

LVAD Implantation • TAVR • Life's Simple 7

# microscope

November 2016

CHIhealth.com

The  
**Heart**  
Issue

**TREATING  
STRUCTURAL  
HEART DISEASE**

Advanced  
Resistant-Lipid  
Management

Mind-Cardiac  
Connection

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About CHI Health

CHI Health is the largest not-for-profit, regional health network in Nebraska. It embraces a Mission to nurture the healing ministry of the Catholic Church while creating healthier communities. Based in Omaha, CHI Health has 15 hospitals, two stand-alone behavioral health facilities and more than 150 physician practice groups – in CHI Health Clinic and The Physician Network (TPN) – in Nebraska and southwest Iowa. CHI Health is the primary teaching partner of Creighton University's health sciences schools. CHI Health is part of Catholic Health Initiatives (CHI), a nonprofit, faith-based health system based in Englewood, Colorado, that operates in 19 states. For more information, please visit [CHIhealth.com](http://CHIhealth.com).

# Under the Microscope



Dear Colleagues,

Welcome to *microscope*, CHI Health's physician-focused publication providing information to help navigate your patients through illness and disease. Each issue of *microscope* will focus on a specialty and the physician teams doing phenomenal work in these areas.

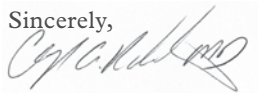
This month we put our cardiovascular service line under the *microscope*. Our first objective as physicians is to prevent cardiac events, which is the work our lipid clinic is focused on. We are on the leading edge of many cardiovascular innovations that can be life-changing for patients.

- Our physicians were first in the region to introduce radial heart procedures, where heart catheterizations are accomplished through the radial artery rather than the groin. Not only are the outcomes excellent, but the procedure is easier on the patient and the recovery is much more comfortable.
- Our physicians were first in the region to bring code chill to the market. By lowering a patient's body temperature, we buy the heart time to heal so it can better tolerate treatment.
- Patients whose arteries are 100 percent blocked are no longer resigned to open-heart surgery thanks to the chronic total occlusion (CTO) procedure and the specialists who skillfully break through the blockage like never before.
- Our work with clinical trials brings the latest treatments to patients who need breakthroughs now.

As a primary care doctor myself, I recognize that your reputation as a physician is tied to the performance of the specialists and hospitals that you choose for your patients. This publication is indicative of our commitment to you. We strive to provide you with the right information to make an informed choice, which requires objective evidence, not slick marketing.

I hope you find this publication valuable. I invite you to share it.

Sincerely,



Cliff Robertson, MD  
Chief Executive Officer  
CHI Health

## Letter from the Cardiology Team

Dear Colleagues,

As physicians, we know trust is everything—whether working with patients, colleagues or referring physicians. We are only as good as our last patient's experience and outcome.

CHI Health, CHI Health Clinic and Nebraska Heart Institute have proven our commitment to quality. The Centers for Medicare and Medicaid Services rated CHI Health Nebraska Heart a five-star hospital, placing us in the top 2.2 percent in the country for heart care. CHI Health Creighton University Medical Center – Bergan Mercy's Cardiac Surgery Program has been nationally recognized with the highest star ranking from the Society of Thoracic Surgeons, as well as by Stanford University, for excellent outcomes and cost of care.

We are leaders in new specialty procedures, minimally invasive procedures and other services that you will read about in *microscope*. The cardiology field has progressed so dramatically that even general cardiologists refer to specialists within their field for procedures that could not be done a few years ago.

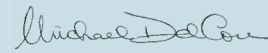
Your patient is our patient. We strive to provide same- or next-day appointments and pledge to report back to you in a timely manner with findings and recommendations.

If you need a consult, give us a call. We'll do our best for you and with you. Enjoy the magazine.

Sincerely,



Jeffrey S. Carstens, MD



Michael G. Del Core, MD



Peter N. Dionisopoulos, MD

**Video:** Know when it's time to refer your patient to a cardiologist at [CHIhealth.com/MicroCardioReferral](http://CHIhealth.com/MicroCardioReferral)

# Heart Surgery Program Gets Top Kudos for Outcomes



**Thomas Langdon, MD**  
 Cardiovascular Surgery  
 Medical Director  
 CHI Health Creighton  
 University Medical Center-  
 Bergan Mercy

**Excellence is a consistency game** that’s won in increments, according to Thomas Langdon, MD, CHI Health Creighton University Medical Center - Bergan Mercy cardiovascular surgery medical director.

“If you do the right thing one time, each time, then in aggregate you’re going to end up with really good outcomes,” he said.

The program is one of three in the United States recognized and visited by Stanford University School of Medicine’s Clinical Excellence Research Center representatives.

“Our practice had been identified as one of the top most valuable practices in the country and that entailed not only being in the top decile of clinical outcomes for coronary artery bypass, but also for providing excellent value to our insurers as far as cost goes for coronary artery bypass surgery,” said Dr. Langdon.

Standardization touches every aspect of the CHI Health Cardiovascular Surgery program.

“When you reduce variance, you really reduce the opportunity for medical error,” said Dr. Langdon. “You introduce a lot of consistency where everybody knows exactly what they need to be.”

Dr. Langdon and his partner, John Batter, MD, have worked to standardize and remove opportunity for medical error, resulting in better patient care, fewer readmissions, less complications and more efficiency. Other improvements include:

- Operating room teams are very efficient and have very short turnover times.
- Postoperatively, heart surgery patients stay in one place, using the universal bed unit approach. “Our patients are not moved around the hospital, but we move the care around the patient,” said Dr. Langdon.
- Staffing is structured for consistency. A finite number of anesthesiologists work with the team, cardiovascular surgery preoperative nurses handle only preoperative care, and postoperative nurses focus on postoperative care. Standard protocols are defined and followed.

