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CARDIO BEAT

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SPRING 2021

Deep Hypothermia Circulatory Arrest: A First at Henry Ford Macomb Hospital



Susan Klonowski, 57, of Shelby Township.

Taking a patient to the edge of death to give her life back is just what saved Susan Klonowski, 57, of Shelby Township. Susan knew she had a heart problem, but “I still did something stupid and took a drug I shouldn’t have. It was a weird pain in my chest, worse than I’ve experienced before,” she remembered.

By the time Susan arrived in the Henry Ford Macomb Emergency department, she was short of breath, had signs of heart failure with a very swollen extremities, explained Raed Alnajjar, M.D., medical director, Division of Cardiothoracic Surgery at Henry Ford Macomb Hospital. Dr. Alnajjar’s diagnosis—a very leaky heart valve with an aortic aneurysm which started at the root of the heart and extended into the arch of aorta.

To save Susan’s life surgery would be very technically demanding and complex. Dr. Alnajjar explained the surgical plan was an aortic valve replacement and aortic root aneurysm resection and replacement using a Bentall procedure under deep circulatory hypothermic arrest and ascending aortic aneurysm and aortic arch aneurysm resection and replacement.

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iPhone 12 Charging Coil Magnet Interferes with ICDs

The newer-generation iPhone 12 series, with a circular array of magnets around a central charging coil to make the phone compatible with MagSafe charging accessory, presents a public health concern for patients with implantable cardioverter-defibrillator (ICD).

In a letter to the editor of *Heart Rhythm*, a publication of the Heart Rhythm Society, Gurit Singh, M.D., cardiac electrophysiologist at Henry Ford Hospital, explains how an iPhone 12 deactivated an ICD when brought in close contact to a patient’s chest.

“As a safety feature, when an external magnet of sufficient strength is applied to a defibrillator, high-voltage shock therapy for ventricular tachycardia and ventricular fibrillation is suspended. It has been estimated that a magnetic field stronger than 10 gauss is strong enough to activate these switches,” explained Dr. Singh.

Joshua Greenberg, M.D., electrophysiology fellow at Henry Ford Hospital, explains, “We tested this interaction on a patient with a Medtronic ICD. Once the iPhone was brought close to the ICD over the left chest area, immediate suspension of ICD therapies was

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HENRY FORD HOSPITAL OPENS NEW HYBRID OR: THE FUTURE OF VASCULAR SURGERY

STUDY INDICATES RELATIONSHIP BETWEEN MAXIMAL EXERCISE CAPACITY AND RISK OF HOSPITALIZATION AMONG COVID-19 PATIENTS

Deep Hypothermia Circulatory Arrest: A First at Henry Ford Macomb Hospital

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“Deep hypothermia circulatory arrest alters the patient’s body temperature down to about 14 degrees which also involves putting ice around the head to ensure the patient is kept cold. The body’s entire circulation has stopped” explains Dr. Alnajjar. “It is critical to be very time efficient to perform this procedure so circulation can be restored as quickly as possible. We have about 45 minutes to an hour.”

While the patient was in deep hypothermia, those 45 minutes were used by Dr. Alnajjar to replace the ascending aorta, the aorta and the aortic arch. “We had to reconstruct the aorta using an inert BTFE material, to reconstruct the arch and connect it to the main coronary arteries and the aortic valve. Once complete, the patient was put on bypass and a heart/lung machine to allow her heart to recover with minimal stress. Then Susan’s body temperature was restored. She was breathing on her own in four hours.” explained Dr. Alnajjar. “She has complete nerve recovery and went home in about 5 days.”

Both Dr. Alnajjar and Susan noted how pleased they were with her quick recovery. Amazed with her quick recovery Susan shared, “I realized even as I woke up, just how much better I felt, and I’m very grateful.”



Raed Alnajjar, M.D.



Susan’s therapy guinea pig helped her through recovery.

This was the first time this deep hypothermic arrest was performed at Henry Ford Macomb. Dr. Alnajjar performed 2-3 cardiac procedures a day using deep hypothermic arrest in his previous training at Texas Heart Institute and brought this expertise to Henry Ford Macomb patients. “I want our community to know that not only do I have the experience to perform these very complicated cases to save lives, but people don’t have to travel far from home because the highly-trained Henry Ford Macomb team of pre-surgery, OR staff, anesthesia, perfusion and post-op recovery staff, nurses, and ICU staff and APP (Advanced Practice Provider) are ready to support these very complicated cases,” Dr. Alnajjar concluded.

To refer a patient to Henry Ford Macomb Hospital or Raed Alnajjar, M.D., call, 586-263-2980

Dr. Alnajjar’s office is located at 16151 Nineteen Mile Rd, Suite 301 Clinton Township, MI 48038

STAFF UPDATE

Kenneth G. Warner, M.D.
Cardiology/Cardiothoracic Surgery



MEDICAL SCHOOL EDUCATION
University of Michigan, MI

RESIDENCIES & INTERNSHIPS
Brigham and Women’s Hospital,
Thoracic Surgery, MA

Brigham and Women’s Hospital,
General Surgery, MA

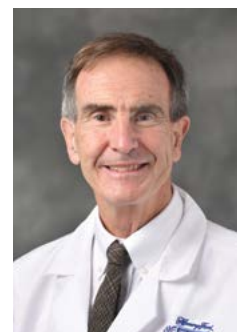
BOARD CERTIFICATIONS

American Board of Surgery -
Surgical Critical Care

American Board of Thoracic Surgery - Thoracic
Surgery (Cardiothoracic Vascular Surgery)

RESEARCH INTERESTS

Dr. Warner’s research interests are in surgical techniques to improve the neurologic and clinical outcomes in children undergoing open heart surgery and developing multidisciplinary programs to improve clinical outcomes in patients with substance use disorder who require surgery for infected heart valves.

