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CARDIO BEAT

PUBLISHED BY HENRY FORD HEART & VASCULAR INSTITUTE

FALL 2020

Bluetooth® Enabled ICD Implanted in Henry Ford Hospital Patient



Valerie Satterfield

For Valerie Satterfield, being one of the first patients in Michigan to receive a Bluetooth®-enabled implantable cardioverter defibrillator (ICD) caused her fear. But not for the reasons one might expect, true she was one of the first patients, and a surgical procedure was involved, but her fear, “I’m not very technologically savvy, that part scared me,” Valerie explains.

Arfaat Khan, M.D., director of the Electrophysiology (EP) Lab, explained how technology has evolved over the last 10-15 years. “To connect with the defibrillator, a wand was waved over the implanted defibrillator to get the information we needed. Patients would have to come into the office at least four times a year. Then we moved to a modem with a landline enabled connection to the defibrillator that only stayed connected within a short range. Today, an FDA approved Bluetooth®-enabled ICD allows the information to be captured and transmitted by an App on the patient’s mobile device.”

The App functions as the programmer, to transmit information about the device, the leads, the battery

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Only U.S. Cardiologist Performs Procedure At CTO Live Aid To Fight COVID-19

Khaldoon Alaswad, M.D., a world-renowned Henry Ford Hospital interventional cardiologist specializing in catheter-based treatment of heart blockages, was the only U.S. doctor to perform a live procedure during a 14-hour marathon of cases taking place around the world on July 9.



Khaldoon Alaswad, M.D.

CTO Live Aid was designed to fundraise for the International Red Cross to fight COVID-19, while providing invaluable training to cardiologists around the world. Thirteen cardiologists at 12 hospitals were invited to participate in the event conceived by cardiologists in Milan, Italy. Medical professionals around the world joined the live online session.

“It was an honor to be asked to participate in such a high-profile event,” said Dr. Alaswad, director of the Catheterization Laboratory. “We’re showcasing the advanced work done at Henry Ford Hospital, sharing

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STAFF UPDATE

Khoury Abdulla, M.D.

Cardiology



MEDICAL SCHOOL EDUCATION
Tishreen University, Latakia, Syria

FELLOWSHIPS
William Beaumont Hospital, Royal Oak, MI, Cardiovascular Medicine

University of Texas M.D. Anderson, TX, Neurosurgery

RESIDENCIES & INTERNSHIPS
William Beaumont Hospital, Royal Oak, MI, Internal Medicine

Tishreen University, Lattakia, Syria, Internal Medicine

Philipps-Marburg University, Germany, Immunology

BOARD CERTIFICATIONS
American Board of Internal Medicine - Cardiovascular Disease

American Board of Internal Medicine - Internal Medicine

RESEARCH INTERESTS
Dr. Abdulla's research interests include: Cardiac CT, FFR CT, echocardiography in heart failure.

Dr. Abdulla also speaks Syrian.



Khoury Abdulla, M.D.
Henry Ford Medical Center - Fairlane
Henry Ford Medical Center - Second Ave.

Zain Azzo, M.D., F.A.C.C.

Cardiology



MEDICAL SCHOOL EDUCATION
University of Baghdad, School of Medicine, Baghdad, Iraq

FELLOWSHIP
Ascension St. John & Medical Center, Detroit, MI

Chief fellow, Cardiovascular Disease

Fellowship, Cardiovascular Disease

RESIDENCIES & INTERNSHIPS
Ascension St. John & Medical Center, Detroit, MI, Chief Medical Resident, Internal Medicine Residency

BOARD CERTIFICATIONS
American Board of Internal Medicine - Cardiovascular Disease

American Board of Internal Medicine - Internal Medicine

American Board of Internal Medicine, Board of Nuclear Cardiology

American Board of Internal Medicine, National Board of Echocardiography

RESEARCH INTERESTS
Dr. Azzo's research interests include, geriatric cardiology, cardio-oncology and cardiac amyloidosis.

Dr. Azzo also speaks Arabic.



Zain Azzo, M.D., F.A.C.C.
Henry Ford Medical Center - Sterling Heights

Wael Dabaja, D.O.

Cardiology



MEDICAL SCHOOL EDUCATION

Michigan State College of Osteopathic Medicine, East Lansing, MI

FELLOWSHIPS

Accession Macomb-Oakland, MI

Interventional Cardiology Fellowship

Cardiovascular Disease Fellowship

RESIDENCIES & INTERNSHIPS

Accession St. John Providence, MI, Internal Medicine Residency

BOARD CERTIFICATIONS

American Osteopathic Board of Internal Medicine - Subspecialty Certification in Cardiology

American Osteopathic Board of Internal Medicine

Certification Board of Nuclear Certification (CBNC)

National Board of Echocardiography

RESEARCH INTERESTS

Dr. Dabaja's research interests are in peripheral arterial disease with a focus on novel interventions. Future research includes the study of preventive treatment for coronary artery disease.

Dr. Dabaja also speaks Arabic.



Wael Dabaja, D.O.

Henry Ford Wyandotte Hospital
Henry Ford Health Center - Brownstown

Huiting Tina Chen, M.D.

Vascular Surgeon

MEDICAL SCHOOL EDUCATION

Baylor College of Medicine, TX

RESIDENCIES & INTERNSHIPS

University of Michigan, MI, Vascular Surgery

BOARD CERTIFICATIONS

American Board of Surgery - Vascular Surgery

RESEARCH INTERESTS

Dr. Chen's research interests are resident education and teaching.

Dr. Chen also speaks Chinese.



Huiting Tina Chen, M.D.

Henry Ford Allegiance Health

Ryhm Radjef, M.D.

Cardiovascular Medicine



MEDICAL SCHOOL EDUCATION

University of Medicine, Mouloud Mammeri, Tizi-Ouzou, Algeria

FELLOWSHIPS

Henry Ford Hospital, MI, Cardiovascular Medicine

RESIDENCIES & INTERNSHIPS

Henry Ford Hospital, MI, Internal Medicine

BOARD CERTIFICATIONS

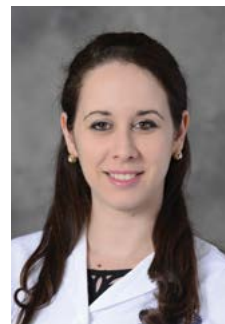
American Board of Medicine - Internal Medicine

American Board of Medicine - Pending Cardiology

RESEARCH INTERESTS

Dr. Radjef's research interests include: primary and secondary prevention of CAD, cardiovascular disease in women, high risk pregnancies and non-invasive cardiovascular imaging.

