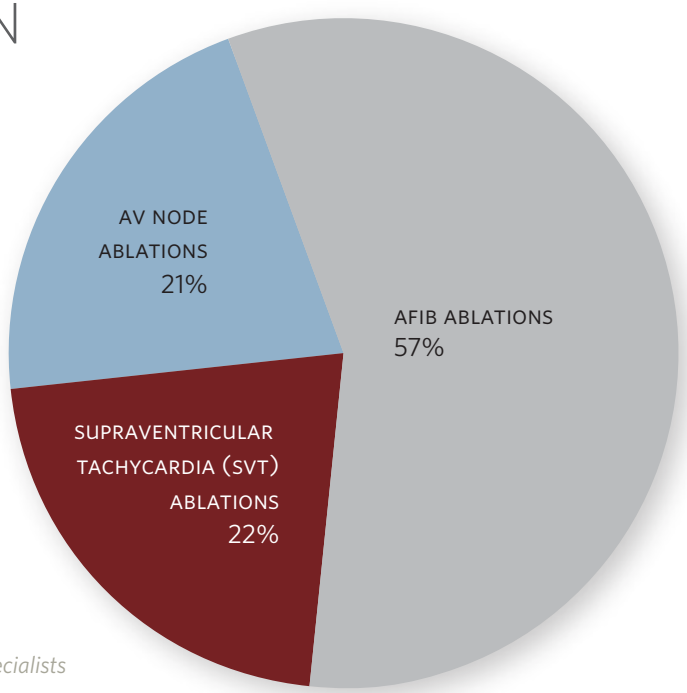
Atrial fibrillation has long been a challenging condition for doctors to treat because of its complexity, but the new system offers direct images of myocardial bio-electrical activation, the impulses shown to exacerbate the condition. "The system allows us to view the rotation of electrical disturbances in the cardiac tissue," says Dr. Overton. "The increased density of the mapping shows electrical potential and tells us when the ablation is successful. In other cases, we can quickly determine whether a patient will benefit from medication or a pacemaker, for example."

"Advancements in cardiovascular care happen quite regularly, and we pay close attention to the introduction of new devices, technology, and treatments. In addition to 3-D heart mapping, our patients will soon benefit from more advancements, including left atrial appendage closure devices, implantable remote heart monitoring, contact-sensitive catheters, pacemakers as small as the tip of a pen, and even a smartphone app designed to provide the patient with real-time heart data."

EP VOLUME

PACEMAKER IMPLANTS (PPM/CRT-P)	404
ICD IMPLANTS	118
TILT TABLE TESTING	30
TOTAL EP ABLATIONS (*SUM OF BELOW*)	115
AFIB ABLATIONS	66
SUPRAVENTRICULAR TACHYCARDIA (SVT) ABLATIONS	25
AV NODE ABLATIONS	24

ABLATION DETAIL



DATA SOURCE:
Michigan Heart & Vascular Specialists

Magnetic Resonance Imaging Advances:

MRI-SAFE DEVICES

In the treatment of brachycardia, both single and dual chamber pacemakers are implanted at McLaren Northern Michigan. The most recently approved magnetic resonance imaging (MRI) pacing leads include active and passive fixation models, marking the first time a passive fixation pacing lead is approved for U.S. patients undergoing MR scans. Significantly, patients implanted with the full system can now receive full-body MR scans in select environments when conditions of use are met.

"These new pacing systems have been specifically designed for safe use in the MRI environment and the results are very promising; in fact, every qualified patient should have an MRI-safe device," explains Electrophysiologist Naomi Overton, MD. "I feel that this is the future of technology and will allow us to continue advancing the quality of care for patients throughout northern Michigan."

ANTON SHARAPOV MD
Vascular Surgeon

healing the vessels

OF THE HEART

The vascular specialists of McLaren Northern Michigan use nationally and internationally accepted research, best practices, and emerging clinical trials to supplement proven treatments directed toward individual patient conditions.

At McLaren Northern Michigan, "our focus is on classic and leading edge vascular care with an aim towards primary, secondary, and tertiary prevention of cardiovascular complications. Offering this dimension of vascular care to the community means that our patients don't need to travel far for state-of-the-art care. In addition to managing a full complement of patient medical needs including lipid management, I am also dedicated to providing lifestyle education and preventative care."

— **ANDRIS KAZMERS** MD
VASCULAR SURGEON

Choosing the Best:

IMPROVING VASCULAR HEALTH

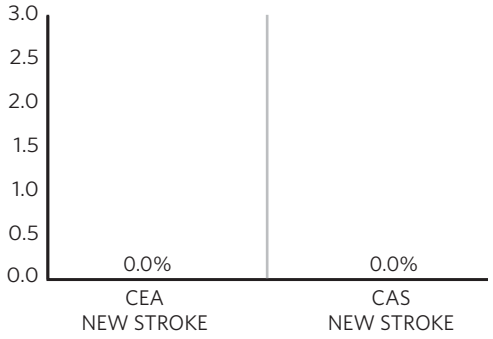
In 2015, the vascular team at McLaren Northern Michigan performed nearly 1,000 vascular surgeries — endovascular, open, and hybrid approaches for complex conditions. Each patient is evaluated for the appropriate intervention, followed by risk management and lifestyle change management.