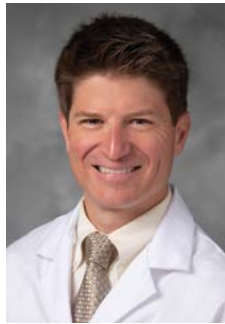


Kenneth G. Warner, M.D.
Henry Ford Hospital

U.S. Caval Valve Registry Examines Caval Valve Implantation

The U.S. Caval Valve registry, is a retrospective study of patients who underwent caval valve implantation (CAVI) between March 1, 2013 and March 1, 2018. Drawn from seven participating centers, eligible patients were determined to be poor candidates for tricuspid valve surgery who underwent CAVI with inferior vena cava (IVC) implant only using a single valve.

CAVI places a valve outside of the heart heterotopically in the IVC, or in both the superior vena cava (SVC) and IVC, in an effort to ameliorate downstream effects of chronic right heart congestion. Previous data on CAVI have demonstrated an improvement in New York Heart Association (NYHA) functional class. However, the data are heterogeneous due to the variety of transcatheter valves used for CAVI and the implantation techniques (ie, IVC vs IVC and SVC).



Brian O'Neill, M.D.

“Previous studies of the MitraClip device (Abbott Vascular) for tricuspid valve disease have demonstrated improvements in liver function, but not kidney function, in patients presenting with symptomatic severe tricuspid regurgitation (TR). In CAVI, the flow from untreated TR is redirected away from the renal and hepatic veins. Eliminating regurgitant flow into the IVC and hepatic vein is essential, and those patients without higher right atrial pressures are unlikely to derive significant benefit,” explained Brian O’Neill, M.D., interventional cardiologist, Henry Ford Hospital.

“It is important to note that valve embolization remains a potential complication of this procedure,” said Dr. O’Neill. The TRICAVAL study, which was a randomized trial of CAVI versus medical therapy, revealed four delayed complications with two cases of stent migration and two cases of valve embolization. “This highlights the challenges of fixing a transcatheter valve in the venous circulation,” Dr. O’Neill explained.

A total of 24 patients were treated with CAVI. The median age was 79.5 years, 63% were women, and 96% were white. Twenty-three of 24 patients underwent valve implantation with a 29 mm Sapien 3 valve (Edwards Lifesciences). There was a 100% rate

of successful valve implantation. There were no cases requiring emergency surgery. Thirty-day mortality rate was 25%.

The median survival of all patients was 350 days at the last follow-up. Pre- and post-procedure NYHA class data were available in 11 of 24 patients; of these 11 patients, 72.7% improved at least 1 NYHA class from baseline.

Overall survival was analyzed using the product-limit method with the Kaplan-Meier survival curve presented. Comparisons of interest between two groups by survivorship were implemented using the Wilcoxon rank-sum test for continuous variables and Fisher’s exact test for categorical variables. Multiple comparison adjustments were not made due to the exploratory nature of the study. P-values <.05 were considered statistically significant.

“Procedural success with CAVI was 100%.”

–Dr. Brian O’Neill

Rates of valvular regurgitation were low in this study, as the median diameter of the IVC at the superior hepatic vein was 29 mm. IVC size remains a major limiting factor, precluding almost two-thirds of patients being evaluated in the HOVER trial (NCT02339974).

“To our knowledge, this study is the largest experience of CAVI in the IVC using the Sapien 3 valve. Procedural success with CAVI was 100%, including both successful deployment of the valve and removal of the delivery system,” explained Dr. O’Neill.

In conclusion, Dr. O’Neill said, “CAVI may be performed safely in a high surgical risk population with severe tricuspid regurgitation. However, dedicated studies with longer-term follow-up are needed to advance our knowledge.”

The complete retrospective study was recently published in *The Journal of Invasive Cardiology*, 2020;32(12):470-475. Epub 2020 October 22. O’Neill, B., Negrotto, S., Yu, D., Lakhter, V., Depta, J., McCabe, J., Dube, S., Vaikom, M., Wang, D., Patil, P., Lindman, B., Igleisis-Azuaje, I., Fredi, J., Lu, X., O’Neill, W.

BEST Critical Limb Ischemia Registry Seeking Participants

The Division of Vascular Surgery is recruiting patients with critical limb ischemia (CLI) to study in the BEST CLI Registry. Henry Ford Hospital has been designated as one of 40 U.S. centers with the goal to recruit 1,200 participants. The registry is a collaboration with National Heart, Lung, and Blood Institute (NHLBI) and Duke University Durham, North Carolina. The BEST Registry is an off-branch continuation of a prior randomized study, the BEST CLI study, which has completed enrollment. Henry Ford Hospital was one of the top 15 recruitment sites worldwide and was highest in the state of Michigan for recruitment in this critically important study.

The primary outcome of the BEST Registry is to evaluate the percentage of participants with major adverse limb events (MALE) as measured by patient reports (verified by medical records)

at six and 12 months. Treatments and outcomes will be reviewed, which includes quality of life and cost effectiveness. The specialist can, in discussion with the patient, pick what he or she deems the best operative approach or procedure for the patient and the patient will be contacted directly by phone at 6 and 12 month after the intervention.