Dr. Radjef also speaks French, Arabic and Berber.



Ryhm Radjef, M.D.

Henry Ford Medical Center - Sterling Heights

Zachary J. Virgin, D.O.

Vascular Surgery

MEDICAL SCHOOL EDUCATION

Nova Southeastern University, FL

FELLOWSHIPS

University of Mississippi, MS,
Vascular Surgery

RESIDENCIES & INTERNSHIPS

McLaren Macomb, MI,
General Surgery

BOARD CERTIFICATIONS

American Osteopathic Board of
Surgery - Surgery

RESEARCH INTERESTS

Dr. Virgin's research interests include endovascular treatment of thoracoabdominal aortic aneurysms with branch devices, optimal treatment of infrainguinal arterial occlusive disease, and hybrid surgery for cerebrovascular disease.



Zachary J. Virgin, D.O.
Henry Ford
Allegiance Health

Benjamin Swanson, M.D.

Cardiology



MEDICAL SCHOOL EDUCATION

Wayne State University School of
Medicine, MI

FELLOWSHIPS

Henry Ford Hospital, MI,
Cardiovascular Medicine
Fellowship

RESIDENCIES & INTERNSHIPS

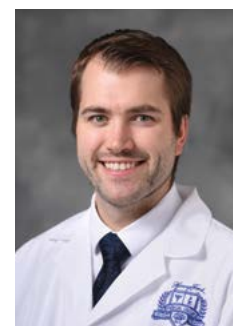
Henry Ford Hospital, MI,
Internal Medicine Residency

BOARD CERTIFICATIONS

American Board of Internal
Medicine - Internal Medicine

RESEARCH INTERESTS

Dr. Swanson's research interests include echocardiography, non-invasive imaging, and general cardiology.



Benjamin Swanson, M.D.
Henry Ford Medical
Center - Fairlane
Henry Ford Medical
Center - Livonia

Andi Peshkepja, M.D.

Vascular Surgery



MEDICAL SCHOOL EDUCATION

Michigan State University College
of Human Medicine, MI

FELLOWSHIPS

Indiana University School of
Medicine, IN,
Vascular Surgery

RESIDENCIES & INTERNSHIPS

Michigan State University College
of Human Medicine, MI,
General Surgery

BOARD CERTIFICATIONS

American Board of Surgery -
Surgery

Dr. Peshkepja also speaks Albanian.



Andi Peshkepja
Henry Ford
Wyandotte Hospital
Henry Ford Hospital

Penny D'Souza, D.O., F.A.C.O.I.
Cardiology



MEDICAL SCHOOL EDUCATION

Michigan State University College of Osteopathic Medicine, MI

FELLOWSHIPS

Garden City Hospital, MI

Cardiology, Chief Fellow

Internal Medicine

RESIDENCIES & INTERNSHIPS

Garden City Hospital, MI,
Internal Medicine, Chief Resident,
Internal Medicine Tracking
Internship

BOARD CERTIFICATIONS

American Osteopathic Bureau of
Subspecialties

Cardiology Subspecialty Board



**Penny D'Souza, D.O.,
F.A.C.O.I.**

Henry Ford West
Bloomfield Hospital

Paul John Corcoran, M.D.
Vascular Surgery



MEDICAL SCHOOL EDUCATION

Wayne State University,
School of Medicine, MI

FELLOWSHIPS

Case Western Reserve University,
University Hospitals Health
System, OH,
Vascular and Endovascular
Surgery

RESIDENCIES & INTERNSHIPS

Wayne State University – Detroit
Medical Center

General Surgery, Chief
Administrative Resident, MI

BOARD CERTIFICATIONS

American Board of Surgery,
Vascular Surgery



Paul John Corcoran, M.D.

Henry Ford
Wyandotte Hospital
Henry Ford West
Bloomfield Hospital
Henry Ford Hospital
Henry Ford Medical
Center - Fairlane



In 2020 Henry Ford Hospital and Henry Ford Allegiance Health achieved Magnet designation, awarded by the American Nurses Credentialing Center (ANCC). This recognition represents the highest level of professionalism in nursing practice and is the gold standard in nursing excellence. Only a small and select group of U.S. health care organizations have achieved Magnet recognition.

COVID-19: The Henry Ford Heart & Vascular Experience

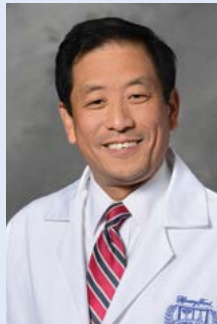
Months after COVID-19 was identified and hundreds of thousands of people contracted the virus, there's still so much that is still unknown about how the virus effects the body. "We are in the early phase of understanding the long-term effects to the heart, explains Henry Kim, M.D., chief of Henry Ford Health System Heart & Vascular Institute, "What we do know, the virus can directly or indirectly affect the heart."

As more is learned, one serious COVID-19 complication is a cytokine storm, the immune system response causes inflammation damaging or destroying healthy tissue of the heart, kidneys and liver.

"During a cytokine storm, serious ventricular arrhythmias can make it difficult for the patient to survive," says Dr. Kim. "We also learned that viruses can attack blood cells and cause inflammation around the heart, putting patients at higher risk for a heart attack, a blocked artery, or heart failure."

Myocarditis has been identified, damaging the heart indirectly by the body's own immune system response. Cardiomyopathy has also been seen when a surge of catecholamines stun the heart.

Bleeding and blood clots are also known symptoms of COVID-19. When the clots enter the small blood vessels and micro clots hit the lungs and heart, damage occurs to the healthy tissue.



Henry Kim, M.D.

Of the experience, Dr. Kim shares, "It has been a very challenging time to be the epicenter of COVID-19. We experienced being overwhelmed, facing unprecedented logics and safety issues and living moment-to-moment to solve problems in unique ways."

The logistics were one aspect, the human factor was another. "It was a time of all hands-on deck, residents, fellows, faculty, all working to help our patients and doing our best to be safe. This included Dr. Scott Kaatz, a hospitalist who cared for COVID-19 patients in the early phase. He contracted and survived COVID-19.

"During a cytokine storm, serious ventricular arrhythmias can make it difficult for the patient to survive."

—Dr. Henry Kim

In these few pages, we share some patient experiences and challenges for our team to treat and support our colleagues. While we know there will be many research opportunities with some already underway, we share our completed research on COVID-19 care.

What is most critical to express to patients who have experienced COVID-19 and recovered, there may also be damage to the heart. These patients should be evaluated and treated on an ongoing basis. To refer a patient to Henry Ford Heart & Vascular institute, call 1-877-434-7470.