- Carotid Endarterectomies, Bypass, and Stenting
- Carotid Subclavian Bypass
- Aortoiliac Stenting for Occlusive Disease
- Aortofemoral and Aortovisceral Bypass
- Mesenteric Stenting and Angioplasty
- Renal Artery Stenting and Angioplasty
- SFA and Tibial Angioplasty, Atherectomy, and Stenting
- Femoral Endarterectomy
- Femoropopliteal and Femorodistal Bypass
- Arterial and Venous Thrombolysis
- Arteriovenous Fistula Creation
- Fistulogram and Access Maintenance
- Aortic, Iliac, and Popliteal Endorgraft Stenting for Aneurysmal Disease
- Aortic Snorkel Graft Technology for Paravisceral Aneurysms
- IVC Filter Placement and Removal
- IVC and Iliac Vein Thrombolysis
- Venous Laser, Radiofrequency Ablation, Stripping, Ligation, and Stenting
- Limb Amputations

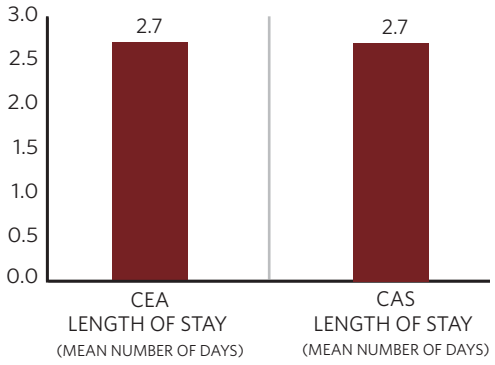
CAROTID ENDARTERECTOMY (CEA) | CAROTID ARTERY STENTING (CAS)

Vascular surgery data is compiled and approved through the Blue Cross Blue Shield of Michigan Cardiovascular Consortium (BMC2-VIC). The consortium is comprised of 43 participating Michigan hospitals to standardize practices and to monitor and improve the quality and safety of vascular procedures. The consortium measures quality improvement indicators specific to vascular surgical procedures. McLaren Northern Michigan consistently exceeds goals as recognized by BMC2-VIC.

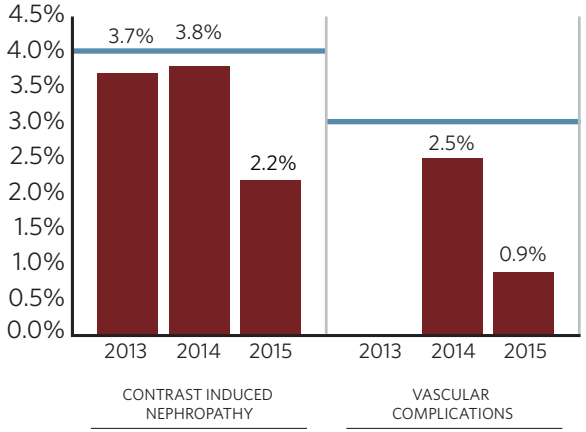
POST-PROCEDURE LENGTH OF STAY



STROKE



CIN | VASCULAR COMPLICATIONS



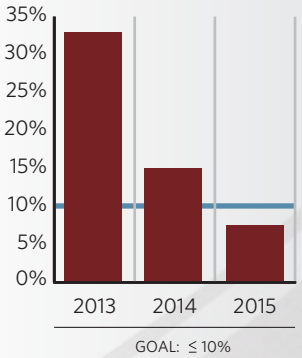
Consecutively, McLaren Northern Michigan is Better than BMC2 Goals

40% REDUCTION in CIN since 2014

64% REDUCTION in Complications since 2014

BLOOD PRODUCT USAGE

TRANSFUSION WHEN ASYMPTOMATIC WITH Hgb



Over a three-year period,
McLaren Northern Michigan Initiatives Show

88% REDUCTION
in TRANSFUSION
WHEN ASYMPTOMATIC with Hgb

From Left to Right:
DALTON MIRANDA MD — Cardiologist
TAMMY KENNY AHS, BLS, AHT
JENNIFER LaLONDE RN, BSN, CCRC — Director of Research
Louis Cannon MD — Interventional Cardiologist
Joan Moray BSN, RN, CCRC

an exacting search for

NEW KNOWLEDGE

Forward thinking colleagues approach research and clinical trials as a journey of discovery, choosing only those that will best impact patient lives.

Research and clinical trials are a vital, and very necessary component of modern health care. "The only way to advance medicine in the United States is to do research," says Jennifer LaLonde, RN, BSN, CCRC, Director of Research. "We participate in research and clinical trials so that our organization benefits from new knowledge and our patients benefit from advances in treatment. A lot has been accomplished, but there is an ongoing need for continued study."

6 NEW CARDIOLOGY TRIALS IN 2015 WITH 136 NEW PATIENTS ENROLLED | 20 ONGOING TRIALS WITH 468 TOTAL PATIENTS

2 NEW CARDIOTHORACIC TRIALS IN 2015 WITH 40 PATIENTS ENROLLED | 1 ONGOING TRIALS WITH 98 TOTAL PATIENTS

3 NEW VASCULAR TRIALS WITH 25 PATIENTS ENROLLED | 1 ONGOING TRIAL WITH 53 TOTAL PATIENTS

33 TOTAL TRIALS WITH 201 NEW PATIENTS ENROLLED IN 2015

IN ADDITION TO TRIALS ABOVE, NISUS RESEARCH AT McLAREN NORTHERN MICHIGAN CONDUCTS CARDIOVASCULAR CLINICAL TRIALS AND MANY TRIALS IN OTHER THERAPEUTIC AREAS.

GARY SUMERIX
Absorb Trial Patient
Outside His Grayling Home

medical history in the making:

ABSORB III

McLaren Northern Michigan played an historic role in the approval of Absorb III, a dissolvable drug-eluting scaffold which has changed the treatment of coronary artery disease. One of only 20 facilities nationwide invited to participate and the only facility in Michigan approved to participate in all phases of the trial, McLaren Northern Michigan was one of the highest enrollers for 3 of the 5 phases.

Unlike a traditional stent, the Absorb III scaffold begins to soften at nine months and dissolves completely over the course of two years, providing a threefold advantage: it does not require surgical removal; it is compatible with graft placements in the event of bypass surgery; and it greatly improves overall patient outcomes.

The Absorb III trial commenced in early 2013 and earned FDA approval in July 2016. During that time, the research team underwent extensive training in implant technique and patient selection strategies and successfully implanted 95 Absorb scaffolds, ranking in the top ten internationally.

"This was transformational research," says Interventional Cardiologist and Absorb Lead Investigator Louis Cannon, MD. Dr. Cannon is president of the Cardiac and Vascular Research Center of Northern Michigan and one of just six cardiologists from the United States and Europe to advise scientists about the possibilities of a dissolving stent. "Research is thought to be the realm of metropolitan or university hospitals," Dr. Cannon says, "but we are a leader in cardiac research and an active participant in the Harvard Clinical Research Institute and the Duke Clinical Research Institute." He adds, "We have the experience and the expertise right here in northern Michigan."