“By getting a very specialized team of people who are stakeholders and are very engaged in the care of these patients, we get really great patient care,” said Dr. Langdon. 🌱

## CHI Health Cardiovascular Surgery Program Earns High Star Ratings\*

	Isolated CAB <sup>1</sup>	CAB + AVR <sup>2</sup>	AVR
Bergan Mercy, Omaha	★★★	★★	★★
Nebraska Heart, Lincoln	★★	★★★★	★★
Good Samaritan, Kearney	★★	★★	★★

\*The Society of Thoracic Surgeons <sup>1</sup> Coronary artery bypass <sup>2</sup> Aortic valve replacement

**Video: More on Kudos for Surgery Outcomes at CHIhealth.com/MicroCardioLangdon**

# Clinical Studies Improve Quality Outcomes for Heart Patients

**Research is an essential component** of the cardiovascular care delivered by CHI Health. As the Academic Health System grows through the relationship between Creighton University and CHI Health, there is a continual focus on understanding cardiovascular disease, testing new treatments and improving quality outcomes.

Each academic year, 16 physicians complete specialty or subspecialty training in cardiovascular disease and interventional cardiology. Training new professionals in cardiovascular diseases brings excitement and energy to research. Currently, there are 33 projects being conducted by these investigators.

- Each physician in the fellowship program is required to design, implement and present a research project during training. They identify a faculty mentor and determine a clinical question that interests them and will benefit CHI Health cardiovascular patients.
- One prospective project seeks to determine the antiplatelet effect of aspirin on patients with obstructive sleep apnea who are receiving continuous positive-airway pressure.
- A retrospective project using CHI Health patient data involves analyzing right-ventricular function and change in kidney function in patients who are hospitalized with acute heart failure. Information from these projects will help create new models of care for our patients and provide pilot data to create larger trials.

In addition to investigator-initiated studies, CHI Health Cardiovascular Services works with industry partners to bring pharmaceutical and device trials to our region. Currently, more than 40 trials are being performed in the market. These investigations are successful because of the cardiovascular leadership at CHI Health Nebraska Heart, the Nebraska Heart Institute and CHI Health Clinic. Our strong regional presence and history of successful enrollment in trials allows CHI Health to be sought for important cardiovascular trials, such as the PARTNER (Placement of AoRTic TraNscathetER Valve) trials.

Nebraska Heart is now participating in the PARTNER III trial (enrolling 1,200 patients, ages 65+, with a Society of Thoracic Surgeons risk score of less than 4 percent at 50 U.S. sites). The trial studies transcatheter aortic-valve replacement (TAVR) vs. open surgical replacement in low-surgical-risk patients with symptomatic severe aortic stenosis. If data shows that TAVR provides results comparable to surgical aortic-valve replacement (SAVR) in this group, it could mean most low-surgical-risk patients will opt for the less invasive approach (no surgical incision, less pain, a shorter or no ICU stay, and faster return to normal activity).

Heart disease remains the leading cause of mortality in the United States. However, ongoing research and programs at CHI Health will spur on advances that enhance the health and well-being of patients in the communities we serve. 🌱

**“Currently, more than 40 trials are being performed in the market.”**



**Michael D. White, MD**  
Interventional Cardiologist  
Chief Academic Officer  
CHI Health

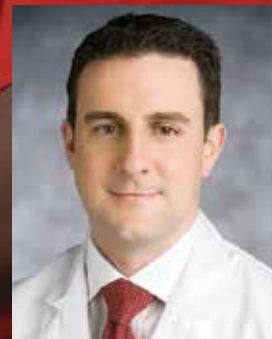
As a U.S. Air Force medic for 23 years, Charles Williams made fitness part of his daily routine, sometimes running 15 miles a day. In his mid-50s, Williams was suddenly unable to run a single city block due to shortness of breath and fatigue. He also had to sleep sitting up or fluid would collect in his chest and throat. That prompted the Omaha resident to seek medical attention, and Williams learned that he was experiencing heart failure.

## Heart Failure Comes as Shock to Avid Runner

**“It was a shock** because I was at the point where I was running five miles in the morning, five miles at lunch and five miles in the evening,” said Williams, now age 66. “Not being able to do that really threw me for a loop.”

CHI Health Cardiologist Joseph Thibodeau, MD, first saw Williams six years ago and diagnosed him with familial type cardiomyopathy. When medical therapy didn’t improve Williams’ condition, he received an implantable cardioverter-defibrillator (ICD) and had good results for several years.

But in 2015, Williams once again experienced fatigue, and tests showed his kidneys were starting to fail because his heart was unable to maintain the necessary blood flow.



**Joseph Thibodeau, MD**  
Cardiologist  
CHI Health Clinic

With Williams' situation becoming dire, he was assessed for and received a left ventricular assist device (LVAD). The battery-operated mechanical pump is surgically implanted and helps the left ventricle pump. Sagar Damle, MD, a cardiothoracic surgeon at CHI Health Nebraska Heart in Lincoln, performed the LVAD implant in March 2016.

"Charles immediately felt better," Dr. Thibodeau said. "He is able to do things on his own, and his kidneys have recovered. It's a success story because Charles had multi-organ failure and now he can go on and seek a heart transplant, if he so desires."

"Not being able to [run 15 miles a day] really threw me for a loop."

While Williams' daily routine no longer includes 15-mile runs, he participates in cardiac rehabilitation at CHI Health Bergan Mercy on Mondays, Wednesdays and Fridays. Other days, Williams walks 1 1/2 miles round trip to a local grocery store.

Williams said he's eternally grateful for the collaborative care he received from Dr. Thibodeau and Gina Mentzer, MD, an advanced heart failure and transplant specialist at Nebraska Heart. Without the LVAD implant, patients with Class IV heart failure — as Williams had — typically have a one-year survival rate of less than 50 percent.

