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# Transcatheter Aortic Valve Replacement in the Private-Hospital Setting

Interview by Stephanie Wasek

*This article features an interview with Kristin Doster, BS, RDCS, FASE, CPAS, the valve clinic/rapid read administrator and echovascular services coordinator for Prairie Cardiovascular Consultants and the Prairie Heart Institute at St. John's Hospital in Springfield, IL. It is the second in a series of six articles sponsored by Edwards Lifesciences.*

Prairie Cardiovascular Consultants helped to build, from scratch, a transcatheter aortic valve replacement (TAVR) program at the Prairie Heart Institute at St. John's Hospital in Springfield, IL — in just three months. This article will explore in particular the specific challenges to a TAVR program in the private-hospital setting, and the development of an echo database to identify patients with severe aortic stenosis (AS) who might be candidates for TAVR.

## How would you describe your hospital?

Kristin Doster, BS, RDCS, FASE, CPAS: Prairie Heart Institute at St. John's Hospital is the largest heart program in Illinois. It's part of Hospital Sisters Health System (HSBS), a multi-institutional healthcare system that sponsors 13 hospitals in 12 communities across Illinois and Wisconsin. St. John's Hospital is the largest hospital in the 13-hospital system.

We perform more cardiovascular procedures than any other hospital in the state. We also have developed a reputation as one of the premier cardiovascular programs in the country, but it's our dedication to providing superior quality of care and compassion to patients and their families that makes us unique.

## Establishing a TAVR program takes significant commitment and investment. How does your hospital's TAVR program support St. John's Hospital's mission and vision?

KD: Our mission at St. John's Hospital is to provide a ministry of exceptional healthcare services to the people of central Illinois in the Catholic tradition of compassion, justice and reverence for life. TAVR dovetails with all aspects of our mission. It lets us not only serve people who need our help, but a portion of the population with no other options for getting treatment.

Life is precious. We see it in the eyes of every person we treat and hear it in the stories of every patient we serve. TAVR is a perfect match with our mission as an organization.

We also had full administrative support from the onset. Even before the Centers for Medicare and Medicaid Services (CMS) released the details of the proposed national coverage for TAVR, we had an advocate in Dr. Charles Lucore, the executive director of the Prairie Heart Institute, and Bob Ritz, CEO of St. John's Hospital. At the time, the CMS coverage conditions were a complete unknown; our administration's stance has remained constant: "Prairie Heart is committed to provide the best cardiac care available."

## Your institution was one of the first in the country doing commercial TAVR cases. Tell us how you went about setting up your program.

KD: We started with a 12-month retrospective screening of our cardiovascular (CV) picture archiving and communication system (PACS) looking at echocardiograms for patients with severe AS. We varied our queries to include mean gradient, peak velocity and a subset of low ejection fraction (EF) with AS to capture the low-flow/low-gradient AS patients. We then cross-referenced those patients in our electronic medical record (EMR) to determine a treatment plan.

Initially, there was a 4-ft. by 4-ft. piece of butcher paper taped to the back wall of the nursing director's office. People would come by and add names and data as it was acquired. Although this seems like an antiquated beginning to implement such a sophisticated technology, it gave us a solid foundation for what eventually became our TAVR database.

For the formal database, we used Windows SharePoint, which provided a robust format and let us continually adapt the database to meet our needs.



Figure 1. The TAVR team, from left to right: seated — Dr. Carl Arentzen, Dr. Robert Woodruff, Dr. John Gill, Dr. Greg Mishkel, Dr. Roberto Pacheco and Dr. William Stevens; and standing — Char Shallow, Theresa Thompson, Lisa Dixon, Nancy Dust, Jennifer Thomas and Sheryl Friedrich.



Figure 2. Prairie Heart Institute at St. John's Hospital is the largest heart program in Illinois, performing more cardiovascular procedures than any other hospital in the state.

**When the heart team gathers for case review, it can access our EMR, transthoracic and transesophageal echocardiography, cardiac cath, and CT images with 3D reconstruction, all from a single source.**

It also gave us a platform to create and disseminate our TAVR-based imaging protocols for the diagnostic modalities. Having a single resource for all modalities to access for protocols, worksheets and training was essential.

All facets of the TAVR team also met regularly: interventional cardiology, imaging cardiologists, CT surgery, radiologists, anesthesia, perfusion, cath lab, nursing, diagnostics, and administration. Although the meeting themes vary in content — training, protocols, patient review, scheduling — there is always an inspirational tone. Greg Mishkel, MD, the

interventional cardiologist credited with bringing TAVR to central Illinois and the director of our structural heart disease program, even included the Lady Gaga song "Edge of Glory" in a pre-procedure meeting. It is difficult to describe the feeling of being a part of a staff meeting that closes with a standing ovation!

## Describe your role in the heart team.

KD: Our program deviates a bit from others across the country. Although I am not a nurse, I have a diverse healthcare background and my last 20-plus years have included



**Figure 3. Bernadine Weidler, 85, was once a professional softball player. When she arrived at the valve clinic, she said she could still pitch like a pro, but would get dizzy and short of breath just bending over to pick up the ball. She had a successful TAVR and will soon attend her grandson's college graduation.**

respiratory therapy, cardiovascular ultrasound, facets of IT and administrative roles. In recent years, clinical PACS administration has also been incorporated into my duties.

