



# Aurora Health Care Boosts Cardiology Offering with Minimally-Invasive Structural Heart Program



Aurora Health Care is recognized as one of Wisconsin's leading health systems for heart and cardiovascular care and is ranked #31 in the nation for cardiology and heart surgery.<sup>1</sup> At the epicenter of the system's highly respected cardiovascular program is the flagship facility in Milwaukee, Aurora St. Luke's Medical Center, where patients with complex conditions are treated. Aurora St. Luke's Medical center is home to cardiac specialty centers, world-renowned cardiac experts, state-of-the-art resources, ground-breaking clinical trials and cardiovascular research. Not only are Aurora Health Care's cardiology specialists using the facility's resources to improve health outcomes and patient experiences, they've boosted cardiology revenues by expanding their services to perform structural heart repair using a minimally invasive procedure called Transcatheter Aortic Valve Repair (TAVR).

Performing these minimally invasive transcatheter valve repairs utilizing hybrid ORs, cardiologists can see and treat twice as many patients. The specialized configuration of the hybrid OR allows for open surgery to be performed in the same space, should it become necessary. As the CMS (U.S. Centers for Medicare and Medicaid Services) continues to evaluate and expand structural heart repair coverage for more patient groups, such as intermediate-risk patients, Aurora St. Luke's leadership

moved forward with plans to build additional hybrid ORs to accommodate more patients with aortic stenosis who qualified for this minimally invasive option.<sup>2</sup>

## Laying the Foundation for Expansion

Located near the US and Canada headquarters in Wauwatosa, Wisconsin, Aurora Health Care had been a longtime user of some GE Healthcare solutions, but in recent years, began working more closely with GE Healthcare in the cardiology space.

"The more we worked with GE Healthcare, the more we realized that we have the opportunity to build a bigger relationship because our needs were met very well by the GE Healthcare technology as well as the staff and support personnel. So, the relationship grew from the cath lab side, on to ultrasound and CT scanners," said Dr. Tanvir Bajwa, Cardiologist at Aurora St. Luke's.

"With GE Healthcare, we had access to all the latest equipment, and all the latest technology, including some work with GE Healthcare on future developments and technologies. That allowed us to plan for the future, which allowed us to reach our present state, really having what I think is the high-tech, most efficient lab for transcatheter valve repair in the country," added Daniel Ohair, M.D., Cardiovascular and Thoracic Surgeon at Aurora St. Luke's Medical Center.

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***- Dr. Tanvir Bajwa, Cardiologist at Aurora St. Luke's Medical Center***

The Aurora team engaged GE Healthcare to talk about their plans to grow their TAVR program. (TAVR is a minimally invasive surgical procedure that repairs the valve without removing the old, damaged valve. Instead, it wedges a replacement valve into the aortic valve's place.)<sup>3</sup> The goal of Aurora St. Luke's cardiology team was to create the largest and most experienced program in the region using TAVR, to correct severely diseased aortic valves in high-risk and intermediate risk patients. Working collectively with GE Healthcare, they designed a hybrid operating room where they could perform these minimally invasive procedures, but should any complications arise, could also operate in the same room. The rooms are uniquely designed around the patient, in a way that facilitates multiple procedures. The hybrid OR meets surgical sterility requirements, laminar air flow requirements, and is designed with a free ceiling for placement of surgical lighting, anesthesia boom and monitors. Aurora's operation of GE Healthcare's Image Guided System (IGS) technology enables a low dose profile during intra procedure real-time imaging, for both patient and staff, as well as low contrast usage for patients. As one of the nation's earliest adopters of the hybrid OR for structural heart repair, Aurora's team also incorporated GE Healthcare's advanced visualization technology, VALVE ASSIST II, so they can more accurately deploy patients' new heart valves. The combination of this flexible setup and optimized technology enable the Aurora team to work comfortably and safely around the patient for the entire procedure, which helps drive the best outcomes and best patient experience.

To maximize efficiency, the hybrid ORs are set up in a tandem space with a control room in between them, and visible to both procedure rooms. As one procedure is completed, a team comes in to clean the room while the next patient is being prepped on the opposite side. The surgeons are able to finish one procedure, speak to the patient's family, and immediately begin working on the next critically ill patient. This setup has allowed Aurora St. Luke's to double the number of procedures the surgeons are able to complete in a single day, enabling better outcomes for patients who might otherwise have to wait until a procedure can be scheduled. In total, Aurora St. Luke's has built five hybrid OR suites with complete teams staffing each room for these procedures.



Aurora St. Luke's Medical Center OR Suite

"For maximum efficiency, we staff each hybrid OR with a complete TAVR team, consisting of a cath lab team, a surgical team and an anesthesiologist. We refer to the control room as the central core between the two hybrid ORs. That "inner room" provides our teams additional visibility and flexibility to move between the rooms. It's actually one of the more revolutionary features of our hybrid ORs. It's given us the ability to more than double the number of cases we're able to do in a single day; from three cases, to seven. The amount of operational efficiency gained by doing procedures this way is very beneficial for patients and for our team. From a patient standpoint, those patients are very, very ill, so that was really the driving point behind it." said Christopher Koblosky, Manager of Interventional Services at Aurora St. Luke's Medical Center.