Dr. Cannon will continue promoting Absorb III, this time in an educational role, by teaching other physicians in the country and abroad about the uses and benefits of the dissolving scaffold.

"Without the first balloon angioplasty, there would be no bare metal stents. Without those, there would be no drug-eluting stents. And today, without drug-eluting stents, there would be no Absorb bioresorbable stent."

— **GARY SUMERIX**
ABSORB PATIENT
WITH HIS WIFE GINNY

SPREADING THE WORD:

McLaren Northern Michigan Retiree *— and Absorb III Patient —* Chosen to Address FDA

A family history of heart disease, extensive hands-on experience with metal stents, and good timing all came together to impact the life of Gary Sumerix of Grayling. Sumerix had retired from McLaren Northern Michigan after 46 years assisting in thousands of cath lab procedures, and then as systems administrator.

His knowledge of heart risks and heart conditions and their treatments made him especially aware of cardiac health issues; yet ironically, he was slow to recognize his own condition. Sumerix noticed a shortness of breath walking to the mailbox, for example, that he attributed to indigestion, but a stress test ordered by Cardiologist Harry Colfer, MD, proved otherwise. Sumerix was unable to finish the stress test due to pain, and Dr. Colfer was able to diagnose severe coronary artery disease. During his own catheterization, Sumerix was told that he would need two stents and was asked to participate in the Absorb III trial, underway at McLaren Northern Michigan. Since it was a blind study, there was no guarantee that he would receive the trial stent, but, he says, "after the procedure, I got up and started walking around. The difference in how I felt was amazing. It was a great feeling."

The irony is not lost on Sumerix. "The year before I retired, we began discussing an upcoming trial to study a new and innovative approach to treating coronary artery disease, a fully dissolving heart stent, which was the Absorb III trial." He was happy to participate in the trial, because he had seen many examples of over-healing scar-tissue created by metal stents. Following trial completion, "I learned that I had received the Absorb stent with no metal left behind in my body and nothing to inhibit my healing."

AN FDA INVITATION

Sumerix was one of ten patients, and one of only two from the United States, chosen by Abbot Laboratories, the Absorb manufacturer, to address an FDA panel in Washington, D.C. He says, "It was an amazing experience and very significant in advancing the treatment of cardiovascular disease." In his four-plus decades on the job, Sumerix developed a deep, and now personal, understanding of the importance of research and clinical trials. "Without the first balloon angioplasty, there would be no bare metal stents," he says. "Without those, there would be no drug-eluting stents. And today, without drug-eluting stents, there would be no Absorb bioresorbable stent. I really appreciate the importance of finding new ways to treat heart disease."

Today, Gary Sumerix and his wife Ginny are enjoying their grandchildren and their retirement in Grayling. "This treatment has enabled me to live a wonderful life," he adds.

TRIAL NAME	ABSORB III
LEAD INVESTIGATOR	LOUIS CANNON, MD
START DATE	3/2012
END DATE	9/2015 | FOLLOW-UP THROUGH 2022
ENROLLED PATIENTS (as of 12/31/15)	73
SPONSOR	ABBOTT VASCULAR
CONDITION	CORONARY ARTERY DISEASE

"This will dramatically change the protocols for interventional cardiology. Surgery for progressive heart conditions will have significantly decreased risks and far better outcomes."

— **LOUIS CANNON** MD
INTERVENTIONAL
CARDIOLOGIST

"Contrast-induced nephropathy (CIN) is among the leading causes of hospital-acquired renal failure, with the risk of CIN being increased in patients with preexisting kidney disease and additional comorbidities such as diabetes and heart failure. Despite a better awareness of this phenomena and aggressive hydration protocols such as those employed at the McLaren Northern Michigan Cardiac Catheterization Laboratory, CIN remains a challenge for interventional cardiologists. Trials like CARIN are aimed at decreasing the risk of CIN and improving outcomes for our patients undergoing coronary angiography and percutaneous coronary intervention."

— **THOMAS EARL**
MD, FACC, FSCAI
CARDIOLOGIST

CARIN TRIAL:

Safety and Efficacy of CMX-2043 for Protection of the Heart and Kidneys in Subjects Undergoing Coronary Angiography (CARIN)

OBJECTIVE: To evaluate the efficacy of CMX-2043 for prevention of renal and cardiac injury associated with coronary angiography in patients with acute coronary syndrome (ACS).

DESCRIPTION: Oxidants produced in the heart as a result of the disease or from the surgical procedure itself, and those produced in the kidneys as a result of the radio-contrast dye can cause heart muscle damage and contrast-induced nephropathy respectively. CMX-2043 is a potent, antioxidant molecule that activates natural protective enzymes in the heart and kidneys thereby reducing the incidence of cardiovascular complications and acute renal injury.

TRIAL NAME	CARIN
LEAD INVESTIGATOR	THOMAS EARL, MD
START DATE	APRIL 2014
END DATE	SEPTEMBER 2015 (PRIMARY MEASURE)
ENROLLED PATIENTS (as of 12/31/15)	49
SPONSOR	ISCHEMIX, LLC
CONDITION	NON STEMI / UNSTABLE ANGINA

LIFE TRIAL:

LIFE Study: Least Invasive Fast-Track EVAR with the Ovation Prime™ Abdominal Stent Graft System

OBJECTIVE: The primary objectives of the LIFE Study are to demonstrate the clinical and cost benefits associated with using the Ovation® Abdominal Stent Graft Platform under the least invasive conditions defined in the Fast-Track EVAR protocol. The key elements of the Fast-Track EVAR protocol include: appropriate patient selection, bilateral percutaneous access, no general anesthesia, no ICU admission post procedure, and next day discharge.

DESCRIPTION: The LIFE Study is a prospective, consecutively enrolling, non-randomized registry to evaluate the ultra low profile (14F) Ovation Abdominal Stent Graft Platform when using in the Percutaneous Endovascular Aneurysm Repair (P-EVAR) treatment of patients with Abdominal Aortic Aneurysm (AAA) using a Fast-Track EVAR protocol.

