Cath Lab Digest

A product, news & clinical update for the cardiac catheterization laboratory specialist

How TAVR Teams are Caring for Patients During the Pandemic and Preparing for the Journey Ahead

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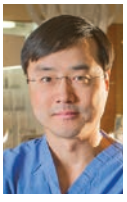

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Cath Lab Digest **spoke with leading experts across the U.S., hearing firsthand how TAVR programs are navigating patients through the patient care pathway during COVID-19, and what they are doing locally to make the best decisions for their patients and community.**

Michael Reed, MD: When the COVID pandemic first hit, there was a wave of fear that was astronomical.

Megan Coylewright, MD, MPH: Patients avoided coming to the hospital from either fear of COVID-19 or benevolence — not wanting to overwhelm the healthcare system. Patients have an unbalanced view. They are receiving a lot of knowledge about the risk of COVID-19, but not enough information about the risk of their heart valve disease.

Brian Whisenant, MD: The whole country seems to be alarmed at the lack of cardiac procedures being done, realizing that patients' health is being threatened.

Roseanne Palmer, MSN, RN: Initially many organizations across the nation cancelled or postponed non-emergent procedures, such as TAVR, as a first step to prepare for an increase in census due to anticipated COVID-19 surge. The intent was also to reduce the risk of exposure to patients and to staff; however, in doing so, we essentially took away the key component of shared decision making, patients' choice. While we worried about what exposure to COVID-19 would do to this population, they worried about waiting. The initial safeguards were extremely hard on some of our patients. The first person I contacted to postpone her TAVR was so distraught that she burst into tears as she voiced her concern that her clinical status would decline while she was waiting.

Delaying these patients for several months, certainly those we deem higher risk, is really like walking a tightrope.

Alex Hall, RN: Patients are definitely more reluctant to come. Family members have let us know they are keeping them at home and being very protective. A high percentage of people are very reluctant right now to come for any testing unless absolutely necessary.

Augustin DeLago, MD: At our last count, we have about 90 patients in the queue who have canceled and had their procedures moved out to June. We have a huge number of patients who have decided on their own, despite us calling and trying to get them to come in, despite us telling them how important it is, that they would like to wait. We are ready to treat them, but it is their choice.

Bassem Chehab, MD: Patients and family members are coming to me and sharing that concern. Family members are asking, "What's going to happen if we wait on my grandad or mom's procedure, and they catch COVID?" I've had a few questions like this coming from family members and it was tough to answer. These patients are starting at a disadvantage. There are no data, but if you add COVID to this elderly and very vulnerable population, theoretically they would not fare well.

I have spent my career advocating that we not let go of this untreated population, those who are being forgotten and falling through the cracks. We should not sit on this population. We need to treat them.

Augustin DeLago, MD: The amount of fear around hospitals needs to be quelled somewhat. This is not New York City and we can't have everyone treating the whole country like it is. It's awful in New York City and my fellow clinicians down there are suffering through this madness. But COVID has materialized at a different level here in Albany. Meanwhile, we have patients scared to death to come to the hospital. Action is going to have to be taken at national and state levels in order to calm people and lessen their fear of going to the hospital.

James McCabe, MD: We are seeing a lot more people with shortness of breath who were told "just stay home," and they are not seeking an evaluation. What ends up happening is that they are landing on our doorstep with these massive complications or very late sequelae of all sorts of cardiovascular conditions, whether aortic stenosis or just riding out a heart attack and now experiencing a structural complication from that. We probably want a mulligan on our public messaging. It was likely not the best public health message, and while it made sense at the time, at least within our community, the rates of cardiovascular complications and late sequelae from cardiovascular disease are not trivial.

Michael Reed, MD: It's important to remember that patients, even before COVID, would sometimes die of their aortic stenosis waiting for TAVR, even with a normal progression of procedural execution. Delaying these patients for several months, certainly those we deem higher risk, is really like walking a tightrope.

Benjamin Galper, MD: Aortic stenosis patients can get sick very easily. When they do get sick, sometimes there's no turning back, because once they fall off that cliff, they can move into irreversilbe heart failure and even die. We have to keep a close eye on them and weigh the risks of COVID with the risks of waiting to perform TAVR before it's too late.