Cardiac Injury Patterns and Inpatient Outcomes Among Patients Admitted With COVID-19

Henry Ford Health System conducted a comprehensive retrospective study looking at myocardial injury and mortality in patients admitted with COVID-19. Over 1,000 patients were analyzed and with 38% of patients demonstrating biomarker evidence of cardiac injury on presentation. Those with cardiac injury had hypertension, diabetes mellitus, heart failure, coronary artery disease, atrial fibrillation/flutter, cerebrovascular disease, and were more likely to be smokers or have a pulmonary or

kidney disease history. Patients with cardiac injury had higher median levels of lactate dehydrogenase, C-reactive protein, ferritin, and D-dime.

The full study can be viewed at:

Am. J Cardiol 2020;00:1-8

<https://doi.org/10.1016/j.amjcard.2020.07.040>

Raad, M., Dabbagh M., Gorgis S., Yan J., Chehab O., Dagher C., Jamoor K., Hussein Hajj I., Cook B., Van Harn M., Singh G., McCord J., and Parikh S.

Evolving Patient Care Delivery

The COVID-19 pandemic challenged the entire health system to look at ways to deliver safe care when patients were told not to come to a hospital for their safety. There was a significant decline in cardiac emergencies treated throughout HFHS emergency departments. This delay over the fear of contracting COVID-19 within the hospital caused a significant increase in high acuity cardiac patients who were later admitted.

Creating an environment that was safe for patients and where high-risk patients with heart conditions, who needed to be monitored in the office, where they felt safe presented an urgent challenge. A “significant ramp up in virtual visits by some 5,000% system-wide in four months” (Wright Lassiter III, president and CEO said on July 21 on ACHE webinar) as well as performing weekend procedures was one solution. Many of the cardiology clinics were moved from the main hospital

“Patients should not wait to seek care for cardiac care, delays in seeking care could mean worsened symptoms or even death.”

–Dr. Henry Kim

to the Henry Ford Medical Center - Second Avenue building to help alleviate patient fears of coming into hospital for their outpatient follow-up care.

The Echo lab created new protocols, as well. To keep the sonographers safe while imaging patients who were COVID-19 positive they began utilizing handheld Echo machines, called POCUS or point of care ultrasound to allow quick and rapid imaging.

Emergency Intervention: Pacemaker Implant During COVID-19

Edward's neck cancer went into remission after treatment, only to return a year later. Jawad Sheqwara, M.D., hematologist/oncologist, started him on a course of immunotherapy infusions at Henry Ford Hospital. Then, the COVID-19 pandemic hit.

At first, both Edward and Sharon, his daughter, were concerned about going to the infusion center. At 89 years-old, "I was absolutely worried about it for Dad, since he was going through treatment and was immunocompromised," Sharon says. "But I also have a son with a cardiac issue. So the stakes were very high." COVID-19 safety had been their first concern, but this quickly changed. While undergoing his latest infusion, Edward's heart rate plummeted.

"I was anemic, so they gave me blood transfusions, and they thought this would increase my heart rate," he says. "It didn't."

Edward's care team sprang into action, starting with the oncology nurses, who actively monitored his heart rate. In addition to Dr. Sheqwara, who ordered an immediate EKG, consultation with Henry Ford Electrophysiologist Arfaat Khan, M.D., determined that Edward quickly needed a pacemaker.

"Originally, they wanted Dad to be monitored, but due to COVID-19, there were no direct admits to Henry Ford Hospital," Sharon says. "This meant the only option was through the ER, and since he was almost 90, and with the virus spreading, this really wasn't an option in our minds."



Edward needed a pacemaker, daughter Sharon was just as concerned about him contracting COVID-19.

Dr. Khan agreed to treat Edward, and quickly came up with the solution to implant a pacemaker the next day. Dr. Khan's goal was to complete the pacemaker procedure and send Edward home the same day. They used other surgery-specific COVID-19 safety precautions, including taking off Edward's N-95 mask briefly to put on the oxygen mask for anesthesia, then putting his original mask back on over the equipment.

"They were thinking a step ahead on how they were going to keep him safe," Sharon says. "And when I came back to see Dad before he went in, I saw they had replaced the mask." Sharon also notes that the team has always made her family feel like there was an answer.

Given Edward's case, there were also two possible surgical paths to implant the pacemaker, and Dr. Khan explained that they wouldn't know until the procedure was underway which was the best option. "They prepared everything ahead of time, sterilizing all of the equipment for both options," Sharon says. "And when I visited Dad in the cardiac recovery room a couple of hours later, he was only one of two patients. Dr. Khan and his team met with us, and told us what to expect for the rest of the day as they monitored Dad. By 5 p.m., we were done and they sent us home."

"We never felt like we were exposed to anything," Sharon says.



Arfaat Khan, M.D.

Incidence of COVID-19 Infection Among Health Care Workers Managing COVID-19 Vascular Surgery Patients

At the recent online Society for Vascular Surgery (SVS) meeting in June 2020, the Henry Ford Hospital Division of Vascular Surgery in collaboration with the Division of Infectious Disease presented their COVID-19 experience providing care to patients during the recent COVID-19 crisis at Henry Ford Hospital. This study compared the incidence of coronavirus-2 (SARS-CoV-2, COVID-19) infection in frontline members of the Henry Ford Hospital Division of Vascular Surgery to those healthcare workers (HCWs) in the Surgical Intensive Care Unit (SICU). The 2019-2020 pandemic caused by coronavirus 2 has presented many concerns and unknowns for health care workers. This study aimed to determine the seroprevalence of SARS-CoV-2 among a population of HCWs managing vascular patients with COVID-19 in metro Detroit. The vascular service, in addition to routine vascular care and consultation, provided urgent and emergent dialysis access care to the COVID-19 patients as well as performed ultrasonic evaluation for deep vein thrombosis, a recognized complication of COVID-19.

Any HCW who participated in the management of vascular surgery patients with COVID-19 were recruited over a two-month period. Serological testing was performed using CMC-19D SARS-CoV-2, COVID-19 Rapid Antibody Test (Audacia

Bioscience, Windsor, Canada) according to manufacturer's instructions. Either IgM or IgG line or both lines indicate the presence of anti-SARS-CoV-2-IgM or anti-SARS-CoV-2-IgG or both antibodies. A positive IgM alone was considered false-positive. The outcomes for the Vascular HCWs were then compared to the outcomes of SICU HCWs during the same period. Nearly all vascular and SICU HCWs were wearing personal protective equipment (PPE) in their encounters with potentially positive or positive COVID-19 patients. There were 184 HCWs in the ICU group and 28 HCWs in the vascular population consisting of physicians, advanced practice providers, nurses, and ultrasound technologists. The incidence of sero-positivity in the Vascular HCWs was only 3.5% (one health care worker) whereas the ICU HCWs had an 8% positive serologic testing ($p < 0.05$).