TRIAL NAME	LIFE
LEAD INVESTIGATOR	JASON RICCI, MD
START DATE	SEPTEMBER 2014
END DATE	MAY 2015
ENROLLED PATIENTS (as of 12/31/15)	3
SPONSOR	TRIVASCULAR, INC.
CONDITION	ABDOMINAL AORTIC ANEURYSM

"Significantly, the LIFE Study is trying to define whether endovascular abdominal aortic aneurysm (AAA) repair can be performed in the same cost-effective manner using a percutaneous approach to eliminate the need for general anesthesia and ICU care."

— **JASON RICCI** MD
CARDIOLOGIST

"Open heart surgery is an insult to the kidneys, and the use of QPI-1002 may save damaged kidney cells that might otherwise die. We must find useful ways to prevent kidney damage and the resulting kidney failure. Dialysis is not an attractive alternative."

— **DAVID CORTEVILLE** MD
CARDIOLOGIST

QUARK TRIAL:

A Randomized, Double-Blind, Placebo Controlled, Phase 2 Study to Evaluate the Efficacy and Safety of QPI-1002 for the Prevention of Acute Kidney Injury in Subjects at High Risk for AKI Following Cardiac Surgery

OBJECTIVE: To evaluate the efficacy and safety of QPI-1002 for the prevention of acute kidney injury in high-risk subjects following cardiac surgery.

DESCRIPTION: During heart surgery, a decrease of oxygen-rich blood injures cells in the kidneys and produces the protein p53, killing the injured cells and leading to the possibility of acute kidney injury (AKI). QPI-1002 is a siRNA, or small interfering ribonucleic acid, a new class of investigational drugs using a pathway of "RNA interference." This allows the body to repair injured cells.

TRIAL NAME	QUARK
LEAD INVESTIGATOR	DAVID CORTEVILLE, MD
START DATE	DECEMBER 2015
END DATE	DECEMBER 2018
ENROLLED PATIENTS (as of publish date)	40
SPONSOR	QUARK PHARMACEUTICALS
CONDITION	ACUTE KIDNEY INJURY

REPRISE III TRIAL:

Repositionable Percutaneous Replacement of Stenotic Aortic Valve Through Implantation of Lotus™ Valve System — Randomized Clinical Evaluation

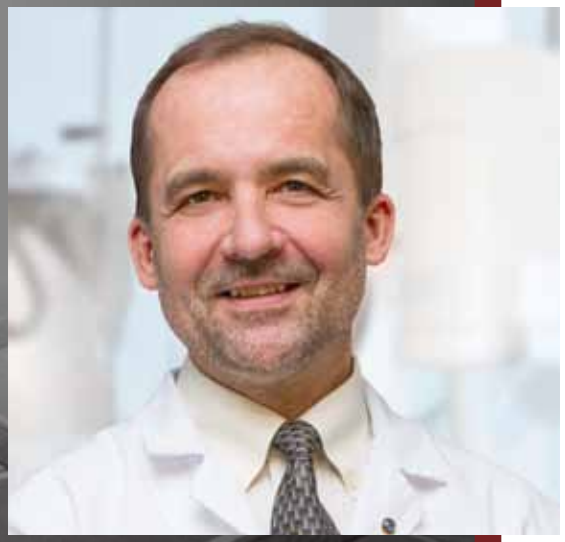
OBJECTIVE: To evaluate the safety and effectiveness of the Lotus Valve System for transcatheter aortic valve replacement (TAVR) in symptomatic subjects with severe, calcific, native aortic stenosis who are considered at extreme high risk for surgical valve replacement.

DESCRIPTION: Reprise III is a randomized test comparing the safety and effectiveness of the Lotus Valve System with Medtronic's CoreValve Transcatheter Aortic Valve Replacement System. The Lotus Valve System is composed of bovine heart tissue attached to a braided metal frame made of a nickel/titanium composition.

TRIAL NAME	REPRISE III
LEAD INVESTIGATOR	LOUIS CANNON, MD
START DATE	AUGUST 2015
END DATE	DECEMBER 2020
ENROLLED PATIENTS (as of 12/31/15)	10
SPONSOR	BOSTON SCIENTIFIC
CONDITION	AORTIC STENOSIS

"Through REPRISE, we are able to compare the safety and efficacy of two valves used to treat aortic valve stenosis. Collection of data through this and other device trials is crucially necessary in the advancement of medicine for the entire heart and vascular health care field."

— **LOUIS CANNON** MD
INTERVENTIONAL
CARDIOLOGIST



"The IMPROVE-IT trial studied treatment of cholesterol with Simvastatin and Ezetimibe in patients who had heart attacks and showed a reduction in risk of recurrent events. This protocol gives us an additional treatment option with proven benefit in our coronary artery disease patient."

—**ANDREW TEKLINSKI** MD
CARDIOLOGIST
VEIN CLINIC DIRECTOR

IMPROVE-IT TRIAL

Examining Outcomes in Subjects With Acute Coronary Syndrome: VYTORIN (Ezetimibe/Simvastatin) vs Simvastatin (P04103)

OBJECTIVE: The primary objective was to evaluate the clinical benefit of Ezetimibe/Simvastatin combination 10/40 compared with Simvastatin 40 mg. As per the original protocol, if low-density lipoprotein cholesterol (LDL-C) response was inadequate, the dose of Simvastatin in the VYTORIN arm or Simvastatin arm, could be increased to 80 mg. Clinical benefit was defined as the reduction in the risk of cardiovascular death, major coronary events, and stroke.

RESULT: Men and women presenting with non-ST segment elevation myocardial infarction (NSTEMI) , STEMI, or hospitalized, documented unstable angina (UA) whom a percutaneous coronary intervention (PCI) was planned as management for the qualifying acute coronary syndrome (ACS) event were eligible for the randomized trial. The Ezetimibe/Simvastatin combination proved to reduce incidence of cardiac events in the active-control group.