Timothy Nypaver, M.D., chief of Vascular Surgery, the primary investigator at Henry Ford Hospital explained, “This registry will provide vascular specialists with real world practice information and enhanced insight so as to evaluate existing therapeutic strategies, clinical

outcomes, and costs associated with patients presenting with critical limb ischemia. Our goal is to continue to define what works best for the patient with the highest chance of both short-term and long-term success and freedom from additional procedures.”

The BEST Registry is currently enrolling patients who are willing to comply with the BEST Registry protocol, attend follow-up appointments, complete all study assessments, and provide written informed consent.

“This registry will provide vascular specialists with real world practice information and enhanced insight”

–Dr. Timothy Nypaver



Timothy Nypaver, M.D.

Inclusion criteria includes both male and female patients over 18 years old with:

- Infrainguinal peripheral artery disease (occlusive disease of the arteries below the inguinal ligament)
- Critical limb ischemia, defined as arterial insufficiency with gangrene, non-healing ischemic ulcer, or rest pain consistent with Rutherford categories 4-6 indicating that they are in threat of progressive gangrene, worsening of non-healing wounds and ultimately progressing to limb loss.

To learn more about criteria for the BEST Registry or to enroll a patient, call Timothy Nypaver, M.D., chief of the Division of Vascular Surgery, 313-916-3153, or email Dr. Nypaver at tnypave1@hfhs.org.

Henry Ford Hospital Opens New Hybrid OR: The Future of Vascular Surgery



Timothy Nypaver, M.D., chief of the Division of Vascular Surgery, and Deirdre Salanger, Vice President-Operations at Henry Ford Hospital, officially open the Vascular Hybrid OR at Henry Ford Hospital.

Approximately 85% of all vascular procedures are endovascular or hybrid procedures. The opening of a new “Hybrid OR”, to be used by Henry Ford vascular surgeons, will allow for a continued expansion of these minimally invasive procedures.

The Hybrid OR is equipped to allow vascular surgeons quicker and easier access to any part of the body. As technology has advanced, more complex vascular procedures can now be performed safely.

This includes use of a previous CT overlay on the real-time x-ray image, allowing visualization of vessel location and disease.

Vascular surgeons specialize in treating all blood vessels throughout the body, everywhere except for the heart and brain.

Dr. Nypaver explains the importance and use of the equipment at: henryford.com/physician-directory/n/nypaver-timothy



Celeste T. Williams, M.D.

Women Making History

A nationally-known transplant cardiologist, Celeste T. Williams, M.D., leads Michigan’s largest cardiac transplantation program at Henry Ford Hospital. She identifies the patients who require a heart transplant and cares for the patient after surgery. Of the seven Advanced Heart Failure and Transplant cardiologists on her team, five are women:

- Jennifer A. Cowger, M.D.
- Gillian F. Grafton, D.O.
- Yelena Selektor, M.D.
- Cristina Tita, M.D.

Also on the team are: Bashar Hannawi, M.D. and David Lanfear, M.D.

Impact Of Preoperative Anemia In Patients Undergoing Peripheral Vascular Intervention

In a retrospective study, pre-operative anemia was reviewed for its association with postoperative death and length of stay (LOS) in patients undergoing peripheral vascular intervention (PVI).

To determine participants, the national Vascular Quality Initiative (VQI)[®] database used to query for all patients who had a PVI performed between 2010 and 2019. According to the World Health Organization's definition, anemia is classified into mild (10-13 g/dl for men and 10-12 g/dl for women), moderate (8-9.9 g/dl) and severe (<8 g/dl). Using this definition, 86,726 patients met the inclusion criteria.

Demographics were mean age (68 years), male (59%), and white (80%). Anemia was documented in 41,627 patients (48%); mild 71% (N=29687) moderate 25% (N=10,500), and severe 4% (N=1440). Analysis of variance or Kruskal-Wallis test were used for continuous variables and Chi square test was used for categorical variables. Multivariate logistic regression, generalized linear, and proportional cox models were used to evaluate the association between preoperative anemia and postoperative 30-day mortality, total LOS and overall survival time. Kaplan Meier curve was used to compare the survival time based on anemia severity.



Abdul Kader Natour, M.D.



Loay Kabbani, M.D.

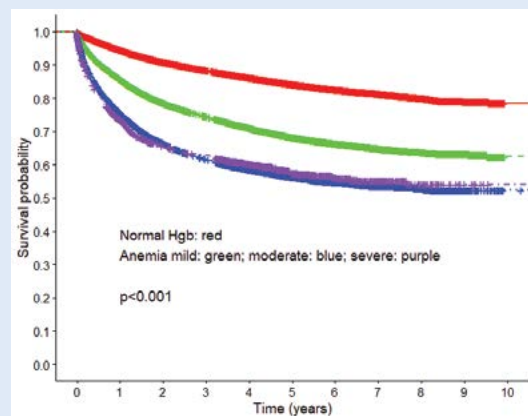


Figure 1: Kaplan Meier curves comparing the survival time based on anemia severity.