This was an advantage when coordinating all the diagnostic components, and setting up and querying databases, because it facilitated sharing images between locations and consolidating the required imaging modalities in a single review platform. When the heart team gathers for case review, it can access our EMR, transthoracic and transesophageal echocardiography, cardiac cath, and CT images with 3D reconstruction, all from a single source. When it came to creating and disseminating imaging protocols, being a sonographer was a huge asset.

Having spent over a decade with this group of cardiologists has also been a blessing in implementing our TAVR program. Having insight into the multiple specialties that need to amalgamate helps make a program like this a success.

Additionally, we were able to assemble an exceptional valve clinic team. Theresa Thompson, our nursing director, rallied the resources for our initial retrospective database screening. Lisa Dixon, the valve clinic nurse coordinator, directs all nursing components of the valve clinic. Char Shallow, the valve clinic nurse practitioner coordinator, manages both the valve clinic visits and each patient's post-procedure hospital stay.

No single person makes this program a success — it's a true team effort.

#### **Tell us about the heart team members and their roles.**

KD: The TAVR team here is a

collaborative, multi-disciplinary medical team. Our interventional and imaging cardiologists are members of Prairie Cardiovascular Consultants, and our surgical members are from the Southern Illinois University School of Medicine's Division of Cardiothoracic Surgery. Along with Dr. Mishkel, the physician team includes John Gill, MD, interventional cardiologist; William Stevens, MD, cardiothoracic surgeon; and Carl Arentzen, MD, cardiothoracic surgeon. The collaborative team includes imaging cardiologists, and anesthesia, cath lab and cardiovascular operating room personnel.

The cardiologists and the surgeons work together in our hybrid cath lab, and as a team in the clinic setting as well. At a recent meeting, Dr. Arentzen observed, "It's no longer the cardiologists sending their sickest patients to the surgeons. Now the surgeons have an opportunity to refer their sickest patients to the cardiologists." At the valve clinic visit, the cardiologist and surgeon co-evaluate the diagnostic testing and the information gathered by the valve clinic team. Potential TAVR cases are also presented to the team at monthly, grand-rounds-style, case review meetings. PowerPoint presentations of each case include history and physical, STS and frailty scores, even patient pictures and videos. All diagnostic testing is also reviewed.

The team also collaborates when structuring patients' post-procedural care. Except for some minor deviations, we essentially follow the standard surgical AVR standing orders. Cardiology and surgery watch over patients, and the valve clinic team is accessible to patients and families 24 hours a day. The valve clinic team also rounds on patients several times throughout the day.

#### **How is your TAVR program structured?**

KD: There are myriad entry points into our valve clinic. Patients are found in database queries, physician referrals and even self-referral. We receive phone calls, EMR messages, internal emails and simple hallway conversations. Emailing TAVR@prairieheart.com reaches the entire valve clinic team with a single email. In the case of inpatient referrals, the valve clinic team goes to the patient. It is important that it be easy to get patients to the clinic visit and through the clinic work-up.

Once a patient is identified, we screen the history and access prior diagnostic testing. On the day of a patient's first visit, the valve clinic team evaluation typically includes H&P, labs, PFTs, 6-minute walk, STS score and frailty index. It is imperative to have immediate access to all previous testing to determine an individual diagnostic plan for each patient.

Although the plan can vary a bit, we always perform the TAVR computed tomography angiography (CTA) as the final round of testing and only

after the patient has been determined inoperable. At that point, we will have already identified severe symptomatic AS; evaluated the aorta, coronaries and peripheral vessels at the time of the cath; and evaluated the other valves, left ventricular function and annulus with echocardiography. All these imaging modalities are necessary regardless of the patient's final care plan. The patient's vascular access status is not going to change operability. The goal is to be a good steward with your resources and approach the plan logically.

The referring physician is apprised at every step in a patient's care. Results of all diagnostic testing and evaluations are shared with the physician and, once the patient has been identified as a TAVR candidate, the physician receives a plan of care that details the scheduled procedure, including planned access site and valve size.

#### **Many of the established U.S. TAVR programs are at large academic institutions. What are some the keys to establishing a TAVR program in a private-hospital setting?**

KD: In a private-hospital setting, not only are you dealing with multiple specialties, you're dealing with their groups. Separate groups employ our cardiologists, surgeons, and radiologists.

Although there was already a strong relationship between the specialties, we needed to ensure that we established clear, concise imaging protocols and distributed them effectively. It was necessary to identify a point person in each department — someone willing to dedicate the time to implement the new protocols. It was important to share not only what we needed, but why we needed it.

Fortunately, everyone's commitment to bringing this technology to the community transcended the boundaries of employment. Bringing this program to the Prairie Heart Institute underscores our medical community's commitment to providing world-class cardiac care.