TRIAL NAME	IMPROVE-IT
LEAD INVESTIGATOR	ANDREW TEKLINSKI, MD
START DATE	OCTOBER 2005
END DATE	NOVEMBER 2015
ENROLLED PATIENTS (from inception)	23
SPONSOR	MERCK SHARP and DOHME CORP
CONDITION	HYPERCHOLESTEROLEMIA MYOCARDIAL INFARCTION

Publications

LOUIS CANNON, MD

Systemic Pharmacokinetics of Everolimus Eluted From the Absorb Bioresorbable Vascular Scaffold: An ABSORB III Substudy. J Am Coll Cardiol 2015 Dec 12;66(21):2467-9. Epub 2015 Oct 12. David G Rizik, Louis Cannon, Gregg W Stone, Maureen Kennedy, Karine Piard-Ruster, Peter Staehr, Stephen G Ellis, Dean J Kereiakes

Long-term follow-up of the platinum chromium TAXUS Element (ION) stent: The PERSEUS Workhorse and Small Vessel trial five-year results. Catheter Cardiovasc Interv 2015 Nov 25;86(6):994-1001. Epub 2015 Feb 25. Dean J Kereiakes, Louis A Cannon, Ira Dauber, Michael Ball, Barry Bertolet, Michael Foster, Andrey Y Nersesov, Paul L Underwood, Dominic J Allocco, Keith D Dawkins *Interventional Cardiology, Boston Scientific Corporation, Marlborough, Massachusetts.*

Infusion of Reconstituted High-Density Lipoprotein, CSL112, in Patients With Atherosclerosis: Safety and Pharmacokinetic Results From a Phase 2a Randomized Clinical Trial. J Am Heart Assoc 2015 Aug 25;4(8):e002171. Epub 2015 Aug 25. Pierluigi Tricoci, Denise M D'Andrea, Paul A Gurbel, Zhenling Yao, Marina Cuchel, Brion Winston, Robert Schott, Robert Weiss, Michael A Blazing, Louis Cannon, Alison Bailey, Dominick J Angiolillo, Andreas Gille, Charles L Shear, Samuel D Wright, John H Alexander *Duke Clinical Research Institute, Durham, NC (P.T., M.A.B., J.H.A.).*

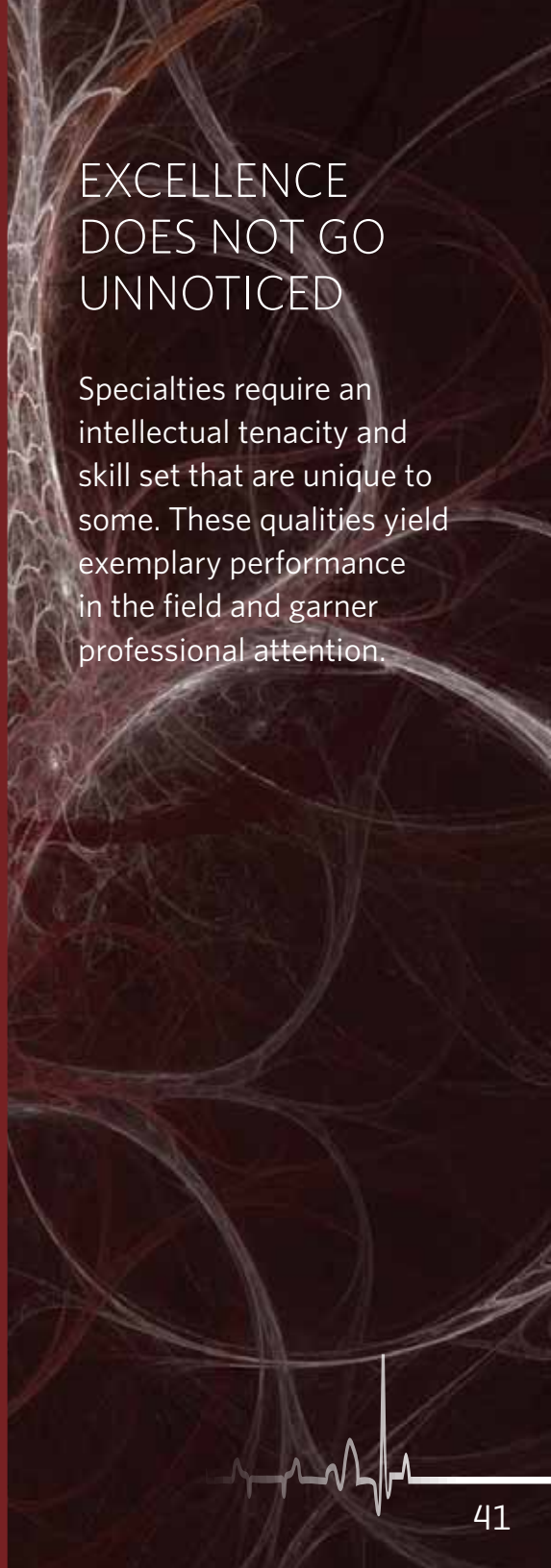
Two-year safety and effectiveness of the platinum chromium everolimus-eluting stent for the treatment of small vessels and longer lesions. Catheter Cardiovasc Interv 2015 Feb 4;85(2):207-15. Epub 2014 Jul 4. Paul S Teirstein, Ian T Meredith, Robert L Feldman, A Charles Rabinowitz, Louis A Cannon, Tommy C Lee, Joseph Dens, Christophe L Dubois, Michael R Mooney, Vincent J Pompili, Shigeru Saito, Dominic J Allocco, Keith D Dawkins, Gregg W Stone. *Scripps Clinic, Division of Cardiovascular Diseases, La Jolla, California.*

JASON RICCI, MD | LOUIS CANNON, MD

Subclinical and clinical contrast-induced acute kidney injury: data from a novel blood marker for determining the risk of developing contrast-induced nephropathy (ENCINO), a prospective study. Ren Fail 2015 Mar 18;37(2):187-91. Epub 2014 Dec 18. Krittapoom Akrawinthawong, Jason Ricci, Louis Cannon, Simon Dixon, Kenneth Kupfer, David Stivers, Patrick Alexander, Shukri David, Peter A McCullough.