On univariate analysis, 30-days mortality, total LOS and overall survival were significantly associated with pre-operative anemia, with worse outcomes occurring at worse anemia levels (Table I). This persisted on multivariate models (Table I); 30-day mortality ($P < 0.001$), total LOS ($P < 0.001$), and overall survival time ($P < 0.001$). The Kaplan-Meier estimate, when compared to normal preoperative hemoglobin patients, showed decreased of overall survival in the mild anemia group, and worse in the moderate and severe groups ($P < 0.001$).

According to the study's investigators, Vascular Research Fellow Abdul Kader Natour, M.D. and Vascular Surgeon Loay Kabbani, M.D., the conclusion presented in an abstract indicates the presence and degree of preoperative anemia are independently associated with 30-day death, total LOS and overall survival in patients undergoing PVI. Dr. Natour says, "The presence and degree of anemia should be important components of preoperative risk stratification for patients undergoing PVIs. We advise that anemia should be a listed variable in all reports detailing outcomes of PVI.

To refer a patient for treatment of Vascular disease at Henry Ford Hospital, call 1-877-434-7470.

EXPANSION OF SERVICES

New Heart & Vascular Clinic Opens as Part of Medical Mall Expansion Project at Henry Ford Wyandotte Hospital

A new Heart & Vascular Institute suite opened Feb. 15 at Henry Ford Wyandotte Hospital as the first of a three-phase, \$3 million project to expand the medical mall for subspecialty areas including Heart & Vascular, Oncology and Urology.

“We are very excited about the expansion and the addition of these specialty areas to Wyandotte,” said Ann Marie Creed, vice president of operations at Henry Ford Wyandotte Hospital. “This project will allow for growth in service and expand the outpatient presence of those services in the Downriver region.” For patients, that means easier access to subspecialty services within the Downriver area with expanded examination rooms as part of the new suite as well as a procedure room, physician offices and staff work areas.

“This will allow us as a vascular department to be fully engaged at Wyandotte with four surgeons, a vascular surgery nurse manager and a physician assistant,” Loay Kabbani, M.D., senior vascular surgeon, said. “We are now available 24/7 to help with any vascular patients at Wyandotte.”

Physicians practicing in the new HVI suite include:

- Paul Corcoran, M.D., vascular surgery
- Loay Kabbani, M.D., vascular and thoracic surgery
- Arfaat Khan, M.D., cardiology and electrophysiology
- Farah Mohammad, M.D., vascular surgery
- James Mohyi, M.D., cardiology
- Andi Peshkepija, M.D., vascular surgery
- Krishna Sawhney, M.D., general surgery
- Frederic Sulak, M.D., cardiology

“We have a new state-of-the-art procedure room for our vein clinic, where we can treat varicose veins as an outpatient procedure. In the future, we hopefully will be able to expand these services to simple outpatient catheter-based procedures like fistulagrams and venograms for dialysis access patients,” explained Dr. Kabbani.

With vascular surgeons rotating on a weekly basis, most vascular procedures, including angioplasties and arterial bypasses, will be performed geographically at Wyandotte. “As we continue to promote vascular services inclusive of a new state-of-the-art angiography suite, we hope to be able to

continue to expand our services to include more complex procedures like endovascular aortic surgery,” Dr. Kabbani said.

Dr. Kabbani added that the HVI clinic’s location in the hospital’s main lobby provides visibility and ease of access for patients. “There are a lot of patients who need our help and now we have the opportunity to grow and provide excellent care at Wyandotte,” he said.



Heart & Vascular Institute suite

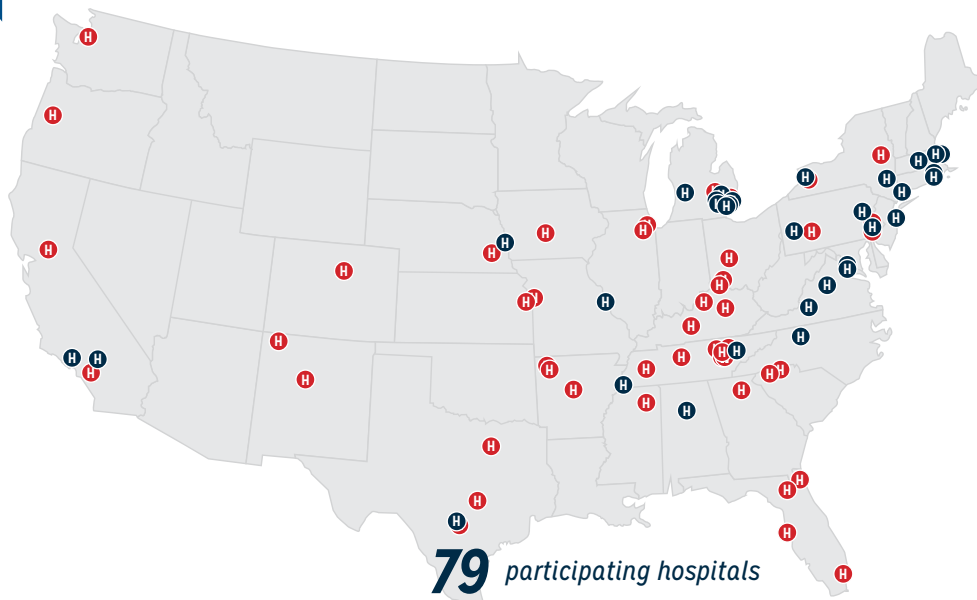
Cardiologist James Mohyi, M.D., explains the opportunity to offer new, non-invasive diagnostic technology is an exciting prospect. “We have acquired new echo machines that are state of the art measuring ventricles and atrial,” Dr. Mohyi said.