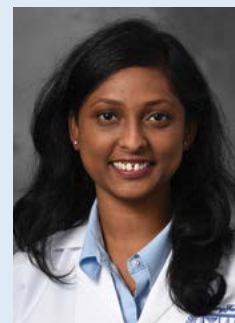
Timothy J. Nypaver, M.D., chief of Vascular Surgery, shares that the results indicate "The sero-prevalence of at-risk vascular HCWs managing COVID-19 was very low using a rapid antibody test. These results show that with proper PPE that we were able to protect most of our HCWs during this outbreak." Further studies to evaluate the performance of these tests are warranted. The study was presented by Chinmayee Potti, M.D., and the senior presenter/author Loay Kabbani, M.D.



Timothy J. Nypaver, M.D.



Loay Kabbani, M.D.



Chinmayee Potti, M.D.

MI COVID-19 Initiative

In a collaborative effort, the MI COVID-19 registry was created to gather data on Michigan patients with COVID-19. At Henry Ford Health System, the Heart & Vascular Institute and Infectious Disease departments, lead the system's effort to provide data for multicenter research through this one database along with 40 plus Michigan hospitals.

The goals of the registry are as follows:

- Identify factors associated with critical illness/severe course and outcomes

- Identify patient characteristics, care practices, and treatment regimens associated with improved outcomes
- Understand the long-term complications for hospitalized patients including subsequent rates of readmission, mortality, and return-to-normal activities
- Evaluate variability of care processes across MI-COVID19 hospitals and identify processes associated with improved outcomes
- Utilizing established CQI models, facilitate improvement in care across Michigan hospitals.

Marilyn's Heart Journey: Robotic heart surgery with TAVR, angioplasty may be first in country

Marilyn Reckling, 85, of Rochester Hills, Mich., was scheduled for knee replacement in January 2020. But when she visited her cardiologist for clearance prior to surgery, Sindhu Koshy, M.D., discovered Marilyn had critical aortic valve stenosis—a narrowing of the opening of the aortic valve that restricts blood flow from the left ventricle to the aorta. The knee surgery was put on hold so her heart issues could be addressed.

Marilyn, a mother, grandmother and great-grandmother, was referred for evaluation with Samer Kazziha, M.D., an interventional cardiologist and Henry Ford Macomb Hospital's chief of Cardiovascular Services. A cardiac catheterization revealed significant coronary artery blockages in addition to the severe aortic valve stenosis.

Based on her age and 40-year history of high blood pressure, Marilyn was considered high risk for open-heart surgery.

Henry Ford Macomb's Structural Heart team evaluated her case and formed a multi-faceted plan of care that incorporating the hospital's leading-edge, minimally invasive treatment options.

To buy Marilyn some time at the start of the COVID-19 pandemic, Dr. Kazziha performed aortic valvuloplasty, which opened the valve area with a balloon and helped to temporarily improve her symptoms.

COVID-19 forced all but the most urgent surgeries to be postponed at Henry Ford Macomb and most other hospitals in the area. As soon as surgical services were

approved to resume, Marilyn's surgeries were rescheduled.

First, Raed Alnajjar, M.D., director of Cardiothoracic Surgery Services, performed robotic bypass surgery, with a single bypass to the left anterior descending artery (LAD). Robotic heart surgery is done through very small cuts in the chest, using tiny instruments and robot-controlled tools.



Drs. Raed Alnajjar, William O'Neill, Samer Kazziha, and Brian O'Neill performed Marilyn's TAVR using robotic bypass surgery.

Heart Transplant During COVID-19

Surgeons at Henry Ford Hospital typically perform about 300 solid organ transplants per year. The COVID-19 pandemic caused the delay of about 20% of those surgeries. Henry Ford Transplant Institute staff intensified remote care and monitoring of all Henry Ford patients who were on the waiting list prior to COVID-19. "Our coordinators, nurses and doctors have worked tirelessly to keep our patients healthy and updated, and we are grateful to provide safe, life-affirming care" Transplant Director Marwan Abouljoud, M.D., said.

Donna Arm, was the first person to receive a transplant as COVID-19 cases began to

subside and entire sections of the hospital were dedicated to non-COVID patients. The 68-year-old Romulus mother of three, grandmother of eight and great-grandmother of four received a new heart on Saturday, April 25.

Cardio-thoracic surgeon Hassan Nemeh, M.D., performed the 6½-hour surgery, said he felt privileged to help Donna with her transplant. "It always feels like a miracle to help provide the gift of life through a heart transplant," said Dr. Nemeh. "It is so good to be back in my comfort zone and be able to make a difference by turning the tragic event of

“Henry Ford Macomb Hospital is one of only a few hospitals in the country—and the only one in southeast Michigan—to offer robotic heart bypass surgery, which has the benefits of smaller incisions, minimal pain and a much shorter recovery time,” said Dr. Alnajjar.

The next day, Dr. Kazziha performed angioplasty and stenting of the left main and circumflex—a procedure used to widen coronary arteries that are blocked or narrowed.

“All of these preceding steps were done so we could eventually do TAVR in the safest manner possible and not put Marilyn through open-heart surgery,” said Dr. Kazziha.

“It was scary for me,” said Marilyn. “I was nervous about going to the hospital because of COVID and patients weren’t allowed to have any visitors at the time. Luckily, my family was able to stay in touch by phone to provide support.”

Finally, just three weeks later, a Transcatheter Aortic Valve Replacement (TAVR) was completed under the leadership of William O’Neill, M.D., medical director of the Henry Ford Center for Structural Heart Disease, assisted by Drs. Alnajjar, Kazziha and Brian O’Neill.

The procedure was finished in less than one and a half hours with an excellent outcome.

“We believe it’s the first time in the country that a cardiac robotic bypass has been combined with TAVR and angioplasty/stenting,” said Dr. William O’Neill.

Marilyn and her family are grateful for the care she received at Henry Ford Macomb.

“We saw an improvement right away,” said Marilyn’s daughter, Jacqueline Pettitt. “Since the surgery, we notice a difference in her breathing and her color. She doesn’t walk as slowly. She even speaks with less effort. My mom has done remarkably well.”