Bassem Chehab, MD: I have spent my career advocating that we not let go of this untreated population, those who are being forgotten and falling through the cracks. We should not sit on this population. We need to treat them.

Benjamin Galper, MD: Severe symptomatic aortic stenosis is a very serious diagnosis, which carries a mortality of up to 50% at one to two years. Once you are symptomatic with aortic stenosis, we know you need to move forward with valve replacement and do it as soon as possible.

How Did You Determine Who to Treat, and What Does TAVR Look Like for You Locally?

James McCabe, MD: In Seattle, we were early to the party with COVID but it didn't stay that long. We were not overrun in the same way that some regions of the East Coast seem to be. And while there were concerns and limitations, there was never a moment where we didn't have enough PPE. As a result, we actually took a more aggressive stance in terms of proceeding with our TAVR patients on the basis that we had sufficient PPE and aortic stenosis is a highly morbid condition. Furthermore, TAVR in 2020 is fairly resource-light, because the patients are staying for 24 hours max and we put some other structures in place. Every patient who came in for an outpatient procedure during this time got COVID testing, because they are interacting with anesthesia and there is a possibility that an aerosolizing process could happen if they needed to be bag-masked, if CPR was required, or if they needed to be intubated. Every single person, irrespective of their symptom status, was tested for COVID before coming in. With those kinds of conditions in place and with those caveats, we were able to keep a pretty brisk TAVR program going during this time, and we felt that was best.

Brian Whisenant, MD: We have a backlog of patients who we call regularly and invite them to come in for TAVR if they feel that their symptoms are significant. Utah just lifted the ban on elective procedures a few days ago. Our hospital has tiered levels of care. We were red, meaning no elective procedures, and now are orange, defined as no procedures that require overnight stay or intubation. However, the hospital has been most receptive as we have discussed how aortic valve patients are not truly elective, and how we need to provide symptomatic patients with necessary care.

Benjamin Galper, MD: In mid-March, when it was clear COVID was going to be an issue across the country, we started reviewing our TAVR patients to figure out how we can safely manage these really high-risk patients. We looked at our TAVR patient list with our structural heart team and just to make it easy, we grouped patients into red, yellow, and green. Patients that were red, we determined could not wait and really needed to undergo TAVR, no matter what. Yellow were ones that we really worried about, who had worsening symptoms, but were stable. Green were stable patients who had mild symptoms. We decided we were going to try to get through all the red patients in the second and third week in March, and then watch the other ones closely.

Bassem Chehab, MD: These are tricky times. In early March, our administration notified us to stop doing elective procedures, and only do emergent TAVR cases. But which ones are the emergent cases? These people have critical symptomatic aortic valve stenosis. It is difficult to triage, and decide on those patients who can be delayed and those who are emergent. After a long discussion with the administration, we were able to keep treating these patients. In my opinion, if symptomatic valve disease is present, I don't think anyone can wait. If a patient has severe aortic valve stenosis with symptoms, their risk of death or additional comorbidities is quite high. They should not be delayed.

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Augustin DeLago, MD: At the medical center, we proactively approached the interventional cardiologists and structural cardiologists. We made a list of what we thought was essential and non-essential, and determined how we would work up these patients, and decide who could wait and who could not wait. This happened as soon as we knew bed rationing was a possibility. We wanted to make sure that there were enough ICU beds available, so we went through an essential/nonessential list and came up with our criteria based on symptoms in valve patients.

Shared decision making is most important in times of uncertainty… to make sure the patients do not feel abandoned and that they know what the next steps are.

Brian Whisenant, MD: Administration is an inherently receptive audience. Every day, they wonder what is around the corner. They survey, track, and share ventilator use, ICU capacity, and daily COVID trends in the state. As we move further into this, we recognize that we must have the capacity to be flexible and quickly change. As the hospital gives us more latitude to care for patients, we recognize that we must be ready to change quickly if necessary. They have been quite receptive.

Benjamin Galper, MD: There has been a lot of coordination with hospital administration. In the very beginning, we had almost daily interaction in terms of, "What is our PPE status? What is our COVID bed status?" I was having almost daily discussions with our hospital CMO about each case I was going to do. Making sure we were doing what was best for the patient, making sure we were all on the same page, and minimizing the risk to the patients and staff.