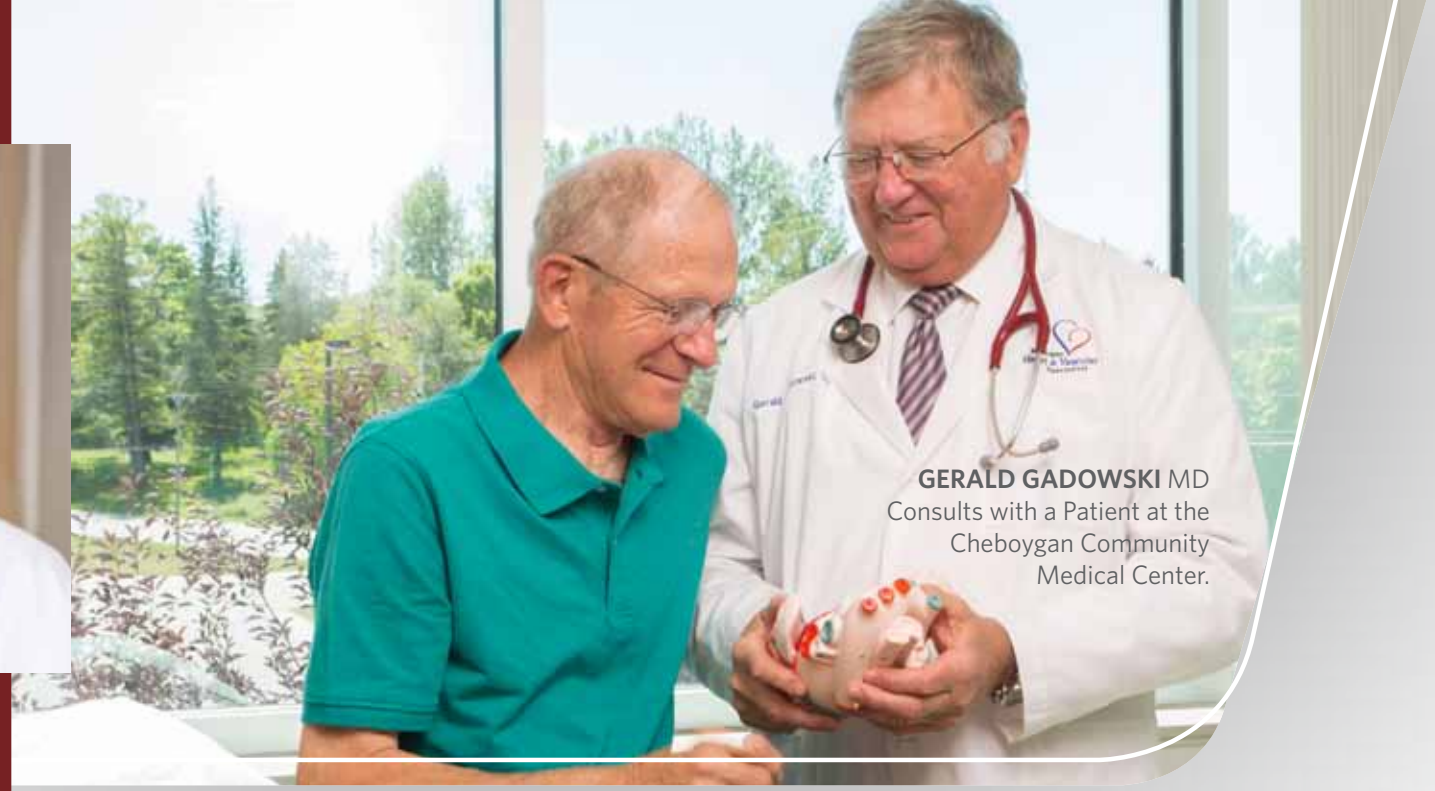
ANDREW TEKLINSKI, MD

American Venous Forum (AVF) Annual Meeting 2016 Presentation February 23 - 26, 2016, Orlando Florida. Postural Orthostasis Tachycardia Syndrome (POTS) Cured by Treatment of Venous Insufficiency. Andrew Teklinski, MD, MS, FACC, Brad Vazales, MD, FACS, FACC, Linda Schofield, PhD, RN, Jim Gracey, PA-C.



"Through our satellite clinics, we are making commitments to the communities in which we serve. Our Gaylord location, for example, offers a broad spectrum of services from stress testing to echocardiography and vascular studies."

— **LINDA GOSSETT** MD
CARDIOLOGIST
Seeing Patients in Gaylord and Petoskey



GERALD GADOWSKI MD
Consults with a Patient at the Cheboygan Community Medical Center.

Reaching 22 Counties:

A VARIED POPULATION

Within the McLaren Northern Michigan 22-county region, both disparities and commonalities are indicative of the need for proactive outreach efforts. McLaren Northern Michigan stresses health and wellness education, appropriate interventions for targeted populations, and affordable medical and clinical access for all. Results of the 2015 Community Health Assessment study are reminiscent of historical data and reaffirm the needed focus on quality heart and vascular health care. The facing bar graph reflects data from ten counties.