Dr. Mentzer said she and Dr. Thibodeau's work together with Williams is a great example of the collaborative care between the CHI Health and NHI physicians.

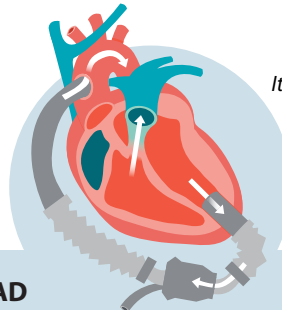
## Success with LVAD implant requires team approach



The Nebraska Heart Institute (NHI) track record of success with LVAD implants is achieved with a team-first approach, according to Sagar Damle, MD, a cardiothoracic surgeon at NHI in Lincoln. He leads a surgical program for heart-failure patients who may be candidates for left ventricular assist device (LVAD).

### What is an LVAD?

An LVAD is a battery-operated mechanical pump that helps the left ventricle circulate blood to the rest of the body.



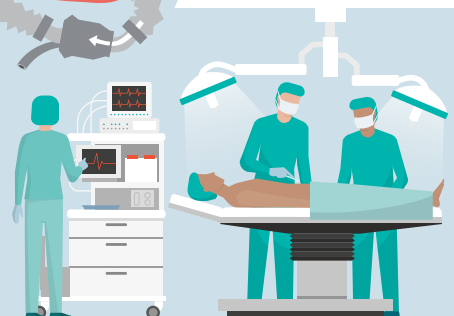
It's implanted in patients with end-stage heart failure.

It's a very stressful operation for a very sick group of patients.

### NHI performs 20 to 30 LVAD implants per year.

The procedure is complicated because most patients have had previous heart procedures, such as valve replacements.

After a successful LVAD implant, most patients can breathe easier and have more energy.



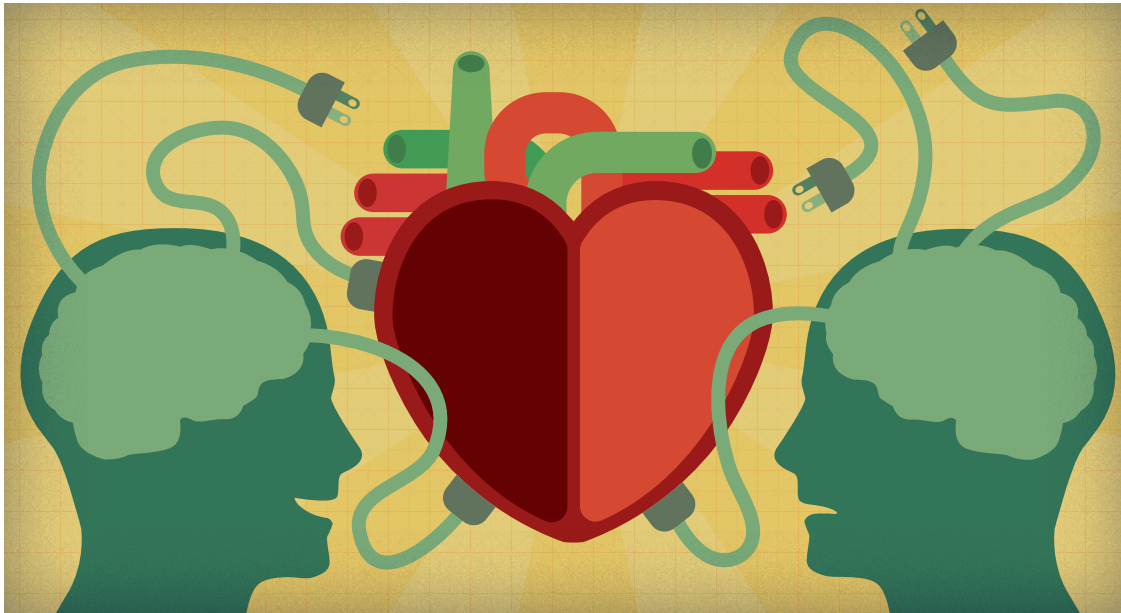
<b>NHI LVAD SURGERY RECOVERY RATE</b> <small>(Average length of stay)</small>	<b>13</b> <b>DAYS</b>	<b>23</b> <b>DAYS</b>	<b>NATIONAL LVAD SURGERY RECOVERY RATE</b>
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**"When you consider that the one-year survival rate of these patients if they had no heart pump is about 50 percent and the two-year survival rate without it is about 10 percent, it's a marked improvement."** Dr. Damle

<p>Aggressive use of IV medication.</p> <p>Ensuring patients don't enter surgery with excess fluid</p> <p>Cardiac rehabilitation to get patients in the best possible shape</p> <p>Dedicated coordinators who work closely with patients</p>	<b>NHI Survival Rates</b>
	<b>85%</b> 1 year <b>75%</b> 2 year

**"The most important thing to remember about these surgeries is that it's not about the surgeon or the pump. It's about the whole team."** Dr. Damle

# Mind-Cardiac Connection Intertwined for Heart-Failure Patients



**Gina Mentzer, MD**  
Advanced Heart-Failure  
and Transplant Specialist  
Nebraska Heart Institute

**The mind-body connection is** evident to Gina Mentzer, MD, advanced heart-failure and transplant specialist at Nebraska Heart Institute.

“Sixty percent of heart-failure patients have depression and memory issues,” said Dr. Mentzer. “Cognitive health and cardiovascular health are uniquely intertwined. It’s very intimate. It’s something we talk about with all our heart-failure patients and all our cardiac patients, whether they’ve had surgery or heart failure or a stroke.”

The causes are systemic and molecular.

“When somebody’s heart fails or they have cardiovascular disease, the blood flow, the oxygen, and just the (blood) pressures that the brain needs to work every day aren’t there,” said Dr. Mentzer. “By improving those, we can improve the biochemistry to the brain.”