Marilyn is catching up by phone with long-time friends and she’s even attended a drive-by baby shower for her third great-grandchild. She’s busy working on a special Christmas stocking for the new baby—a keepsake she makes for everyone in her family. Marilyn and her husband, Bud, celebrated

their 64th wedding anniversary September 15.

“I’m so happy to be home. I can’t beat the care I’ve gotten from my family, especially my husband and my daughter Jackie, who checks on



Marilyn Reckling with her husband of 64 years, Bud, and daughter Jackie.

us and brings us lunch every day,” said Marilyn.

She’s completed both physical and occupational therapy at her home and plans to start her cardiac rehab program soon.

“It took extensive collaboration by multiple specialists to help this high-risk patient achieve a superb clinical outcome,” said Dr. Kazziha. “We’re happy to be able to offer our patients this high level of expertise at Henry Ford Macomb.”

death into a glorious triumph by restoring a suffering soul to normalcy.”

Adnan Munkarah, M.D., executive vice president and chief clinical officer, explained, “Donna’s transplant signaled a change in hospital operations since the onset of the COVID-19 pandemic.” Emergency procedures and surgeries continued after the first positive COVID-19 patient arrived at Henry Ford Health System on March 12.



Donna Arm is back to enjoying fishing and her great grandchildren after receiving a new heart during the peak of COVID-19 pandemic.

turned down the opportunity for a heart pump and, eventually, a heart transplant to keep her alive. “When we found out she was going to be on

And, theoretically, transplants were available, but none came to fruition with hospital bed space limited due to the virus.

Donna, who was suffering from congestive heart failure, said she originally

a floor with no COVID patients, that’s when we relaxed,” daughter Toni said. “The hardest part has been us not being there with her, that she went through this all by herself. But the nurses and doctors there have been wonderful.”

“I just want everyone to know how important organ donation is,” Mrs. Arm said from her hospital room at Henry Ford Hospital, her voice quivering with emotion as she thought about the donor. “I am grateful for their gift and for the extra time with my family, which I love so dearly.”

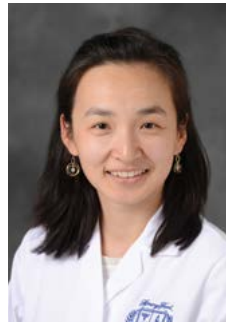
Importance of Three Dimension CT Planning In Cerebral Embolic Protection

The number of transcatheter valvular interventions continue to increase while stroke remains a major concern for left-sided valvular interventions. This demonstrates the need to protect the cerebral vasculature in 2% to 5% of transcatheter aortic mitral valve and replacements.

Currently, the Sentinel Cerebral Protection System (Boston Scientific, Marlborough, Mass.) is the only available device to be approved for this indication by the U.S. Food and Drug Administration (FDA). The device is delivered through the right radial artery with successful deployment being highly dependent on favorable right upper limb arterial anatomy.

The use of three-dimensional computed tomography imaging is key in planning these procedures and identifying optimal visualization for procedural success. Inadequate image-guided planning can result

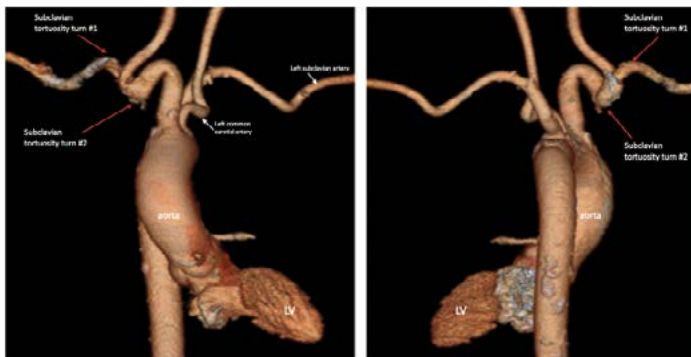
in failure to fully deploy the device, resulting in potentially suboptimal protection, procedural delays, and poor cost efficiency.



Dee Dee Wang, M.D.

The article presented in the *Journal of American College of Cardiology: Cardiovascular Imaging*, presents five key scenarios where 3D CT planning can identify anatomical variants for Structural Heart Teams and Operators to prepare prior to Transcatheter Aortic Valve Replacement (TAVR).

Kang, G., **Lee, J.**, Song, T, Pantelic, M., Reeser, N., Keimig, T., Nadig, **J.**, **Villablanca, P.**, **Frisoli, T.**, **Eng, M.**, **O'Neill, W.**, **Wang, D.D.** Three-Dimensional CT Planning for Cerebral Embolic Protection in Structural Interventions, American College of Cardiology Foundation: *Cardiovascular Imaging* 2020, Online.



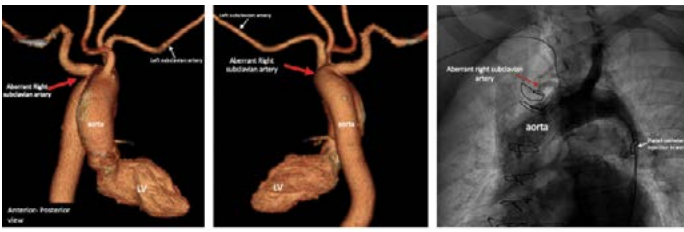
Right Subclavian or Brachiocephalic Artery Tortuosity

Significant tortuosity of the right subclavian is present in up to 10% of all patients undergoing right radial catheterization; risk factors include advanced age, hypertension, female sex, short height, and smoking. Extreme tortuosity will not straighten with the necessary 0.018-inch guidewire and can prevent delivery of the device, as was the case with this patient. Breath-holding may elongate and straighten mildly tortuous vessels but requires patient cooperation while sedated and is insufficient in severe cases. Hence, attempted placement of cerebral embolic protection with the Sentinel device was unsuccessful in this case. LV = left ventricle.



Carotid Tortuosity

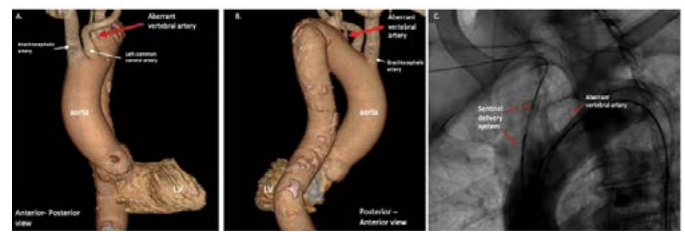
Although left carotid tortuosity does not entirely preclude use of the device, it can prevent deployment of the distal filter. When coupled with an 1800 turn from the right brachiocephalic trunk, guidewire or distal filter advancement into the left carotid can be impeded by vascular loops. Excessive catheter or wire manipulation at this step introduces risks of device deployment that can outweigh any potential benefit. As a result of this pre-procedural computed tomography analysis, and prior procedural difficulty in deploying the Sentinel device in similar vascular loops, embolic protection was deferred for this patient. LV = left ventricle.