#### **Can you tell us more about how you initially evaluated potential TAVR patients? How has your process evolved?**

KD: We did a 12-month retrospective analysis our CV PACS, looking at the echocardiograms of patients with severe AS. Our initial findings showed about one-third of the patients were being managed medically, one-third weren't being followed at all, and the final third had passed away between the echocardiogram and data query. Those results were sobering. We realized we had to find some tools to better identify these patients, both to cardiology and the referring physician.

We incorporated a qualitative statement into our reporting template that states, "Based on current guidelines, one or more hemodynamic or anatomic indicators of significant AS have been identified. Clinical correlation

and cardiology consultation should be considered." This is an instantaneous identifier within our PACS database and lets us capture those studies when the echocardiography report is signed. If the patient doesn't already have a primary cardiologist, we have the opportunity to initiate a dialogue with the referring physician with a phone call or letter. Using transthoracic echocardiography as the gateway to evaluation has been an effective model for patient identification.

#### **How have you educated your referring community about TAVR as an option to treat patients with severe symptomatic AS who are deemed ineligible for surgery?**

KD: We have used multiple forums to share TAVR with the community. After our first month of procedures, we issued a press release in our local paper and did a formal announcement on our website. We are creating a more in-depth webpage detailing the TAVR program, and our structural heart disease program and specialty clinics. We have also used our weekly cath conference meeting to discuss TAVR and share the structure and goals of the valve clinic. We have created multiple educational programs geared toward referring physicians, nurses and diagnosticians. We are also in the process of authoring educational materials for patients, referring physicians and primary cardiologists. We are even tweeting about TAVR (@TAVRPrairiehart).

As some post-procedure time passes for our patients, plans are evolving to do some video interviews on patient and family perspectives of the procedure. The intention is to give them the opportunity to share how they were feeling before the procedure and how their lives have changed since their TAVR.

#### **What are the future plans for your TAVR program?**

KD: Prairie Cardiovascular has office hours in more than 40 cities in central and southern Illinois. We have undertaken the process of educating our referral sites regarding TAVR's diagnostic components — sharing our imaging protocols and providing some brief, onsite training regarding the imaging techniques necessary to better determine patient eligibility. As such, the diagnostic testing performed in referral centers is structured to answer the clinical questions necessary for TAVR evaluation. The success of a TAVR program centers on buy-in from the entire team. It is imperative that your referral sites be given an opportunity to invest in your program.

Our TAVR program has been the genesis for our structural heart disease program. Although many of the programs and procedures existed before we were able to offer TAVR, they now reside under a single umbrella. All programs within our structural

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heart disease model will benefit from this economies-of-scale approach to program development and management. We are currently modifying our database structures to more efficiently identify patients who would benefit from the programs we offer. This structure will give us a single platform for protocol creation, physician and staff education, program management, and marketing.

**What advice would you give to centers similar to yours who will be starting up a new TAVR program? What kinds of marketing/communication activities most effectively increased**

**awareness around the availability of this therapy at your hospital?**

KD: At the onset, internal marketing is key. You need to engage all facets of your organization. This is not a program for a single department. It requires collaboration from multiple disciplines, and their efforts need to be coordinated. Ideally, there is a physician champion who can inspire and motivate staff to move the program forward. Although playing Lady Gaga-themed anthems at staff meetings isn't mandatory, there needs to be a level of enthusiasm and energy that generates interest and maintains the momentum.

There also needs to be the attitude

that no one part is any more or less essential than the others. Engagement of all staff — physicians, cath, anesthesia, perfusion, imaging, nursing, information technology and administration — is vital. You can't be an island and create a successful program. You have to sit down with the radiologists and CT tech, share with your echo lab and cath staff, and talk to respiratory therapy about the patients they will be meeting for PFTs. TAVR needs to be on the lips of every department in the hospital.

That same message needs to be shared with the community. There is an energy and excitement that has come with the commercial release of TAVR. Referring physicians, healthcare staff, and even the community at large want to learn more about the procedure. It is an amazing opportunity, and our obligation to educate them.

**Inoperable, severe AS patients are some of the most challenging to treat, but also the most rewarding. How has being a key player in a TAVR program affected you?**

KD: One of our most recent patients

was this dynamic, 85-year-old woman. When she was a young woman, she was a professional softball player. When we met her in the valve clinic, she told us that she could still pitch like a pro, but she would get dizzy and short of breath just bending over to pick up the ball.

Our valve clinic nurse and nurse practitioner bought her a neon-green softball and presented it to her post-procedure. She had everyone involved in her care sign that ball. It bears the signatures of both TAVR cardiologists and CT surgeons, and the valve clinic team and the nurses who cared for her in the hospital. She is using that softball as part of her rehab and is looking forward to taking it to her grandson's college graduation this May.

She told us he came home from college the weekend before her TAVR because he knew she was having some doubts about having the procedure. He told her, "Grandma, you paid for me to go to college, and I need you to be there when I walk across that stage." When she shared that story, there wasn't a dry eye in the room. Being part of our TAVR team has been the most rewarding experience in my career. ■