“However, it’s more than just that. When somebody’s heart is failing or they have cardiovascular disease, the

stress hormones are elevated. Your body doesn’t know what exactly is supposed to respond. It’s just a fight-or-flight response.”

As an advanced heart-failure specialist, Dr. Mentzer pays attention to the impact, stating, “If we treat their cardiovascular health, it improves their cognition. We like to think: treat the heart and treat the mind.”

Likewise, detecting and treating cognitive problems, such as depression and memory loss, can improve a patient’s ability to take an active role in improving cardiac health. Asking about mental symptoms is an important first step, because patients often hesitate to bring up the topic themselves.

“I think it’s a taboo to talk about cognitive health,” said Dr. Mentzer. “They’re not going to talk about it openly, and they’re more nervous about it.”

It’s also an opportunity to urge participation in the American Heart Association’s Life’s Simple 7 (see **Life’s**

**Simple 7 Benefit Heart, Mind**), which sets targets for cardiovascular health factors including exercise, body weight and smoking.

“It’s made to be simple, so people can understand it and follow it,” said Dr. Mentzer. “At first it takes effort, but over time, as you pay more attention to what those seven are, you’ll incorporate it more into your lifestyle, and it will just happen and you won’t think about it. It could be as simple as just parking farther away to go shopping — that’s more exercise.”

Incremental gains influence overall wellness. “It directly reduces stress on your heart because you decrease body size and the demands on your heart,” said Dr. Mentzer. “You decrease the overall stress hormones that are circulating in your body, which improves your cognition, improves your feel-good hormone levels, and you’re able to deal with ups and downs, and to stabilize to have a healthy balance in your life.”



## LIFE'S SIMPLE 7 by the American Heart Association



**Manage Blood Pressure**



**Control Cholesterol**



**Reduce Blood Sugar**



**Get Active**



**Eat Better**



**Lose Weight**

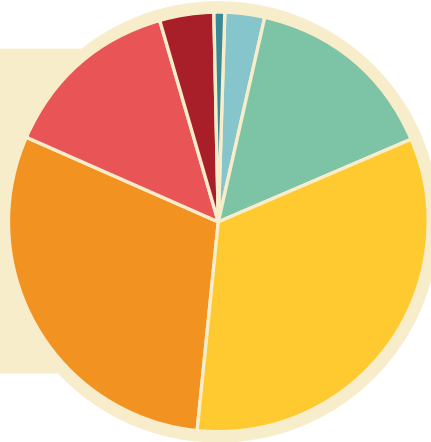


**Stop Smoking**

## Study Results

from "Ideal Cardiovascular Health and Cognitive Aging in the Northern Manhattan Study"

met 6 goals	1%
met 5 goals	4%
met 4 goals	14%
met 3 goals	30%
met 2 goals	33%
met 1 goal	15%
met 0 goals	3%



Older adults who achieved two or more ideal cardiovascular health (CVH) factors had less cognitive decline than those who achieved only one or no CVH goals.

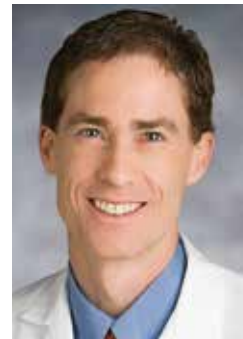
## Life's Simple 7 Benefit Heart and Mind

The American Heart Association developed Life's Simple 7 in 2010 to help reduce deaths from cardiovascular disease and stroke by 20 percent by 2020.

These seven cardiovascular health factors (see chart at left) may also benefit the brain health and cognitive aging of older adults, according to a multi-ethnic study published March 16 in the *Journal of the American Heart Association*. "Ideal Cardiovascular Health and Cognitive Aging in the Northern Manhattan Study" details research led by Hannah Gardener, ScD, Department of Neurology, Miller School of Medicine, University of Miami.

The study followed 1,033 individuals with an average age of 72. Participants underwent neuropsychological testing for episodic memory, thinking and brain-processing speed. Six years later, 722 participants were retested.

Researchers found that participants who achieved gains in more of Life's Simple 7 had less of a decline in processing speed, and, to a lesser extent, executive functioning and episodic memory. The link was most pronounced for three cardiovascular health factors — ideal body mass index, lack of smoking and ideal fasting glucose.



**Eric Van De Graaff, MD**  
Cardiologist  
CHI Health Clinic

The results won't surprise clinicians. "Does heart health equal cognitive health? There's a lot of anecdotal evidence and research to suggest it does," said CHI Health cardiologist Eric Van De Graaff, MD. "To me, this is stuff we've known for a long time. This is just one more piece."

It's easy to assume aging equals mental decline. That doesn't

mean it should be ignored. "I think we underestimate and under-recognize geriatric depression," said Dr. Van De Graaff.

"I remind patients that a lot of this is vascular. The things that impact heart health impact cognitive health."

Those vascular factors — atherosclerosis, high blood pressure, high blood sugar, damage from smoking — can be mitigated. "We know what helps us improve the general overall health of the blood vessels and that's exercise, diet, not smoking. I tell my patients that activity is the key to aging," said Dr. Van De Graaff. "It all leads to a lower risk of dementia, better memory and less depression as patients age." 🏃

# Holistic Lipid Management and CVD Prevention Yield Results



**Peter Dionisopoulos, MD**  
*Medical Director  
Cardiovascular Health  
and Lipid Clinic*  
Nebraska Heart  
Institute  
*Chief Medical Officer*  
CHI Health  
Nebraska Heart

**The time to rigorously manage lipids** and cardiovascular disease risk factors is now. That's the position Peter Dionisopoulos, MD, takes as medical director of the Cardiovascular Health and Lipid Clinic at the Nebraska Heart Institute in Lincoln.