Arteria Lusoria

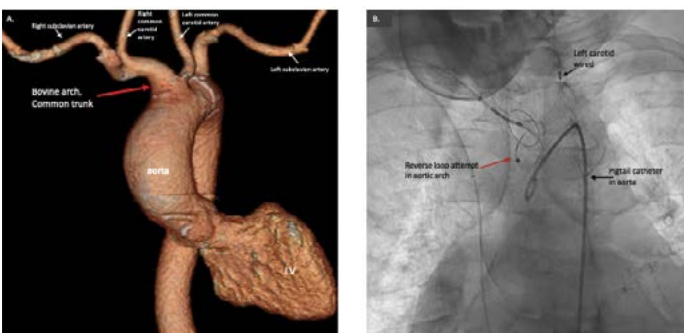
The aberrant right subclavian is one of the most common congenital aortic arch variants, present in 1% to 2% of normal individuals at autopsy. The vessel originates from the distal arch at its junction with the ligamentum arteriosum and usually wraps behind the esophagus before turning upward toward the right upper limb.

Because the device is not designed to accommodate the ordering or number of arch vessels seen in arteria lusoria, both the right and left common carotid arteries would remain uncovered; as a result, device deployment was aborted. Retrospective analysis of the patient’s pre-procedural transcatheter aortic valve replacement computed tomography imaging revealed the presence of the aberrant right subclavian artery. As a result, pre-procedural transcatheter aortic valve replacement computed tomography analysis expands beyond sizing of the great vessels to include evaluation for aberrant subclavian vessels off the aortic arch as part of cerebral embolic protection procedural planning. LV = left ventricle.



Aortic Origin of Vertebral Arteries

Infrequently, the right or left vertebral arteries can originate from the arch itself, rather than from the subclavians. The left vertebral artery is more often aberrant than the right in an 8:1 ratio, and predominantly arises between the left common carotid and the left subclavian origins. Although the device may still be deployed, imagers and operators should take care to note that an aberrant right vertebral artery would not be protected by the proximal filter. Because the device was never intended to protect the left vertebral artery, an aberrant origin of the left is of no theoretical consequence, provided it is not mistakenly cannulated instead of the left common carotid. A Sentinel device was successfully deployed in this patient while taking care to not cannulate the aberrant vertebral artery. LV = left ventricle.



Common Origin of the Innominate and Left Common Carotid Arteries (“Bovine Arch” Otherwise Defined as a “Common Trunk”)

As the most common arch variant, the left common carotid arises from the right brachiocephalic trunk in

approximately one-quarter of the population. Due to the shortened distance between the right subclavian and left common carotid, engaging the left common carotid can be more difficult and may require directly wiring the left carotid before device insertion or looping the steerable portion of the catheter onto itself to negotiate the shorter interstitial distance. Alternatively, if the common right brachiocephalic is appropriately sized (9 to 15 mm), the proximal filter can be deployed alone to cover all three vessels. In this patient, the distal filter was attempted first; however, the delivery wire continued to buckle due to the short interstitial distance. Reverse catheter manipulation was attempted in the aortic arch to form a loop to engage the left carotid artery, although the filter could not be deployed. LV = left ventricle.

Dialysis Access Study— Flex Arteriovenous Access Registry Recruiting Participants

Patients with dialysis access are being recruited to participate in an observational registry of the FLEX Vessel Prep™. A new type of catheter system, the FLEX, is a long and flexible tube with a metal end which opens like a basket in the narrowing area of the vessel. When placed at the treatment location a series of micro-incisions are made through the blockage to decrease scarring and help to keep fistulas patent.

Jordan Knepper, M.D., vascular surgeon, Henry Ford Allegiance Medical Group and medical director, Cardiovascular Services, Henry Ford Health System—Central Market, explains, “We are recruiting dialysis patients with narrowing or blocked blood flow of their dialysis access that require intervention for this random study. Our objective is to compare standard balloon angioplasty of failing fistulas to the use of FLEX Vessel Prep™ scoring catheter plus angioplasty.”



Jordan Knepper, M.D.

Along with Dr. Knepper, Brian Daley, M.D., Zachary Virgin, D.O., and Huiting Tina Chen, M.D., represent the Henry Ford Allegiance Health research team.

There are no fees and participants must agree to active participation for 12 months, with follow-up phone calls at six, nine and 12 months. To qualify for the study, participants must be:

- Over 18 years old, male or female.
- Be on dialysis with IV access in place.

The FLEX-AV registry is sponsored by VentureMed Group.

The enrollment goal is 50 patients. To enroll a patient in this study, please contact Research Coordinator Heather Pustay at Hpustay1@hfhs.com

Pilot Studies Efficacy of First App-Based Supervised Exercise Therapy for PAD Patients

Exercise rehabilitation therapy for vascular patients poses some of the typical barriers including distance to the facility, work, and family obligations. In some areas supervised rehabilitation is not available at all. Yet, studies show that patients with peripheral arterial disease (PAD) who are successfully engaged in exercise therapy experience reduced symptoms and progression of the disease.

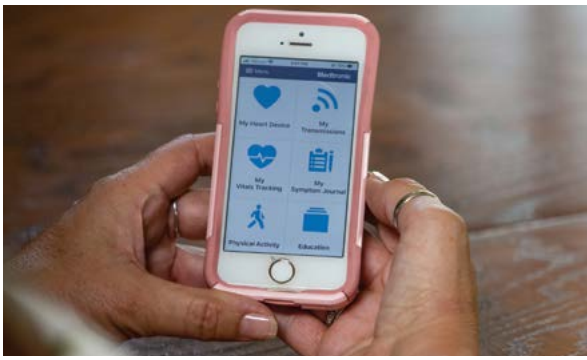
This set of circumstances began the development of a remote digital program by the Society for Vascular Surgery via an App with Cell-Ed. “When COVID-19 hit, the development of the App had a new urgency as we began to see vascular rehabilitation centers close,” says Jordan Knepper, MD, vascular surgeon, Henry Ford Allegiance Medical Group and medical director, Cardiovascular Services, Henry Ford Health System—Central Market.

A national pilot will study the efficacy of the Supervised Therapy Program (SET), delivered via a remote digital program via an App, began in August. Efficacy aspects to be studied include the onboarding process, clinical flow, coaching protocols and outcomes in an effort to ensure SET and the App deliver as anticipated.