While vascular problems are prevalent in the Downriver area, there has been a lack of vascular surgeons, according to Dr. Mohyi. “Now we will be able to help when it’s very complicated,” he said. “We will be doing the majority of surgeries here, utilizing the cath lab and OR, and will also have a procedure lab for vascular surgery in the new suite. There is a lot of improvement here.”

The second phase of the \$3 million medical mall project involves expanding the Urology Clinic with the addition of Naveen Kachroo, M.D., Ph.D., director of endourology at Henry Ford Wyandotte Hospital, and urologist Amit Patel, M.D., at the back of the medical mall. That work is expected to last through early April.

The third and final phase is two-fold—consisting of doubling the size of the first-floor outpatient lab as well as adding six infusion chairs and four exam rooms to the oncology clinic—and is expected to be complete in June.

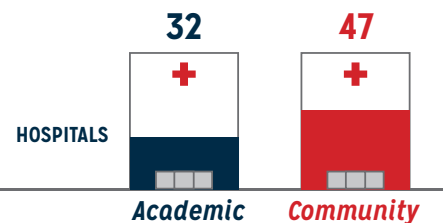
National Cardiogenic Shock Initiative Concludes



NCSI: CLINICAL SITES

406 patients enrolled nationally

1,106 total patients screened (with AMI + cardiogenic shock)



The National Cardiogenic Shock Initiative (NCSI), led by William O'Neill, M.D., and Babar Basir, M.D., completed study enrollment in December 2020. The data is currently being analyzed for publication later in 2021.

Henry Ford Hospital sponsored the NCSI study, which was conducted at 79 hospitals in 26 states across the country. Over 1,100 patients who presented to the hospital with an acute MI and cardiogenic shock (AMICS) were screened, resulting in 406 study-eligible subjects being enrolled.

The goal of NCSI has been to improve the mortality rate among patients who suffer an acute MI complicated by cardiogenic shock. Only about 1 in 10 people who suffer a heart attack develop cardiogenic shock as a complication, but for those who do, the mortality rate has remained close to 50% for over 20 years.

NCSI began as a pilot study in the spring of 2016 when the cardiology directors from four different Detroit-area hospital systems met under the leadership of Dr. O'Neill to address the poor survival rate in the AMICS patient population.



William O'Neill, M.D.



Babar Basir, M.D.

Prior to this time, there were no published standards of care for AMICS. Analyzing all available AMICS research data, the Detroit group worked together and developed a protocolized approach for treatment of AMICS. Recent data strongly suggested that including the early use of mechanical circulatory support (a temporary Impella® heart pump) and monitoring of the patient's right heart hemodynamics may have an impact on survival, and these were included in the treatment algorithm.

The pilot study, formally named the Detroit Cardiogenic Shock Initiative (DCSI), was launched in July of 2016 to scientifically analyze the AMICS outcomes data among the area hospitals who were using the protocol. The 9-month, 41 patient DCSI pilot study resulted in a 76% survival rate to hospital discharge, a significant increase from the historic mortality rate in the 50% range.

After the DCSI data was presented at the American College of Cardiology (ACC) meeting in March of 2017, the treatment algorithm was adopted at over 100 hospitals across the country. The decision was made to take DCSI national, and National Cardiogenic Shock Initiative was born. The Detroit protocol was developed into a national study format, and NCSI was formally launched at TCT in the fall of 2017. Over the following 30 months, hospitals using the AMICS treatment algorithm were added to the group to track the outcomes.

Digitization Improves Precision In Cardiovascular Interventions



Left-side position for structural heart procedures. Keeps the head side free for anesthesia or trans-esophageal echo (TEE) for procedures such as patent foramen ovule (PFO closure).



Right-side position for arrhythmias. Provides dedicated working position to optimize device implantations such as Pacemakers.



Head-side position for PCI procedures. No limitations even in steep angulations such as Spider View as seen here with pristine image quality of the coronaries.

The ARTIS icono systems brings Henry Ford Macomb Hospital a new, intuitive experience to angiography. Added to an existing C-arm, ARTIS icono offers providers more efficiency for treatment of Coronary artery disease, structural heart disease and arrhythmias.

The number of minimally invasive procedures has grown by more than 10% per year. These procedures are becoming more complex, and the number of older, sicker patients continues to increase. With so many variables in play, standardization and an outstanding imaging quality—regardless of the patient or procedure—are crucial factors for smooth workflows and optimal patient outcomes.

“This system provides a groundbreaking approach to an optimal balance of image quality and dose.”

–Dr. Subhi Sbahi

This system provides revolutionary dose-image optimization and quality by offering the user 15,000 possible combinations in next-level Automated Exposure Control (AEC) parameters, OPTIQ automatically selects a low dose for the preferred image quality level.

For patients with severe heart conditions and challenging BMIs, interventional cardiologists can now set preferences for the imaging chain that will assess patient size which improves image



Samer Kazziha, M.D., Natesh Lingam, M.D., and Subhi Sbahi, M.D., use the new ARTIS Icono system at Henry Ford Macomb Hospital.

quality for larger patients. “This system provides a groundbreaking approach to an optimal balance of image quality and dose,” says Subhi Sbahi, M.D., medical director Interventional Cardiology/Structural Heart, Henry Ford Macomb Hospital.