"When we started the clinic back in 2001, it was primarily a lipid clinic," he said. "It was for individuals whose lipids were not controlled, usually because of intolerances to medications."

Tactics for managing lipids and preventing heart disease continue to evolve. "When you look at goals, the recent guidelines aren't really guiding toward a specific number; they're pushing at treating people aggressively," said Dr. Dionisopoulos, who is also chief medical officer of CHI Health Nebraska Heart.

## PCSK9 Inhibitors Move the Needle

“For example, if someone has had an event — a heart attack, a stent, or bypass surgery — we know those individuals need to be treated with statins. They need to be treated with what is referred to as high-potency statins, and they need to be treated at very high doses.”

To get patients to goal, the Cardiovascular Health and Lipid Clinic brings together a cardiologist, physician assistant, dietitian and medical technologist. “We have to take the whole patient into account, take the whole risk profile into account, and put them on the appropriate medications. At this point, advanced lipid testing plays a role to make sure patients are truly treated to their goals. Frequently, we see a treatment gap that will require more aggressive medical therapy,” said Dr. Dionisopoulos. “As many as 33 percent of people fall into that category.”

Cardiovascular risk factors that patients can control, such as smoking, diet and activity, require lifestyle changes that can be difficult to achieve. Presenting real-life scenarios makes the risks real for patients. “If you continue, for example, smoking, or if you continue not eating correctly, or if you continue with your diabetes being out of control, what are the potential ramifications of that?” said Dr. Dionisopoulos.

Those scenarios are followed with solutions. According to Dr. Dionisopoulos, “We do feel that with education, a lot more patients are willing to change their behaviors than if we just prescribed a medication to them and sent them out the door.”

The team approach extends to referring physicians. Dr. Dionisopoulos cited triglyceride abnormalities in diabetic patients as an example of an instance when physician collaboration yields superior results. “If we don’t work together with their primary care physician or endocrinologist to get [patients’] diabetes under control, getting their triglycerides under control is very, very difficult,” he said.

Patients who successfully reduce their risk factors can avoid a future heart attack or stroke. But it starts with a clear picture. “We’re actually looking at the whole individual, helping the individuals identify and correct those risk factors, so that they stay healthy and drastically reduce the chance of having a future cardiovascular event,” said Dr. Dionisopoulos. 🌱

“Over the last several years, the most important new medications to come out are PCSK9 inhibitors,” said Peter Dionisopoulos, MD, medical director of the Cardiovascular Health and Lipid Clinic at the Nebraska Heart Institute.

Guidelines indicate this class of drugs for patients with familial hypercholesterolemia.

“The total cholesterol is over 300, and sometimes as high as 500,” said Dr. Dionisopoulos. “The LDL or bad cholesterol will be in excess of 200. These individuals are at extremely high risk for developing premature atherosclerosis.”

PCSK9 inhibitors are also for individuals who cannot tolerate statins because of side effects like muscle

aches. Clinical trials suggested

that 2 to 3 percent of patients don’t tolerate statins.

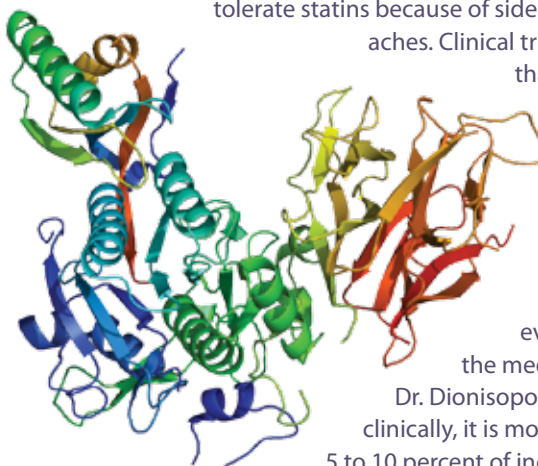
However, the trials weaned out individuals who were intolerant before they were even prescribed the medication,” said

Dr. Dionisopoulos. “I believe clinically, it is more on the order of 5 to 10 percent of individuals who can’t tolerate statins.”

Patients who have had documented atherosclerosis or plaquing are also indicated for PCSK9 inhibitors.

“They have either had a stent or a heart attack or a bypass surgery, or they have disease elsewhere in the body, whether it’s carotid artery stenosis or peripheral artery disease in the legs,” said Dr. Dionisopoulos.

The only drawback is cost and insurance coverage, because the medications are new. However, the results have been striking. “We’ve seen reductions of cholesterol on the order of 70 percent,” he said. “In the clinical trials, there were no significant side effects. Since it’s a specifically modified molecule that binds to the PCSK9, it does not cause muscle pain, memory issues or liver toxicity.” 🌱



Rendering by EMM

## TAVR: How it Works

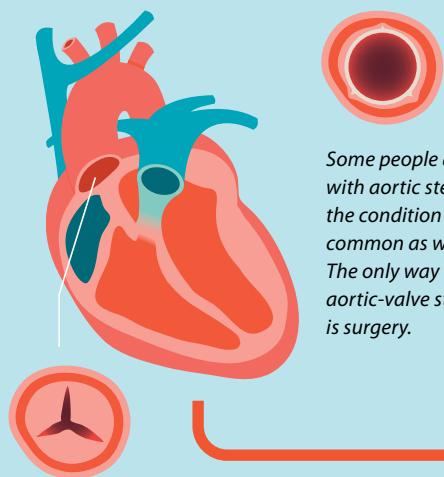
Minimally invasive procedure offers cutting-edge treatment for structural heart disease patients.

### What is Aortic Stenosis?

In simple terms, it's a "tight" heart valve that limits a person's routine activities.

A diseased or "tight" valve has calcified over time and hardened, decreasing the heart's pumping ability.