Bassem Chehab, MD: My discussion with the administration was, "Our patients are very sick. They're sicker than how they look. We're going to see them die if you stop our elective cases, or stop these cases 3-4 weeks ahead of the supposed surge. These people will be impacted and they're going to get hurt waiting." The second concern that I expressed was that if we do stop TAVR procedures, and then six weeks from now we decide that it is safe to reopen, we cannot do 90 cases in two weeks. We don't have the capacity or infrastructure. People who have been waiting for so many weeks, sick with symptoms, they're going to have to wait again for us to move them through the pipeline. This isn't even counting new cases. Our administration was very reasonable; they listened. We have been meeting with administration on a weekly basis to discuss the bed situation, how many COVID cases the hospital has, staffing, and any red flags for the next week telling us if we should downsize or do something differently. Fortunately, we have not had any yet. We have an open dialogue with our administration about available hospital beds, PPE, and volumes. Administration realized TAVR is not taking away from their resources. We don't use ventilators. All our TAVR procedures are done with conscious sedation in the cath lab. We are not using OR rooms. We are not taking away ICU beds. Our patients go to a step-down unit, and then home the same day or home the next day. We have a very vulnerable population that could be massively affected by COVID. We are treating them with limited resource use and limited impact on the system, and that is the beauty of TAVR.

What Has Communication Looked Like With the Heart Team During This Time?

Tricia Keegan, DNP, NP-C, AACC: We continue to meet on a weekly basis, but it is definitely in a different way. We used to all be in a room together, sitting inches apart instead of six feet apart. In terms of having discussions, we would show cases, and everybody would be able to converse right then and there. However, with the requirement for social distancing, we instead have created a virtual meeting. We still have the opportunity to meet using online video platforms, and have conversations just as if we all were in the same room.

Brian Whisenant, MD: Our team communicates regularly and is organized. We sometimes do video calls and sometimes sit in a conference room with masks while sitting far apart. But we are still trying to communicate regularly and make sure that we have a good handle on what is happening.

Michael Reed, MD: Our weekly valve meeting has changed in that we have now made it available via video conference.

What Are You Seeing and Hearing From Patient and Family Members During This Time? (Shared Decision Making)

Brian Whisenant, MD: We try to empower patients so that they know that they have a voice in all aspects of their care. Patients are scared of the hospital and are reluctant to come in. Our prevalence of COVID-19 in the hospital is quite low. We try to segregate patients so that cardiac patients are not in the same units with COVID patients. We tell patients that if they need something done, we are available and ready to take care of them, involve them in the decision regarding if and when to proceed, and make sure they know how to contact us when they are concerned.

The fear of COVID-19 exposure can be paralyzing to patients and unfortunately cause them to delay essential care. Discussing the steps your hospital or health system is taking to mitigate risk of exposure to COVID-19 and protect patients and their families is extremely important in helping support and guide their decision.

Megan Coylewright, MD, MPH: Shared decision making is most important in times of uncertainty. Our entire team — and on the front line, our structural heart disease coordinators — needs to make sure the patients do not feel abandoned and that they know what the next steps are. Their symptoms could be less evident due to minimal activity in the setting of stay-at-home orders.

Roseanne Palmer, MSN, RN: Patients frequently experience uncertainly regarding how to proceed with their healthcare needs during this time. The fear of COVID-19 exposure can be paralyzing to patients and unfortunately cause them to delay essential care. Discussing the steps your hospital or health system is taking to mitigate risk of exposure to COVID-19 and protect patients and their families is extremely important in helping support and guide their decisions. The only correct decision for them is the one they make that best aligns with their preferences and values, not only as it relates to their treatment strategy, but also regarding how that strategy should play out in the context of current pandemic information.

Brian Whisenant, MD: I receive almost daily emails with patients who have been contacted with details of how they're doing, and who would like to talk to me. I call the patients who would like to talk to me or when our advanced practitioners or nurses are concerned.