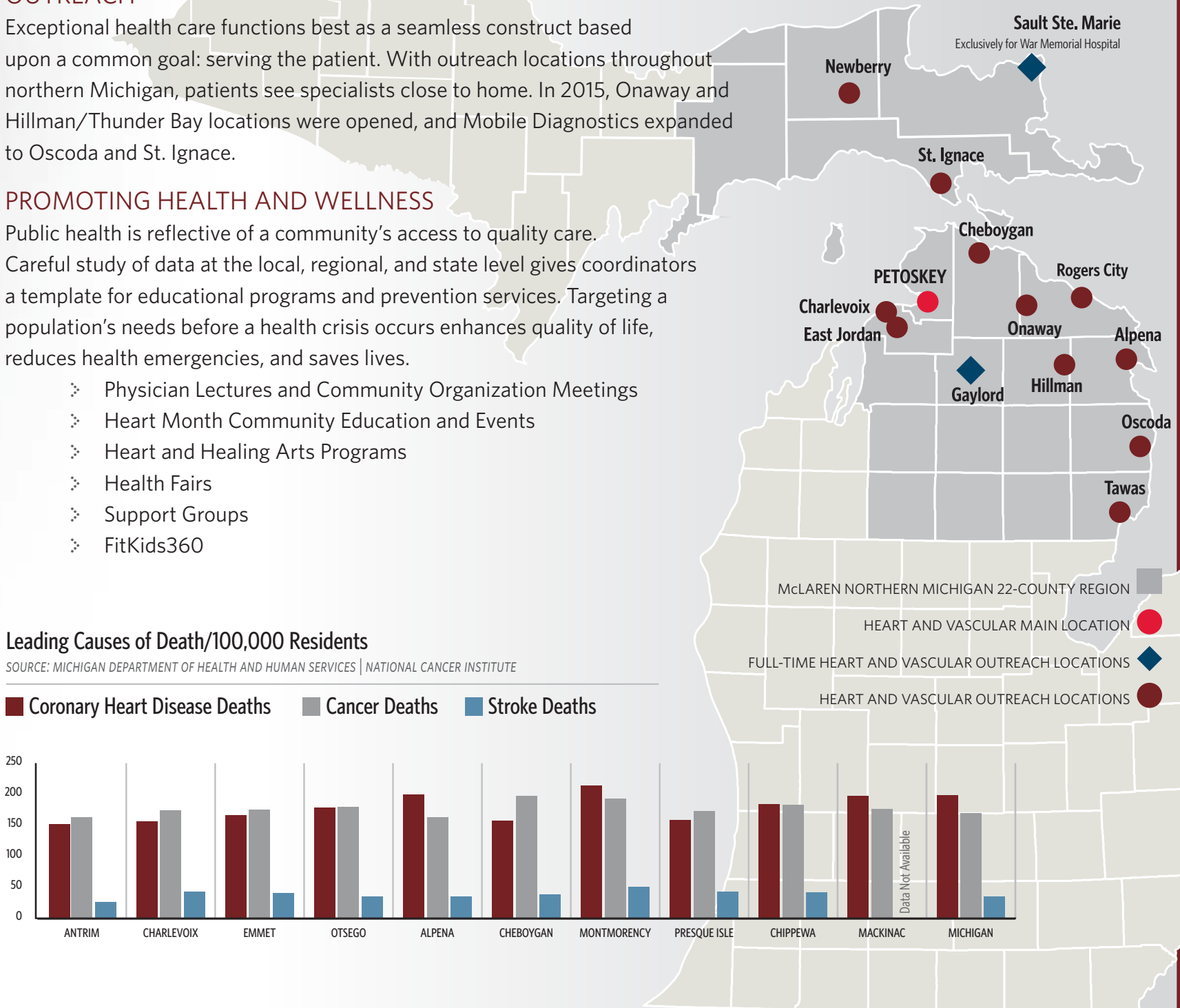
OUTREACH

Exceptional health care functions best as a seamless construct based upon a common goal: serving the patient. With outreach locations throughout northern Michigan, patients see specialists close to home. In 2015, Onaway and Hillman/Thunder Bay locations were opened, and Mobile Diagnostics expanded to Oscoda and St. Ignace.

PROMOTING HEALTH AND WELLNESS

Public health is reflective of a community's access to quality care. Careful study of data at the local, regional, and state level gives coordinators a template for educational programs and prevention services. Targeting a population's needs before a health crisis occurs enhances quality of life, reduces health emergencies, and saves lives.

- Physician Lectures and Community Organization Meetings
- Heart Month Community Education and Events
- Heart and Healing Arts Programs
- Health Fairs
- Support Groups
- FitKids360



Leading Causes of Death/100,000 Residents

SOURCE: MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES | NATIONAL CANCER INSTITUTE

Heart and Vascular Clinics

- ARRHYTHMIA CLINIC
- HEART FAILURE CLINIC
- HEART VALVE CLINIC
- VEIN CLINIC

"Our heart and vascular clinics streamline processes from diagnosis to treatment, followed by appropriate inpatient and outpatient therapies. Specific clinics target the condition and improve outcomes across the continuum of care, focusing solely on the delivery of advanced patient care."

— **DALTON MIRANDA** MD
CARDIOLOGIST
HEART FAILURE
PROGRAM DIRECTOR

From Left to Right:
KADY ELKINS RN
DALTON MIRANDA MD
CARI BELLICINI MA

Specialty Clinics:
PATIENT CENTERED CARE

Specific heart and vascular conditions respond best to targeted care, from diagnoses to treatments, from outpatient therapies to follow-up services. At McLaren Northern Michigan, a cohort of heart and vascular specialists, board-certified surgeons, and licensed support staff focus on every aspect of the patient's condition and, through shared knowledge and skills, realize optimal outcomes. Heart Clinics are dedicated to the treatment of individual conditions to streamline the process from diagnosis to treatment followed by appropriate inpatient and outpatient therapies — all focused on delivering advanced patient care.

Awards and Accreditations

SOCIETY OF THORACIC SURGEONS (STS) HIGHEST RATING FOR HEART BYPASS SURGERY

Consistently since 2012, McLaren Northern Michigan has earned the highest quality rating for heart bypass surgery as determined by the STS. Of the more than 700 U.S. hospitals that were part of the study, McLaren Northern Michigan performed significantly higher than the mean score, placing it among the top 15% nationwide. STS, in coordination with Duke Clinical Research Institute, analyzes data on heart programs nationwide. Their comprehensive rating system allows for comparisons regarding quality, complications, pre-and post-operative medication administration, and outcomes.

GET WITH THE GUIDELINES® — HEART FAILURE GOLD PLUS AND TARGET HEART FAILURE

Recognized by the American Heart Association and American Stroke Association for achieving 85% or higher adherence to all Get With The Guidelines Heart Failure Performance Achievement and Stroke Performance Achievement indicators for consecutive 12-month intervals and 75% or higher compliance in several target areas.

U.S. NEWS & WORLD REPORT BEST HOSPITALS AWARDS

McLaren Northern Michigan is ranked in the top 10 Regional Hospitals in Michigan according to U.S. News & World Report. Ranking is based on careful analysis of patient outcomes from over 5,000 hospitals nationwide. Each hospital was evaluated and rated in five adult procedures/conditions. McLaren Northern Michigan rated as High Performing in 4 out of the 5 including Chronic Obstructive Pulmonary Disease (COPD), Heart Failure, Hip Replacement, and Knee Replacement.