The valve is replaced to prolong life and provide a better quality of life.



Some people are born with aortic stenosis, but the condition is more common as we age. The only way to eliminate aortic-valve stenosis is surgery.

# Treating Structural Heart Disease: TAVR, MitraClip

CHI Health offers cutting-edge treatment for structural heart disease patients, which include the minimally invasive procedures known as transcatheter aortic valve replacement (TAVR) and MitraClip.

The TAVR procedure is for patients who suffer from aortic stenosis, a progressive disease that affects the aortic valve of the heart and often causes restrictions in routine activities. Initially, it was approved for patients who weren't considered good candidates for traditional open-heart surgery due to poor health.

Since there is no medical treatment for aortic stenosis, studies show that 50 percent of patients who don't receive a valve replacement are unlikely to survive more than an average of two years after symptoms begin. The TAVR procedure repairs the heart valve without removing the damaged valve



**Himanshu Agarwal, MD**  
Interventional Cardiologist  
CHI Health Clinic



**Steven Martin, MD**  
Interventional Cardiologist  
Nebraska Heart Institute

by placing a replacement valve into the aortic valve's place, using a catheter with an expandable balloon. This is achieved by entering at the groin area and going through an artery.

"It is a revolutionary procedure that has been performed for the last 10 years outside of America in Europe and elsewhere," said Himanshu Agarwal, MD, an interventional cardiologist for CHI Health Clinic. "It is so effective and was so revolutionary because you can repair a patient's valves without the need for open-heart surgery.

"If someone had a bad valve, it used to be that the only treatment was to cut their chest open, take the bad valve out and put a new one in," he said. "With the TAVR procedure, you can go from the groin and then put in a valve, which is mounted on a balloon, and then we blow that balloon up and the new valve will take over."

While surgery is still the most common method of replacing valves, Dr. Agarwal said, TAVR is certainly the best option for high-risk patients.

"When you compare open-heart surgery — with a recovery time of six weeks and all the possible complications with surgery — to the TAVR procedure, which basically doesn't require surgery, TAVR is a great option," Dr. Agarwal said. "The new valves perform very well and typically last for 10 to 15 years."

At the Nebraska Heart Institute in Lincoln, Steven Martin, MD, and the team at Nebraska Heart have participated in three studies regarding the TAVR procedure, dating back to the fall of 2011 — prior to FDA approval. After taking part in studies on how TAVR impacts high- and moderate-risk patients, Dr. Martin said that NHI is among 50 facilities in the U.S. starting

## What is TAVR?

Transcatheter aortic valve replacement (TAVR) was approved for patients who weren't considered good candidates for traditional open-heart surgery due to poor health.

In this process, an interventional cardiologist and surgeon make a small incision in the groin or side of the chest. A collapsible valve is transported to the heart through a catheter.

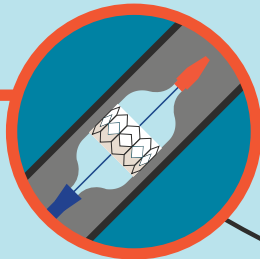
### AVERAGE RECOVERY TIMES

THROUGH THE LEG

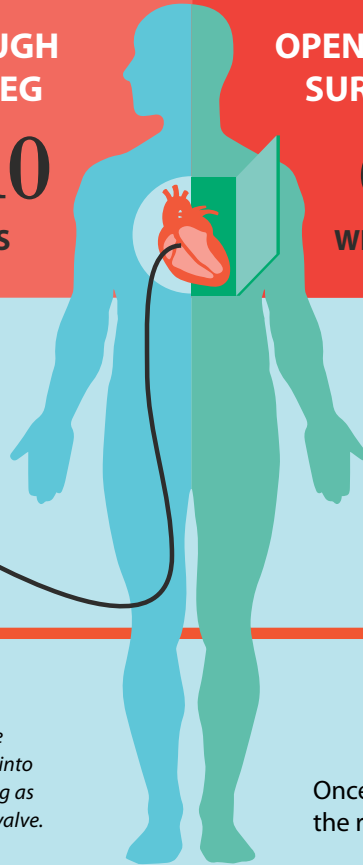
7-10  
DAYS

OPEN-HEART SURGERY

6  
WEEKS



Using imaging technology, the valve is placed into position - acting as the new heart valve.



## Benefits of TAVR

- The procedure provides a new option for patients previously deemed inoperable through traditional open-heart surgery.
- Initial trials were targeted to high-risk patients. Now, trials are in process to determine whether this will be an option for lower risk, and often times, younger patients.
- TAVR provides patients with a quicker recovery; returning home after a shorter stay than traditional surgery; getting back to "normal" activities sooner.

Once in place and expanded, the new valve begins the regulation of flow between the heart's chambers.

to enroll low-risk patients to see how they well they might react to TAVR.


"That will be really interesting to find out. Conventional valve replacement has been the standard because it has just been done for decades, so it's time-tested and we know that it's good treatment," said Dr. Martin, an interventional cardiologist at NHI. "But now that we have seen the trial results for intermediate-risk patients and we know it's good for high-risk patients, it begs the next question: What about your fairly healthy guy whose only issue is an aortic valve? That's what we're excited to be a part of and we were very happy to be chosen."

Another less-invasive treatment option offered by NHI and CHI Health for heart-failure patients is MitraClip. While the TAVR procedure is typically performed to open up a narrow valve, the MitraClip procedure repairs a leaky

mitral valve.

"That valve is a little more complicated to work on," Dr. Martin said. "With the MitraClip procedure, the valve kind of swings open like a swinging door and it stops at a frame. But when there's a problem with the door, so to speak, they can put a clip in the middle of the door that is almost like a staple to sort of keep it closer together so it leaks a lot less.