Frequent Follow-Up: Communication With Patients and Family Members

Tricia Keegan, DNP, NP-C, AACC: It is certainly more challenging to evaluate patients, because with people being physically isolated, they don't get out, they don't walk around, and they spend a lot of time in their house. It can make it more difficult to elicit changes in symptoms. Our team has done an excellent job of coming up with targeted questions to find out whether anything has changed in the past week. They might ask a patient if they are making their bed. Simple questions like that can offer a clue that the patient is getting more symptomatic.

Benjamin Galper, MD: Our structural heart coordinator reaches out to our patients and their families every week to check on how they are doing. I have been talking to a number of concerned patients as well.

James McCabe, MD: The people who are most nervous, actually, are the ones who are uncomfortable with the current guidelines around family, meaning a lack of family attendance in the hospital. And right now, unfortunately, hospital recommendations, at least at our hospital, are that family can come in the pre-procedural area and the immediate post-procedure area, but they can't stay with the patient. There are some patients who are nervous about that. "Should anything go wrong, what would happen? And how would I communicate with my family?" It's a very real concern. We want to respect the process and incorporate shared decision making. It is important to have a conversation with the patient to make sure they have the information necessary to make the best decision for them, but also that the patient's input is absolutely respected during this entire process.

This virus has caused a big change in our process. I am impressed with how the team and even our entire healthcare system has responded to this crisis by developing protocols to make sure that our patients know they are safe.

Brian Whisenant, MD: We have a hospital policy of no visitors, which must be difficult for some patients, but I have been surprised that most patients do fine with it. We are good about calling family members before and after procedures, making sure that family members are updated on their family member's progress and know how to reach us if they have questions. Communication is the key with patients — talking to them regularly and telling them that we want to make sure they are being cared for. If patients know our doors are open, that we are doing procedures, and that other patients are doing well and going home quickly, I think that builds confidence.

Benjamin Galper, MD: Convincing patients that it's safe to come in is important and can be a challenge as well. That has taken a lot of direct reassurance from us letting them know that, "We are testing everyone, we have all the PPE equipment we need, we're going to minimize your exposure as much as possible, and that if we wait on this, your risk of dying or something very serious happening to you is much higher than your risk of contracting COVID."

James McCabe, MD: We have been trying to get out there to say, we understand that it's a scary time to leave your house and to come to the hospital. People feel like the hospital is the last place they want to go. But we should recognize there are COVID-dedicated units, and COVID-dedicated pathways and processes in the hallways. Everyone is getting screened and the hospitals are probably a lot safer than, say, going to a grocery store. I can't confirm that, but at least in terms of the process of how things are being screened and checked, our hospital is more rigorous.

We do most of our consults remotely, often by the phone. Our surgeon will sometimes see the patient on the morning of their TAVR without a second visit. Everything is quite streamlined to limit the number of contacts in the system.

Is There an Optimization Process or Structure in Your Valve Clinic Allowing You to Treat Patients Successfully During This Time?

Tricia Keegan, DNP, NP-C, AACC: This virus has caused a big change in our process. I am impressed with how the team and even our entire healthcare system has responded to this crisis by developing protocols to make sure that our patients know they are safe. We are reaching out to them and want to provide the best care possible — the same care that we would provide if patients came into the office, even though the situation has changed. The connection that has developed between the valve clinic coordinators, the physicians, and the patients is impressive. Patients feel that we genuinely care about what is happening with them. Similarly, the overall support from Emory Hospital has been essential. Our administration understands that these patients are fairly fragile and that we do have to get them done on a more rapid basis.

Michael Reed, MD: We have a skeleton crew of people who are in the room at the table, and others maybe video conferencing in from home or from their office. We try and minimize the number of people in the room. So that's one thing that has changed.

Brian Whisenant, MD: We try to limit the number of times that patients to come into the hospital. For example, if we have patients with low flow, low gradient aortic stenosis with a low dimensionless index, we agree to proceed with TAVR rather than bringing them in for an additional study. We do most of our consults remotely, often by the phone. Our surgeon will sometimes see the patient on the morning of their TAVR without a second visit. Everything is quite streamlined to limit the number of contacts in the system.