Henry Ford Allegiance Health is one of 10 national sites and seeks 25 patients for the pilot. To participate, the patient’s PAD claudication must be diagnosed or can be diagnosed in the Henry Ford Allegiance Health clinic. The 12-week pilot includes an assessment, daily walk schedule, live and automated coaching, patient education and completion of questionnaires.

SET is the first of its kind to be 100% remote specifically to support patients with PAD manage their own rehabilitation at home. SET includes connection to live health and wellness coaches, patient education courses, patient reporting outcomes, provider reporting and monitoring all built into the App.

To enroll a patient into the pilot study, contact Heather Pustay at Hpustay1@hfhs.com



Valerie can transmit her health data from the App on her phone. She can also see her daily activity level and feels more in charge of her own health.

Bluetooth® Enabled ICD Implanted in Henry Ford Hospital Patient

Continued from page 1

life, the make and model of the device and the patient's heart and physical activity. The patient can also see much of this information in addition to being able to transmit information immediately if palpitations are experienced.

Each patient receives education about what events require transmission of data. "Patients know that we read each transmission and will contact them if a follow-up is needed," explains Dr. Khan. "The added bonus is that each patient will be more in charge of their own health, and hopefully that will improve patient outcomes. This advancement has the potential to help us predict what a patient may experience in the future and develop an early intervention."



Arfaat Khan, M.D.

Valerie's fear was quickly relieved. "Turns out the App was very easy to operate. I didn't even need my kids to show me how to make it work!"

To refer a patient to the Electrophysiology program at Henry Ford Hospital, call 313-916-2737.

Only U.S. Cardiologist Performs Procedure At CTO Live Aid To Fight COVID-19

Continued from page 1

techniques with cardiologists around the globe. We all learn from each other, with a common goal to save and improve the lives of our patients."

The Live Aid event offered an educational endeavor, with an online livestream from 13 different cardiologists performing cases one after another, as an alternative to traveling to other hospitals or conferences to learn from each other.

All of the cardiologists who participated are specialists in chronic total occlusion (CTO) and the use of catheters and wires to break through totally blocked coronary arteries to improve the patients' quality of life and allow them to avoid open heart surgery. CTO success is typically 60-70%; Dr. Alaswad is successful in approximately 93% of cases, according to most recent data.

"Our program at Henry Ford Hospital provides the opportunity to achieve success for our patients," he said. "In 2019, we performed 1,200 cases; 220 of those were CTO procedures. But we know that there are plenty more people out there who might benefit from this catheter-based approach."

Cardiologists who participated in the July 9 event also include:

- Jacopo A. Oreglia, Milan, Italy
- Alexandre Avran, Nancy, France
- Mohaned Egred, Newcastle upon Tyne, United Kingdom
- Gabriele L. Gasparini, Milan, Italy
- Omer Goktekin, Istanbul, Turkey
- Arun Kalyanasundaram, Chennai, India
- Paul Hsien-Li Kao, Taipei, Taiwan
- Dante Lindefjeld, Santiago, Chile
- Kambis Mashayekhi, Bad Krozingen, Germany
- Khalid Tammam, Jeddah, Saudi Arabia
- Joao Tinoco de Paula, Linhares, Brazil
- Masahisa Yamane, Sayama City, Japan

The Live Aid event was viewable online only by healthcare professionals. All patients gave permission for their case to be shared during the live event. The event was sponsored by Humanitas Research Hospital in Milan, one of the most advanced research hospitals in Europe, and a number of cardiology device and equipment manufacturers.

Donations can be made to the International Red Cross at the event webpage at <https://www.incathlab.com/en/playlists/706-cto-live-aid>.

To refer a patient to Henry Ford Heart & Vascular Institute, call 1-877-434-7470.

Benefit of Arterial Duplex Stent Imaging After Superficial Femoral Artery Stent Implantation

Lower extremity occlusive disease, also known as peripheral arterial disease (PAD) remains common, affecting about two million patients in the United States. While endovascular procedures, including atherectomy, angioplasty and endoluminal stent insertion have greatly increased the options in the treatment of PAD, a limitation of endovascular intervention remains at a high rate of recurrent disease.

Methods to detect this recurrent disease, such as routine follow-up ultrasound or arterial duplex stent imaging, have been controversial in their use due to a question of benefit. A study recently performed by Martina Draxler, M.D. and Timothy J. Nypaver, M.D., within the Division of Vascular Surgery at Henry Ford Hospital have now confirmed the benefit of follow-up arterial duplex stent imaging on outcomes.

Henry Ford Hospital, using a prospectively collected data set thru the collected state-associated Blue Cross Blue Shield Peripheral Vascular Intervention (PVI) and Vascular Interventions Collaborative (VIC) registry, performed a single-center study comparing the outcomes of patients who had stents implanted in the lower extremity and were then followed by either routine evaluation with simple clinical examination and measurement of an ankle brachial index (without arterial duplex stent imaging) versus those who underwent a more detailed evaluation with performance of arterial duplex stent imaging.

After superficial femoral artery (SFA) stent implantation, this retrospective analysis of outcomes clearly favored those patients who underwent arterial duplex stent imaging, or ultrasound imaging, compared to patients who did not. This study supports the notion that arterial duplex stent imaging should be used in the surveillance for recurrent stenosis and it should be applied uniformly for all patients after their lower extremity intervention.

The analysis included 248 patients who underwent SFA stent implantation between 2009 and 2016. The

arterial duplex stent imaging (ADSI group) had 160 patients and 88 in the ankle brachial index (ABI) clinical exam follow-up only group. A life table analysis was performed, demonstrating that despite similarity in terms of clinical indication ($P = 0.982$) and the Trans-Atlantic Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC) classification ($P = 0.874$) (a classification system detailing the type and extent of the PAD), that outcomes including stent patency, major adverse limb event, and limb salvage were all better in those patients who were followed with the stent imaging.

Arterial duplex stent imaging (ADSI) patients showed an improved assisted primary patency (84%/68%/54%) vs. ankle brachial index alone (76%/38%/38%; $P = 0.008$). There was also a greater freedom from major adverse limb event in the ADSI group (91%/76%/64%) versus the ABI group (79%/46%/46% ($P < 0.001$) at 12/36/56 months follow-up. Arterial duplex stent imaging patients were more likely to undergo an endovascular procedure as their initial post-SFA stent implantation intervention ($P = 0.001$) whereas ABI patients were more likely to undergo an amputation ($P < 0.001$).