"Is it a perfect result? No. But it makes it a lot less leaky so that patients are hospitalized a lot less and they seem to be functioning much better. You can surgically fix this group of patients, too, but a lot of them are pretty high-risk for surgery," he said.

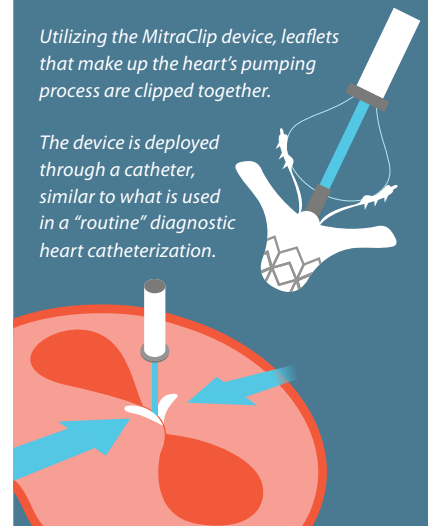
The recovery time required after both TAVR and MitraClip procedures is fairly minimal. Patients can often return home within a couple of days. 

## What is MitraClip

While the TAVR procedure is typically performed to open up a narrow valve, the MitraClip procedure closes down a leaky mitral valve.

Utilizing the MitraClip device, leaflets that make up the heart's pumping process are clipped together.

The device is deployed through a catheter, similar to what is used in a "routine" diagnostic heart catheterization.



# Heart-Failure Clinics Help Curb Hospital Readmission Rates

**Nearly 30 percent of heart-failure patients are re-hospitalized** within 60 to 90 days of discharge, according to a 2013 study by the *Journal of the American College of Cardiology (JACC)*.

Adnan Khalid, MD, of the Nebraska Heart Institute (NHI) in Lincoln, said a major issue is patient uncertainty in following instructions after discharge. Heart-failure patients may not realize that seemingly harmless actions, like drinking too much water, can result in rehospitalization.

“We can’t just assume that the patient knows what to do,” said Dr. Khalid, an interventional/advanced heart failure cardiologist.

Jeffrey Carstens, MD, an interventional cardiologist for CHI Health in Omaha, said reinforcing care instructions to patients is critical.

“We try to see all heart-failure patients in the office within about 72 hours of their initial hospitalization,” said Dr. Carstens. “It’s helpful to answer questions, make sure they understand their medications, and determine if we need to make adjustments.”

Dr. Khalid said that at NHI and CHI Health St. Elizabeth in Lincoln, the heart-failure clinic team reduced readmission rates significantly since assembling 18 months ago.

CHI Health Bergan Mercy has had a similar heart-failure clinic for nearly 10 years.

Dr. Carstens said heart-failure patients who aren’t referred for follow-up care are roughly twice as likely to be readmitted 30 days after dismissal.

“These are fairly complex patients,” said Dr. Carstens. “Typically, they have multiple problems and managing heart failure itself is rather difficult.”

Heart-failure patient Karen Stanley, 75, of Lincoln, experienced complications related to diabetes and fluid retention after being hospitalized more than two years ago.

“Everyone who treated me at NHI and St. Elizabeth was incredibly on top of the domino effect I was experiencing,” said Stanley. “It saves me having to go to the emergency room or hospital because I can do so much monitoring by phone.”

The CHI Health Bergan Mercy heart failure clinic emphasized collaboration and continuity of care.

Heart failure is a chronic condition that requires active ongoing management,” said Dr. Carstens. “Whatever the situation is or the concern might be, the patient knows we’re only a phone call away.”

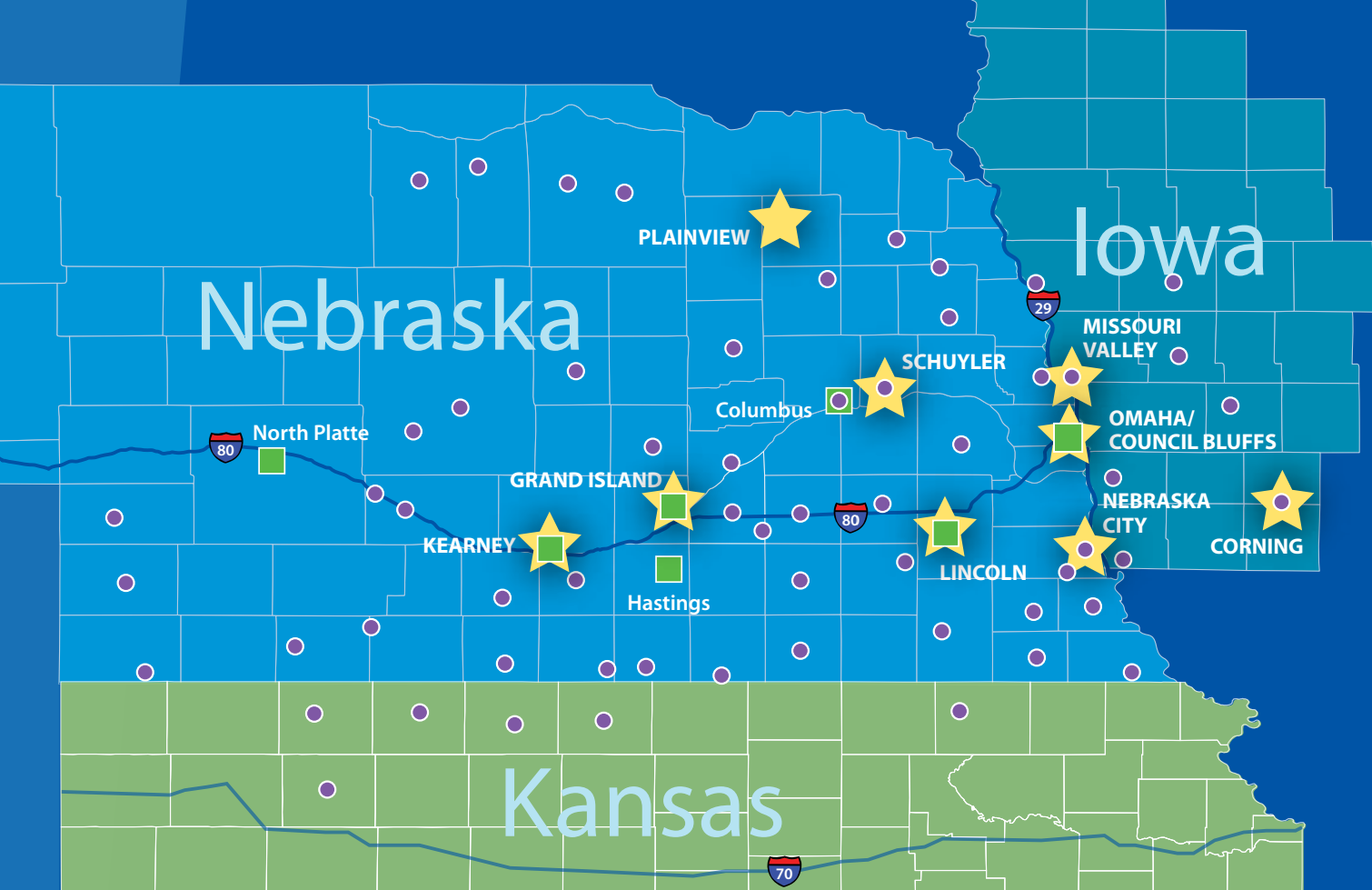
**“These are fairly complex patients. Typically, they have multiple problems and managing heart failure itself is rather difficult.”**