Tricia Keegan, DNP, NP-C, AACC: Staff gets the patient up when they first come off bedrest. Our policy is that patients have to have a mask on once they step outside their room. Again, it is the consideration of how do we protect our patients? We certainly want to be able to fix a problem that is as life-limiting as aortic stenosis, but we don't want to subject patients to a potentially fatal virus, either. It is all part of the conversation about how we keep patients not only safe during the procedure, but safe during the hospitalization.

Michael Reed, MD: I think there are indirect benefits of trying to mobilize patients early if your focus is to try and get people up at four hours and the recovery staff is motivated to do that. Even if patients don't go home same day, they may be more likely to go home early the next day. We certainly have seen patients who sit in bed after their procedure and don't get up at all the day of the procedure, and then they have urinary retention or maybe it's just fatigue from lying in bed. And they stay another day in the hospital, just because they haven't mobilized. So even if they don't go home the same day, I do think early mobilization is a real priority, and outpatients would benefit from that, assuming it is done appropriately.

Brian Whisenant, MD: We have increased our use of the same-day recovery unit without ICU observation to keep our heart patients out of the ICUs.

Michael Reed, MD: All our patients will wear masks coming into the hospital, during the procedure, and while they're recovering. We screen patients for COVID with certain standardized questions, and if there's any red flags in the screening, they will be tested prior to embarking on a procedure. I think the idea of separating COVID patients from non-COVID patients is important. Other than that, common sense is that the less time these people can spend in a hospital setting exposed to multiple other people, the better. Whether that means combining their coronary angiogram with their TAVR, or trying to expedite their discharge, or trying to see them in telehealth rather than in person, patients are very receptive to that idea.

Brian Whisenant, MD: All employees and healthcare providers wear masks in the hospital, and patients wear masks when they are outside of their rooms. I anticipate that we will continue to utilize the CCU less than we have in the past, which will be a positive outcome of this.

Bassem Chehab, MD: We have also restructured the clinic setup. We are minimizing our 30-day and one-year follow-ups, and moving to telemedicine with these patients. It has had a huge impact on our practice. We now focus mainly on new patients, and have started seeing them outside of the hospital setting and outpatient clinic. We enforce social distancing. We do not overbook patients in order to avoid a lot of people in the waiting room, which has created a comfort level within our patient population.

Tricia Keegan, DNP, NP-C, AACC: Emory has been very progressive in that we have been doing nurse-led sedation since 2012. Therefore, our reliance on anesthesia has not been as frequent as other centers that do have anesthesia in every case. Part of our streamlining process has been defining nurse-led

sedation candidates and those patients we believe are going to be short stay, meaning their predicted length of stay is one day. There is data out there to be able to select those patients. We also try to identify patients with anticipated low 30-day readmission rates. The hope is to identify patients who will not be a big resource utilization.

A Focus on Telemedicine

Benjamin Galper, MD: Nearly 90% of our visits have become virtual, mainly to support social distancing during the COVID-19 situation. Patients have loved it, particularly video visits. We've had really high satisfaction from patients. I understand that. They don't have to leave their house, especially the elderly. They can sit on their couch and they can still talk to me face-to-face on video. I like it, too. It is nice to see the patients in their own element, to see the pictures they have on their wall, to see what their house is like, to meet the whole family. It is not as artificial an encounter as sitting in a sterile doctor's office. There's no question this is going to continue.

Tricia Keegan, DNP, NP-C, AACC: We have moved to a mostly telehealth platform for our follow-up patients. The Transcatheter Valve Therapy (TVT) registry requires information about patient status, the New York Heart Association classification, any stroke, and any hospitalizations. Data are typically collected during the video or telephone visit. However, the follow-up imaging is delayed at this point. We do try to get it from a local provider if possible, but many of the local providers are in the same boat as we are.

Michael Reed, MD: We are optimizing telehealth as best we can. Some of these patients really need to be seen in-clinic, particularly to assess their functional status and to get a sense of their capability to undergo surgery versus TAVR. But for many of them, our initial intake is over the telephone or via telehealth, which has been a major change. I think telehealth is definitely going to be utilized more. More than 50% of our patients come from outside Missoula and they are driving from hours away to see us. They come and get a CT scan and do a clinic visit and a coronary angiogram, and then come again for a TAVR. That is a lot of driving back and forth, and we try and consolidate all those things. But I imagine that we're going to be utilizing telehealth for one-month follow-up visits, for example. Or if patients or family members have additional questions leading up to their procedures. I also think the notion of performing the coronary angiogram at the time of TAVR will become a much more common practice just to minimize the number of times people have to come in. Those are two big changes.