## Sharing Success

After implementing the hybrid ORs, Aurora St. Luke's staff began getting requests from other physicians and cardiology teams to visit their operation. They have also become a highly respected site for visiting GE Healthcare customers to see.

"We really enjoyed that relationship [with GE Healthcare] because it showcased both the equipment and our institution's expertise,"



### Clinical Outcomes

#### Increased Patient Volume

- From 3 cases/day to 6-7 cases/day (25-30 procedures per week per room) 100% volume increase
- Improved capacity enables accepting more referred patients



### Operational Outcomes

#### Increased Efficiency

- 50-75% turnover time improvements
- Observed the LOS reduction post HOR implementation

#### Enabled Productivity Increases

- 50% staff reduction (through continuous improvement & innovation/efficiency efforts, dedicated HOR team size decreased by 50%)



### Financial Outcomes

#### Delivered Financial Impact

- >200% TAVR/TAVI's CM improvement in 9 months post HOR installation;
- >1000 TAVR to date #1 globally

noted Dr Bajwa. “We feel very privileged to have this relationship with GE Healthcare where other teams and other physicians and nurses can come and see what type of equipment we use and what efficiencies we have created in the structural heart domain. We felt it was a natural extension of our relationship with GE Healthcare, so that people can come and look at the St. Luke’s equipment, our TAVR operation and our administration and whatever their needs are, we can provide them with that educational experience.”

As a result of the TAVR program’s success, GE Healthcare is now the sponsor for Aurora St. Luke’s Global Learning Health Care Institute, where the Aurora St. Luke’s cardiology team is often host to visiting medical teams and to GE Healthcare customers from around the world. They provide a learning environment for health professionals to come and learn about what Aurora St. Luke’s is doing for their patients in structural valve repair.



Aurora St. Luke’s Medical Center OR Suite

“The goal is that we’re going to have observers from hospitals around the world to come and learn from us and we will, in turn, learn from them,” said Eric Weiss, M.D., Cardiac Surgeon and Director of the Aortic Center at Aurora St. Luke’s Medical Center. “The intention is really to highlight the collaborative nature of what we do here particularly as it relates to our use of technology to get the best possible care for the patient.”

According to Dr. Weiss, having advanced equipment is only as good as the people who are there to help you support it. GE Healthcare is very involved in enabling Aurora St. Luke’s to get the most out of the technology they’ve installed in their facilities.

Dr. Weiss added, “The thing I’m most excited about is to really showcase our structural heart repair program. We have a comprehensive program to treat diseases of the forebrain aorta and the abdominal aorta. We not only fix elective aneurysms in all locations of the body, but we also take care of a lot of patients with aortic emergencies. We’re often able to treat these aneurysms in ways that are less invasive and using cutting-edge technology. Without the help of GE Healthcare technology, combined with the collaborative team of healthcare providers that we have at St. Luke’s, this wouldn’t have been possible.”

The TAVR program at Aurora St. Luke’s Medical Center is a unique construct; a blueprint for combining technology and staff that can be shared with other providers to demonstrate how to make the most advanced technology highly functional in an integrated health care system.

“And what we’re looking forward to,” added Dr. Ohair, “is teaching and transferring some of that knowledge around the world so that folks can get excellent outcomes, provide excellent patient experiences, and do it in a very cost-effective and responsible way.”

## Built on Trust

The leadership team at Aurora St. Luke’s felt that GE Healthcare was very aligned with their own mission, in the sense that their goals are to provide patients with state-of-the-art care, and in the most minimally-invasive way possible. Working together to build the TAVR program has been a journey built first and foremost on trust.

According to Brad Kruger, vice president of Operations at Aurora St. Luke’s Medical Center, the key to any good partnership is to understand that each side has different needs and different demands. For example, from the clinical operations side, the demand is around patients and includes time, resources and effort. Another key to a successful partnership is open communication.

“What we’ve seen from GE Healthcare, in terms of an integrated approach, is how GE Healthcare has brought to the table their wealth of resources and expertise, and incorporated it with the clinical expertise of the physicians and the leaders at Aurora St. Luke’s to create new models of care that are delivered in new and innovative ways, allowing us to improve care for the patients, both in terms of effectiveness as well as efficiency to quality and cost,” Kruger said.

As trust continued to develop between the two organizations over the course of the relationship, communication between the two teams was both frequent and fluid, allowing them to work cohesively to clearly identify potential solutions.

“That really came up through the partnership,” Kruger added. “Now it’s evolved into our TAVR program, and the experts from both sides are working in tandem. In this partnership, there’s true interaction, collaboration, and integration in ideas and in solutions. I found GE to be exceptional at true support and being part of the care team, in listening and in identifying solutions from a technical perspective, and in partnering with the clinicians to be able to help educate, coach and teach them how to use our advanced technology and equipment to improve care. In this partnership GE works by our side, watching, listening and taking our feedback, and then completing the circle, and redesigning to meet the needs of the patient.”



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***– Brad Kruger, Vice President of Operations  
Aurora St. Luke’s Medical Center***

## References

<sup>1</sup> <https://www.aurorahealthcare.org/services/heart-vascular>

<sup>2</sup> <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm517281.htm>

<sup>3</sup> American Heart Association <https://www.heart.org/en/health-topics/heart-valve-problems-and-disease/understanding-your-heart-valve-treatment-options/what-is-tavr>

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