*Jeffrey Carstens, MD*



**Adnan Khalid, MD**  
Interventional/  
Advanced Heart Failure  
Cardiologist  
Nebraska Heart  
Institute

**Jeffrey Carstens, MD**  
Interventional  
Cardiologist  
CHI Health Clinic



[CHIhealth.com/Heart](http://CHIhealth.com/Heart)  
[neheart.com](http://neheart.com)

Omaha/southwest Iowa:  
**402-398-5880**

Lincoln/northeast Nebraska:  
**800-644-3627**

**CHI Health Hospitals**

**NEBRASKA**

**Grand Island**

CHI Health St. Francis

**Kearney**

CHI Health Good Samaritan

**Lincoln**

CHI Health Nebraska Heart  
CHI Health St. Elizabeth

**Nebraska City**

CHI Health St. Mary's

**Omaha**

CHI Health Creighton University  
Medical Center - Bergan Mercy  
CHI Health Immanuel  
CHI Health Lakeside  
CHI Health Midlands

**Plainview**

CHI Health Plainview

**Schuyler**

CHI Health Schuyler

**IOWA**

**Corning**

CHI Health Mercy Corning

**Council Bluffs**

CHI Health Mercy Council Bluffs

**Missouri Valley**

CHI Health Missouri Valley

**Cardiovascular Clinics**

Grand Island    Hastings    Kearney    Lincoln\*    North Platte    Omaha\*

**Outreach Sites**

**NEBRASKA**

Ainsworth  
Albion  
Alma  
Atkinson  
Auburn  
Aurora  
Bassett  
Beatrice  
Benkelman  
Blair  
Broken Bow  
Callaway

Cambridge  
Central City  
Columbus  
Cozad  
Crete  
Falls City  
Franklin  
Friend  
Geneva  
Gothenburg  
Grant  
Hebron

Henderson  
Holdrege  
Imperial  
McCook  
Minden  
Nebraska City  
Norfolk  
O'Neill  
Ord  
Pawnee City  
Pender  
Red Cloud

Schuyler  
Seward  
St. Paul  
Superior  
Syracuse  
Tecumseh  
Wahoo  
Wayne  
West Point  
York

**IOWA**

Atlantic  
Corning  
Denison  
Glenwood  
Hamburg  
Harlan  
Missouri Valley  
Onawa

**KANSAS**

Hoxie  
Marysville  
Norton  
Oberlin  
Phillipsburg  
Smith Center

\*Denotes multiple sites

**We Value  
Your Feedback!**

Please share your thoughts about  
this issue of microscope and your  
ideas for future stories at  
[CHIhealth.com/MicroIdeas](http://CHIhealth.com/MicroIdeas)

**IT WAS A  
SHOCK**

BECAUSE I WAS AT THE POINT WHERE  
**I WAS RUNNING**  
FIVE MILES IN THE MORNING,  
FIVE MILES AT LUNCH AND  
FIVE MILES IN THE EVENING.  
NOT BEING ABLE TO DO THAT  
**REALLY THREW ME**

**FOR A LOOP.**

IT IS SO EFFECTIVE AND WAS SO REVOLUTIONARY  
BECAUSE YOU CAN REPAIR A PATIENT'S VALVES  
**WITHOUT THE NEED FOR  
OPEN-HEART SURGERY.**

# 66.6 microscope

Whatever the situation is  
or the concern might be,  
the patient knows

**we're only a  
phone call  
away.**

**60 PERCENT**  
OF HEART-FAILURE  
PATIENTS HAVE  
**DEPRESSION**  
AND MEMORY ISSUES

WHEN YOU LOOK AT GOALS,  
THE RECENT GUIDELINES  
AREN'T REALLY GUIDING  
TOWARD A SPECIFIC NUMBER,

**THEY'RE  
PUSHING AT  
TREATING  
PEOPLE  
AGGRESSIVELY.**

**REALLY GOOD OUTCOMES.**  
IF YOU DO THE RIGHT THING ONE TIME, EACH TIME,  
THEN IN AGGREGATE YOU'RE GOING TO END UP WITH