Dr. Nypaver, chief of Vascular Surgery and the D. Emerick and Eve Szilagyi Chair in Vascular Surgery, and primary investigator of the study, explains that among patients with arterial duplex stent imaging follow-up, “An advantage was demonstrated in assisted-primary patency and secondary patency as these patients are more likely to undergo a successful endovascular re-intervention, this then correlated in a significant decrease in major adverse limb events.” Dr. Nypaver concluded, “Therefore, there should be a more universal adoption of follow-up arterial duplex stent imaging after SFA stent placement. In other words, doing the procedure successfully is only one part of the solution for these patients. After their procedure, these patients greatly benefit from continuous follow-up with regularly scheduled imaging studies so that more timely and appropriate re-intervention can be performed.”

The study was published online and can be viewed at: *Journal of Vascular Surgery*, 2020 May 8; S0741-5214(20)31102-2. doi: 10.1016/j.jvs.2020.02.055. Draxler, M., Al-Adas, Z., Abbas, D., Kovousi, Y., Kabbani, K., Lin, J., Weaver, M., Shepard, A., Nypaver, T.



Martina Draxler, M.D.



Timothy J. Nypaver, M.D.

Hybrid Vascular and Heart Room Celebrates Opening
 Henry Ford Allegiance Health officially opened its \$4.1 million Hybrid Vascular and Heart Operating Room in April. This new 1,000 square foot operating and state of the art imaging suite offers advanced procedural space and is a replicate of the Henry Ford Hospital hybrid lab. Highly complex procedures can be done in the room and provide comprehensive, patient centered services. Pictured: Jordan Knepper, M.D., vascular surgeon, Henry Ford Allegiance Medical Group and medical director.



EKOS Available at Henry Ford Wyandotte

Treatment for pulmonary embolism (PE) has been enhanced at Henry Ford Wyandotte Hospital. The EkoSonic endovascular thrombolytic system (EKOS) ultrasound guided catheter provides a minimally invasive procedure to dissolve PEs.

Following diagnosis of a PE through symptom confirmation, laboratory tests, and a CT scan, patients are given a clot-busting drug. Then interventional cardiologist Qaiser Shafiq, M.D., takes over. “In the cardiac cath lab, the two-part catheter, the infusion catheter and ultrasonic core, are inserted and remain for six to eight hours. The ultrasonic core generates an acoustic field to drive the clot-busting drug deeper into the clot. This unwinds the fibrin, exposing plasminogen receptor sites.”

Dr. Shafiq explains, “Not only does use of the EKOS reduce drug dosage as much as 68%, it lowers the risk of bleeding and other complications. The PE dissolves faster without damaging vessels, valves or wall.” When the catheter is removed the patient either passes the clot material or the body absorbs it.

Christian Fisher, RN, BSN, MBA, nursing administrator, Cardiovascular Services explains, “This is not new technology, but it is a new advancement to the services we offer our cardiovascular patients at Henry Ford Wyandotte Hospital. It saves lives and helps to keep our community healthier.”



WATCHMAN Now Offered At Henry Ford Macomb

The WATCHMAN Implant is a one-time, minimally invasive procedure that may provide non-valvular atrial fibrillation (NVAF) patients with a lifetime of stroke risk reduction without the bleeding risk associated with long-term oral anticoagulant (OAC) therapy. The procedure is now offered at Henry Ford Macomb Hospital.

Atrial fibrillation (AF) affects about 6 million people in the U.S.—a number that is expected to double by 2030. OACs are an important therapy, but they come with risk factors and limitations, and many patients need an alternative.

The WATCHMAN implant is about the size of a quarter and does not require open-heart surgery. Doctors make a small cut in the upper leg and guide WATCHMAN through a catheter into the left atrial appendage. The procedure is done under general anesthesia and typically takes about an hour. Patients stay overnight and are discharged the next day.

The WATCHMAN implant has been approved in Europe since 2005 and is FDA-approved in the United States. It has been implanted in more than 100,000 patients and is approved in more than 70 countries around the world.

WATCHMAN is covered for eligible Medicare patients who meet certain national coverage criteria and by an increasing number of commercial insurers.

The WATCHMAN program is led by Cardiologist Brian O’Neill, M.D. and Samer Kazziha, M.D., chief of Cardiovascular Services, who work with the interventional cardiology and electrophysiology teams.

To consult with the Structural Heart Disease team, call 586-263-2222.

To connect with a Henry Ford physician, call:

Heart & Vascular Institute
1-877-434-7470



Heart & Vascular Institute
Henry Ford Hospital
2799 West Grand Boulevard
Detroit, MI 48202

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IN THE NEWS



Mohammad Al-Qarqaz, M.D.

Mohammad Al-Qarqaz, M.D., has been named Interventional Cardiology Fellowship Program Director, Henry Ford Hospital. Dr. Al-Qarqaz joined Henry Ford Hospital as an internal medicine resident and completed two fellowships in Cardiovascular Medicine and

Interventional Cardiology. In his role, he oversees training in the cardiac interventional labs at Henry Ford Hospital and serves as the fellowship program director.



Structural Heart Valve Clinic Expands

The Structural Heart Valve Clinic has expanded its services to Henry Ford West Bloomfield Hospital. Marvin Eng, M.D., director of Research for the Center of Structural Heart Disease and Structural Heart Disease fellowship director, at Henry Ford explains “The expansion provides patients in the Oakland County with access to same diagnostic and imaging services without traveling to Detroit.” Procedures will continue to be performed at Henry Ford Hospital in Detroit.

To refer a patient to our Henry Ford West Bloomfield Hospital Structural Heart Disease Clinic, call the Center for Structural Heart Disease at 1-855-518-5100.



New Advanced Heart Failure Clinic In Jackson
Gillian Grafton, D.O., has expanded her services from Henry Ford Hospital and now leads the first heart failure clinic at Henry Ford Allegiance Health. To refer an advanced heart failure patient, call Lana Black, CNP, at 517-205-3924.



Henry Ford Wyandotte Hospital Receives Elective PCI Program Re-Accreditation From Corazon

Corazon has granted accreditation to the Elective PCI program at Henry Ford Wyandotte Hospital. Corazon, a national leader in services for the cardiovascular specialty, boasts a rigorous process, however Henry Ford Wyandotte Hospital has once again met or exceeded the requirements established by the Michigan Department of Community Health. This is in accordance with Certificate of Need Review Standards for Cardiac Catheterization Services effective September 14, 2015, such as providing 24-hour coverage for PCI emergencies, undergoing detailed quarterly quality reviews to ensure outcomes and practices meet or exceed national standards.