ARTIS icono provides easy connectivity and digitalization improves Case Flows usability and optimizes procedural steps. By changing the position or angulation of the system—with zero joystick interaction—Case Flows always select the correct, dedicated protocol for each desired procedural step, which reduces manual interactions with a conventional system from 27 interactions to only seven. Samer Kazziha, M.D., chief of Cardiovascular Services says, “With no limitations, this system will allow our specialists to expand precision medicine, develop new procedural methods to advanced procedures, and ultimately support outcomes that matter to patients all through use of digitization.”

To refer a patient, call 586-263-2030.

Study Indicates Relationship Between Maximal Exercise Capacity and Risk of Hospitalization Among COVID-19 Patients

One of the first retrospective studies to report an association between aerobic fitness—fitness of the heart and lungs—and likelihood of hospitalization due to COVID-19 conducted among Henry Ford Medical Group patients. The researchers looked at more than 18,000 patients who underwent an exercise stress test on a treadmill between January 2016 and February 29, 2020. Of those patients, 1,181 were tested for the SARS-COV-2 between February 29, 2020 and May 31, 2020. During that timeframe, 246 (21%) of those patients tested positive for the virus; 89 (36%) ended up being hospitalized due to COVID-19.

The study measured fitness levels using metabolic equivalents of task, or METs, achieved during the exercise stress test. One MET is the amount of energy used at seated rest. Walking at 3 miles per hour (mph) equals about 3.5 METs. The figure indicates the unadjusted rate of hospitalization among patients with COVID-19 by quartiles of peak metabolic equivalents of task (METs).



Clinton Brawner, Ph.D.



Jonathan Ehrman, Ph.D.

The difference in aerobic fitness between those COVID-positive patients (n=89) who were eventually hospitalized and those who were not (n=157) was studied. The researchers found those who were hospitalized had lower fitness than those who were not hospitalized. In their study, each 1 MET higher peak fitness was associated with a 13% lower risk of hospitalization from COVID-19.

“As we learned in the early phases of this unique COVID-19 virus, the systemic inflammatory response to viral infections like COVID-19 has a significant effect on the heart and lungs, or cardiopulmonary system. We know that the level of fitness of a person with hypertension, cardiac disease or diabetes experience improved or reduced symptoms from these conditions, so it made sense that aerobic-type exercise training, such as walking or jogging, increases a person’s cardiopulmonary

fitness and improves immune function, both of which play an important role in reducing the negative effects associated with respiratory infections,” explained lead researcher and program director

iPhone 12 Charging Coil Magnet Interferes with ICDs

Continued from page 1

noted and persisted for the duration of the test. This result was reproduced multiple times with different positions of the phone over the pocket. The Apple Inc. website already had a mention about magnetic interference with medical devices and recommended consultations with physicians and medical device manufacturers.

Apple’s public statement on the issue said, “Medical devices such as implanted pacemakers and defibrillators might contain sensors that respond to magnets and radios when in close contact.”

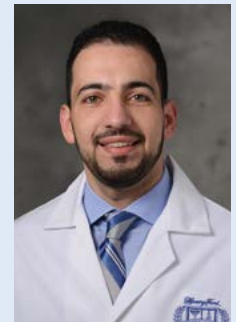
As a precaution, Apple is advising people to keep the iPhones and MagSafe accessories “more than 6 inches” away from the medical devices, and “more than



Gurit Singh, M.D.



Joshua Greenberg, M.D.



Mahmoud R. Altawil, M.D.

12 inches” apart when the iPhone 12 is wirelessly charging. The affected products include the iPhone 12, iPhone 12 mini, iPhone 12 Pro, and iPhone 12 Pro Max.

of Preventive Cardiology Henry Ford Hospital, Clinton Brawner, Ph.D.

It is important to understand that aerobic fitness is improved through structured exercise training that includes a purposeful walk outside, swimming, and activities that evoke a moderate to vigorous intensity. One guide for this intensity is the talk test. That is encouraging someone to exercise at the fastest pace that still allows the individual to talk comfortably,” explains Dr. Brawner, a clinical exercise physiologist. The current public health recommendation is to perform at least 150 minutes of moderate intensity exercise per week, or 75 minutes of vigorous intensity exercise per week, or a mix of both. Including structured or planned exercise guided by the talk test can help to increase aerobic fitness.

“Unfortunately, low fitness seems to be an enduring risk factor for most patients, similar to hypertension and diabetes,” said study co-author Jonathan Ehrman, Ph.D., associate program director of Preventive Cardiology at Henry Ford Hospital in Detroit. “Many people do not move to a higher fitness level during the rest of their lifetime, despite understanding that they have low fitness and the importance of having a higher fitness level. However, if they improve their fitness, there are many studies that show that their health will

improve, including lowering their risk of heart disease, certain cancers, diabetes and other chronic diseases.

And it’s likely that this benefit from improved fitness now likely includes lessening the risk of complications due to COVID-19.”

The conclusion of the study indicates is that higher fitness is related to a lower risk of hospitalization from COVID-19. “Our data suggests that striving to achieve a peak fitness level of at least 7.5 METS—

equivalent to slow jogging—might be a good goal for our patients and general population to achieve a lower risk of hospitalization due to COVID-19,” concludes Dr. Brawner. “These results provide the foundation for further study correlating fitness with other infectious diseases.”