RATED NATIONALLY FOR LOWEST 30-DAY HEART ATTACK READMISSION RATE

Ranked among the top 7 hospitals across the country for the lowest 30-day readmission rate following a heart attack by the Centers for Medicare and Medicaid Services (CMS). McLaren Northern Michigan was the only northern Michigan hospital in the top 10.

GET WITH THE GUIDELINES® — RESUSCITATION SILVER AWARD

McLaren Northern Michigan received the Get With The Guidelines®-Resuscitation Silver Award for implementing specific quality improvement measures outlined by the American Heart Association for the treatment of patients who suffer cardiac arrests in the hospital.

ANCC MAGNET RECOGNITION®

McLaren Northern Michigan achieved initial Magnet® recognition in 2011 and again in 2015, placing McLaren Northern Michigan among only 6.6 percent of hospitals throughout the country and among only 14 in Michigan to receive recognition for nursing excellence.

A COHORT OF HEART AND VASCULAR EXPERTS

McLaren Northern Michigan heart and vascular specialists are among the best professionals in the state and in the nation. Together they represent the power of regional care.

LEADERSHIP

LOUIS CANNON, MD
Senior Program Director
Heart and Vascular

MARLA CLARK, DNP, RN
Senior Director Heart and Vascular

HARRY COLFER, MD
President Michigan Heart & Vascular Specialists

DAVID CORTEVILLE, MD
Diagnostic Imaging Director

GERALD GADOWSKI, DO
Cardiovascular Rehabilitation Director

DALTON MIRANDA, MD
Heart Failure Program Director

JASON RICCI, MD
Cardiac Cath Lab Director

ANDREW TEKLINSKI, MD
Vein Clinic Program Director

Cardiologists, Electrophysiologists, and Cardiothoracic Surgeons

Chris Akins, MD

- CARDIOVASCULAR AND THORACIC SURGERY
- MINIMALLY INVASIVE TECHNIQUES
- CORONARY BYPASS SURGERY AND GRAFTING
- HEART VALVE SURGERY AND REPLACEMENT
- TAVR

Louis Cannon, MD

- CORONARY AND VASCULAR INTERVENTION
- CAROTID STENTING
- CLINICAL RESEARCH
- TAVR

Harry Colfer, MD

- CORONARY INTERVENTION
- LVAD/RVAD
- DEVICE IMPLANTATION
- CLINICAL RESEARCH

David Corteville, MD

- ECHOCARDIOGRAPHY
- NUCLEAR IMAGING
- VALVE DISEASE
- CLINICAL RESEARCH
- TAVR

Waleed Doghmi, MD

- CARDIOVASCULAR DISEASES
- ECHOCARDIOGRAPHY
- CT ANGIOGRAPHY
- HEART RHYTHM MANAGEMENT

Thomas Earl, MD

- CORONARY INTERVENTION
- NUCLEAR IMAGING
- CLINICAL RESEARCH
- TAVR

Gerald Gadowski, DO

- CARDIOVASCULAR DISEASES
- ECHOCARDIOGRAPHY
- NUCLEAR IMAGING
- CARDIAC CTA

Linda Gossett, MD

- CARDIOVASCULAR DISEASES
- ECHOCARDIOGRAPHY
- NUCLEAR IMAGING
- HEART FAILURE

Dalton Miranda, MD

- CARDIOVASCULAR DISEASES
- NUCLEAR IMAGING
- ECHOCARDIOGRAPHY
- HEART FAILURE
- CLINICAL RESEARCH

Naomi Overton, MD

- EVALUATION AND TREATMENT OF RHYTHM DISORDERS, INCLUDING ABLATION
- DEVICE IMPLANTATION
- COMPLEX ABLATION
- VTACH ABLATION

Jason Ricci, MD

- CORONARY AND VASCULAR INTERVENTION
- ABDOMINAL AORTIC ANEURYSM REPAIR
- PFO CLOSURE
- CAROTID STENTING
- CLINICAL RESEARCH
- TAVR

Duane Schuil, MD, PhD

- CORONARY AND VASCULAR INTERVENTION
- CAROTID STENTING
- LVAD/RVAD

J.D. Talbott, DO

- CARDIOVASCULAR AND THORACIC SURGERY
- MINIMALLY INVASIVE TECHNIQUES
- CORONARY BYPASS SURGERY AND GRAFTING
- HEART VALVE SURGERY AND REPLACEMENT
- TAVR

Andrew Teklinski, MD

- CARDIOVASCULAR DISEASES
- VENOUS DISEASE MANAGEMENT
- NUCLEAR IMAGING
- ECHOCARDIOGRAPHY
- PREVENTION

Advanced Practice Providers

Ashly Ellis, NP-C
Jeffrey Fox, PA-C
Ryan Houser, AG-ACNP
Marti Linn, PA-C
Rochelle Mitas, ACNP-BC
AJ Nolan, FNP-BC

Vascular Specialists

Michael Angileri, MD

- INTERVENTIONAL RADIOLOGY

Andris Kazmers, MD

- VASCULAR SURGERY

Jeffrey Beaudoin, MD

- VASCULAR SURGERY

Jason Ricci, MD

- CORONARY AND VASCULAR INTERVENTION
- ABDOMINAL AORTIC ANEURYSM REPAIR
- PFO CLOSURE
- CAROTID STENTING
- CLINICAL RESEARCH
- TAVR

Louis Cannon, MD

- CORONARY AND VASCULAR INTERVENTION
- CAROTID STENTING
- CLINICAL RESEARCH
- TAVR

Duane Schuil, MD, PhD

- CORONARY AND VASCULAR INTERVENTION
- CAROTID STENTING
- LVAD/RVAD

Mark Heilala, MD

- INTERVENTIONAL RADIOLOGY

Anton Sharapov, MD

- VASCULAR SURGERY

Pediatric Specialists

Cathy Webb, MD

- PEDIATRIC CARDIOLOGY (PICTURED)

David Bradley, MD

- PEDIATRIC CARDIOVASCULAR

Mark Norris, MD

- PEDIATRIC CARDIOVASCULAR

McLaren

NORTHERN MICHIGAN

(800) 248-6777

northernhealth.org/heart