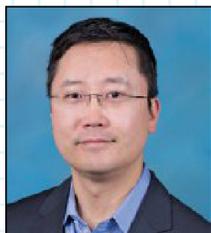


The Team of Heart Doctors



Mauro Moscucci, M.D.
Medical Director,
LifeBridge Health
Cardiovascular Institute



Christopher Kwon, M.D.
Chief of Cardiovascular
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Amir Najafi, M.D.
Interventional Cardiologist



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Interventional Cardiologist

Highly specialized heart care is rapidly becoming a team effort. That's because new advances in minimally invasive treatment for heart conditions require the expertise of several physicians — not only cardiac surgeons and anesthesiologists, but also radiologists, interventional cardiologists and noninvasive cardiologists.

The reason is because aortic heart valve surgery can now be done as a minimally invasive procedure called transcatheter aortic valve replacement, or TAVR (pronounced täv'är) for short. While TAVR requires the involvement of multiple heart specialists, the benefits to the patient are enormous. What used to mean open heart surgery can now be performed for select patients through a slight incision in the skin. Instead of spending almost a week in the hospital with activity restrictions afterward, patients typically go home in three days and resume their normal routines.

While only some patients — those for whom traditional surgery is too risky — can have this procedure now, it is expected to one day be the standard of care for most everyone who needs a new heart valve.

"In three to five years, 50 to 80 percent of patients with aortic stenosis may be receiving transcatheter valves," predicts Christopher Kwon, M.D., a LifeBridge Health Cardiovascular Institute cardiac surgeon who performs the TAVR procedure at Sinai Hospital.

Aortic Stenosis

Aortic stenosis is when the heart's aortic valve hardens and narrows, preventing the valve from opening as it should. This means blood can't flow well from the heart to the main artery that provides blood to the rest of the body. To make up for this, the heart beats harder. But this can damage the cardiac muscle and cause heart failure. Patients who have severe aortic stenosis can experience chest pain, fainting and shortness of breath.

"Unfortunately, if left untreated, about half of patients who experience such symptoms die within two to three years," says Amir Najafi, M.D.,

"After TAVR, patients not only feel much better, but they are more likely to live longer."

— Amir Najafi, M.D.

an interventional cardiologist who is part of Sinai Hospital's TAVR team. "After TAVR, patients not only feel much better, but they are more likely to live longer. This state-of-the-art procedure has greatly expanded our ability to care for patients who had no hope before."

It Takes a Team

Together, a team of interventional cardiologists and a cardiac surgeon guide the catheter that brings the TAVR valve to the patient's diseased valve. Depending on a patient's blood vessel structure, doctors select the entry point for this catheter. It might be inserted into a patient's chest, shoulder or thigh. With the help of radiologists, doctors who read X-ray images, the team decides which approach is best. The team works in such careful coordination that Dr. Kwon says that the patient's heart can keep beating when the valve is positioned and opened.

These photos show how a large TAVR valve can fit inside a small catheter, avoiding the need for open heart surgery.

Because the replacement valve can collapse on itself, it can be moved through the catheter.

A team of heart experts then perform a minimally invasive procedure with the catheter that guides the closed valve to the right place in the heart.

Once there, the TAVR team positions and opens the valve, replacing the patient's faulty valve.



Will See You Now



The LifeBridge Health Cardiovascular Institute's team works in careful coordination during all surgeries. Pictured here from left to right are Drs. Moscucci, Najafi and Kwon.

Minimally Invasive Options for Everyone

As of publication, TAVR is FDA approved only for high- and extreme-risk patients. That's because TAVR valves have been in use in the United States for only about five years, and their durability hasn't yet been proven. However, in Europe, where TAVR valves have been used longer, the data looks promising. Dr. Kwon says that the FDA will soon review the procedure's use for moderate-risk patients.

Even though TAVR is not available for everyone yet, whenever he can Dr. Kwon offers minimally invasive valve replacement by operating through the spaces between a patient's ribs.

"Psychologically, it means so much more to patients to see only a small incision rather than a 6- to 8-inch incision in the middle of their chests," says Dr. Kwon. Recovery from minimally invasive valve surgery is also much faster than traditional open heart surgery.

A Revolution in Cardiovascular Care

Dr. Kwon likens the advances that TAVR is bringing to the field of heart care to the revolution that occurred with coronary stents. More and more patients were able to forgo heart bypass surgery and instead received a minimally invasive procedure that would open up their existing heart arteries.

Think Hybrid for Heart Procedures

The LifeBridge Health Cardiovascular Institute continues to make strides in advanced heart care.

"We recently opened a hybrid room for minimally invasive procedures that can transform into an open heart room if emergency surgery is suddenly needed," says Mauro Moscucci, M.D., medical director of the LifeBridge Health Cardiovascular Institute and chair of Sinai Hospital's Department of Medicine.

Dr. Moscucci says that in addition to TAVR procedures, other minimally invasive heart surgeries can be performed in the hybrid room. These include aneurysm repair, stent procedures and more.

"We're moving toward minimally invasive approaches to diseases affecting the structure of the heart," says Dr. Moscucci. He mentions the use of special vascular "plugs" that can patch congenital holes in the heart or close off areas where blood clots can form in patients who have rhythm disorders.

Other valve procedures are also being performed in a hybrid fashion. A patient with a narrowed mitral valve might receive a balloon valvuloplasty to restore the valve's function. New treatments for leaky valves are emerging as well.

While TAVR is only for high-risk patients with aortic stenosis, minimally invasive replacement valves are now under development for patients with other valve diseases.

"More and more people are getting transcatheter valves," Dr. Kwon says. "Valve surgery volumes are going up overall. The percentage of them performed with this new procedure keeps getting larger." ■