This study was published in the *Mayo Clinic Proceedings*. 2020, Oct. DOI: <https://doi.org/10.1016/j.mayocp.2020.10.003> Brawner, C., Ehrman J., Bole, S., Keteyian, D., Parikh, S., Lewis, B., Gindi, R., Khaled AN., Keteyian, S.

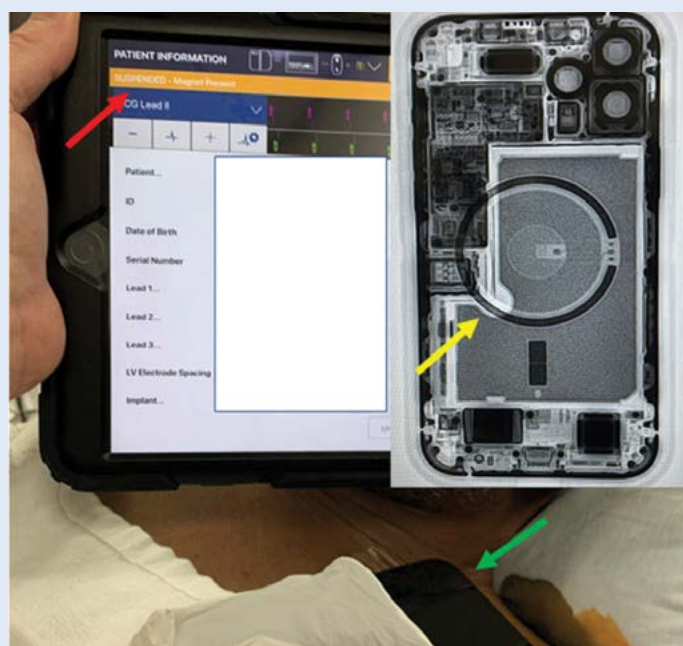
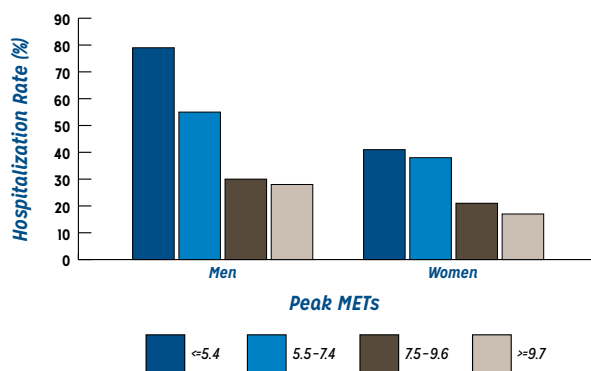
Post COVID-19 patients who have experienced heart failure or pulmonary injury may benefit by improving their fitness from a structured rehabilitation program like PREVENT, through the Preventive Rehabilitation at Henry Ford Hospital. To refer a patient, please call 313-972-1919.

Another of the study’s researchers Mahmoud R. Altawil, M.D., electrophysiology fellow at Henry Ford Hospital warned, “Medical device manufacturers and implanting physicians should remain vigilant about making patients aware of this significant interaction of the iPhone 12 and other smart wearables with their cardiac implantable electronic devices.”

To view the editorial visit:

[https://www.heartrhythmjournal.com/article/S1547-5271\(20\)31227-3/fulltext](https://www.heartrhythmjournal.com/article/S1547-5271(20)31227-3/fulltext)

Device programmer showing suspension of implantable cardioverter-defibrillator therapies (orange bar indicated red arrow) with the iPhone 12 laying over the patient’s chest (green arrow) and fluoroscopy of the iPhone 12 showing the circular magnet array (yellow arrow).



Exercise Intensity in Hybrid Versus Standard Phase Two Cardiac Rehabilitation

In 2016, Henry Ford Hospital began a hybrid Cardiac Rehabilitation (CR) program, providing patients with access to combined clinic and home-/community based synchronized telehealth rehabilitation care. One historical concern of hybrid CR is that patients may exercise at a lower intensity when exercising on their own at home versus under direct supervision in the clinic setting. In this study it was hypothesized there would be no differences in the exercise intensity measured between telehealth hybrid CR and standard, in-clinic cardiac rehabilitation (S-CR). This project was a sub-study from the ongoing improving ATTENDance (iATTEND) to cardiac rehabilitation trial, an NIH funded randomized trial investigating the effects of hybrid CR delivered with virtual telehealth versus clinic-based CR on patient attendance.

The first 47 patients enrolled in iATTEND between March 2019 and March 2020 and who completed > 18 CR visits were included in the analysis. Inclusion criteria also included the patient: experienced a CR qualifying event, was over the age of 18 years old, had demonstrated connectivity to the internet via smartphone or tablet, and had access to home-or community-based exercise equipment. Patients excluded were those: with left ventricular assist devices, receiving continuous inotropic support or dialysis; with angina at low functional capacity [<2 metabolic equivalents of task (METs)]; or unable to exercise independently due to medical, behavioral or cognitive reasons. This sub-study analyzed heart rate (HR) data while exercise training, based on an exercise target heart rate range (THRR) set at 60%-80% of HR reserve by a Core lab using data from a baseline exercise test completed prior to randomization.

Actual exercise training intensity during CR (expressed as a percent HR reserve) was calculated for each patient visit using the following equation:

$$\frac{\text{Exercise training HR} - \text{Seated resting HR}}{\text{Peak HR} - \text{Seated resting HR}} \times 100$$

Where, seated resting HR and peak exercise HR were measured prior to and during the baseline exercise test, respectively.

In a diverse cohort of patients (38% women, 75% Black race) enrolled in CR, this study showed that mean exercise intensity (i.e., % HR reserve) during telehealth hybrid-CR conducted at home or in the community was not significantly different from what was observed during in-clinic training in S-CR (hybrid-CR = $65 \pm 10\%$ HR reserve, S-CR = $63 \pm 12\%$ HR reserve). This finding supports our original research hypothesis. It also suggests that although similar exercise training intensities were achieved in both study groups, neither group regularly trained near the upper (i.e., 80% HR reserve) end of their prescribed THRR.

Finally, across all CR sessions, the percentage of patients that regularly trained within their prescribed THRR was not different between study groups (S-CR = $90 \pm 7\%$, telehealth hybrid-CR = $91 \pm 8\%$).

Steven Keteyian, Ph.D., director, Cardiac Rehabilitation, Henry Ford Health System and principal investigator for the iATTEND trial explains, "Our main finding is important because it also suggests that the staff working in CR could provide more focused instruction on the importance of having patients exercise at a higher intensity, closer to the upper end of their prescribed THRR range (i.e., 80% of HR reserve). Doing so is known to be associated with greater gains in exercise capacity, a clinically important feature because each 1 MET higher exercise workload at the end of CR is associated with an ~30% reduction in the adjusted risk for subsequent clinical events."

The study was published in: *Journal of Cardiopulmonary Rehabilitation and Prevention*, 2021;41:19-22. DOI: 10.1097/HCR.0000000000000569. Keteyian, S., Grimshaw, C., Brawner, C., Kerrigan, D., Reasons, L., Berry, R., Peterson, E., Ehrman, J.



Steven Keteyian, Ph.D.

Carol S. O'Neill Structural Heart Disease Research Fund Established at Henry Ford Health System

William O'Neill, M.D., director of the Center for Structural Heart Disease at Henry Ford Health System, has donated \$1 million to establish the Carol S. O'Neill Structural Heart Disease Research Fund at Henry Ford Health System. This fund, created in honor of Dr. O'Neill's late wife, Carol, who passed away in 2019, will support and advance research efforts at Henry Ford Health System's Heart & Vascular Institute.

"As a devoted wife and mother, Carol continuously exuded unconditional love for her family, and she often put the needs of others before her own," said Dr. O'Neill. "She was a talented nurse, but set that aside to raise our children, Brian, Kate, Julie and Molly. When they were all grown, she returned to nursing, which she loved, as a research nurse in the Structural Heart Disease program at Henry Ford. My kids and I decided to establish the Carol S. O'Neill Structural Heart Disease Research Fund to honor her memory and the research area she was passionate about. This fund is an emblem of the selfless, loving person she was, and it will ultimately help save lives."



Carol S. O'Neill honored with Structural Heart Disease Research Fund

Dr. O'Neill has been at the forefront of many major interventional cardiology advancements, including pioneering the use of angioplasty for the treatment of heart attacks, developing catheter-based treatments for structural heart disease, and leading the National Cardiogenic Shock Initiative to establish new protocols for treating cardiogenic shock.

"As a pioneer in the world of interventional cardiology and structural heart disease, Dr. O'Neill is an internationally recognized leader and his dedication to helping others cannot be overstated," said Adnan Munkarah, M.D., chief clinical officer of Henry Ford Health System. "With this gift, he is

expanding that impact even further. We are so deeply appreciative of Dr. O'Neill's many contributions, not only as a prolific clinician and researcher, but now also as a philanthropist committed to advancing a cause that is very near to his and our hearts."

Mary Jane Vogt, executive vice president and chief development officer at Henry Ford Health System said, "We are incredibly grateful for Dr. O'Neill's generous support of our Edith & Benson Ford Heart & Vascular Institute in honor of his wife, Carol S. O'Neill. The research and innovations of our Heart & Vascular Institute, many of which have been led by Dr. O'Neill himself, have already touched the lives of countless people around the world. Through this gift, that impact will be amplified and honor Carol's legacy in a way that will greatly benefit generations to come."

"This fund is an emblem of the selfless, loving person she was, and it will ultimately help save lives."

—Dr. William O'Neill

The Center for Structural Heart Disease treats some of the most complicated cases of structural heart disease and plays a leading role testing new treatment devices and creating new techniques using catheters. Innovations and scientific contributions of the Center for Structural Heart Disease include:

- Transcatheter aortic valve replacement (TAVR)
- Transcatheter mitral valve repair (TMVr) or replacement (TMVR)
- Tricuspid valve treatment
- Advanced imaging and 3D printing

To learn more about the Center for Structural Heart Disease at Henry Ford Health System, visit henryford.com/services/structural-heart.

To connect with a Henry Ford physician, call:

Heart & Vascular Institute
1-877-434-7470



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IN THE NEWS



Karthikeyan Ananthasubramaniam, M.D.

ACC Elects Henry Ford Cardiologist Next Governor/President

Karthikeyan Ananthasubramaniam, M.D. has been elected as the next Governor/President of the Michigan Chapter of the American College of Cardiology (ACC). He first becomes the Governor/

President-elect at the 2021 ACC Annual Scientific Session and assumes the Governor/President role in 2022. Dr. Ananthasubramaniam says, "I'm very enthusiastic and ready to lead an organization which is respected by myself and colleagues."



Henry Ford Allegiance has opened new satellite offices to provide vascular services.

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