Alex Hall, RN: The use of telehealth will probably continue, especially for our out-of-town referrals. I think the patients enjoy it, instead of having to travel for an office visit, and it is beneficial for them. I still do see patients either by video or by telephone calls, although we miss being present in the clinics with our patients and creating more of a bond than a phone call can provide. Typically we will ask patients if they have blood pressure monitoring and if they take their temperature. The more information, the better, and the more helpful it is to make decisions about their care, because it is very hard to assess someone's valve over a video screen.

The use of telehealth will probably continue, especially for our out-of-town referrals. I think the patients enjoy it, instead of having to travel for an office visit.

Benjamin Galper, MD: We have not been seeing many people in the clinic. We're doing nearly everything virtually because of COVID. We do a lot of video visits. In fact, I have done a couple of video visits with concerned patients and their families who are in different locations, all conferenced together. I have found it to be a really amazing experience, because we don't always meet the entire support network for our patients when they have to come into the office or the hospital. It has been nice to be able to do that. I think it has been reassuring to the families when we all talk face-to-face via video.

Selective Same-Day Discharge

Michael Reed, MD: This was an idea that came about just over the last month in speaking with other colleagues around the country. Our median length of stay for TAVR is one day, and we have been doing same-day discharge for elective percutaneous coronary intervention for almost a decade, so our recovery staff is familiar with the idea. We started thinking about identifying patients who would have a low risk for complications and who potentially could be discharged the same day. This process is based on, in some aspects, the fear that patients have with coming to the hospital for COVID and possibly staying in the hospital for a long period of time. Although that risk is low with TAVR, the idea of potentially discharging someone eight hours after their TAVR was appealing. One of the key questions is if someone doesn't have any sign of complications at all at eight hours, such as hematoma or conduction delay on their EKG, how often are they going to develop those complications in the next 24 hours? If you have a low-risk patient and straightforward transfemoral TAVR, particularly if they have a pacemaker or they don't have any conduction disturbance, they have a supportive family, and they are willing to spend the night locally, those are patients that potentially could be done as the first case, with an uncomplicated course, walking the halls

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and discharged eight hours after the procedure. We are starting to do this, and it has been really interesting working with patients and staff.

How a Virtual Valve Clinic Differs From a Traditional Valve Clinic

John Wang, MD: Our concept is very simple. We decided to bring the valve clinic to the patient. Every workup starts with a heart catheterization. If a referring doctor calls and says, "I have a patient with aortic stenosis. We did an echocardiogram. It's severe. They're symptomatic. I'd like to refer them," the first thing we do is set up the patient for a right and left heart catheterization. Prior to the catheterization, we meet with the patient and explain what is going to happen. We proceed with the catheterization based on what we find. A surgeon sees the patient that afternoon and does the surgical consult. Now the patient has been seen by an interventional cardiologist, had their heart catheterization, and has already had their surgical consult. If their creatinine is normal, we have them spend the night under an extended-stay observation status, and the next morning, we order the TAVR computed tomography (CT) scan. In <24 hours, we have done the entire workup for TAVR. At that point, patients are scheduled to come back for their procedure, typically the following week.

How the Virtual Valve Clinic Shapes the Heart Team Approach

John Wang, MD: The virtual valve clinic does not replace the heart team, nor does it replace the heart team meeting. The meeting, though, is done in real time, as information becomes available from our valve coordinators. After the heart catheterization, the interventional cardiologist is the one contacting the cardiac surgeon for the consult, and we give them a sign-out as to what to expect about this patient. They do their consult, come back, and discuss the patient with us. We have a meeting right then and there about what we think, and the vast majority of time, it is straightforward that TAVR is the right approach for our patients. The results of the patient's CT scan with 3-dimensional reconstruction come back the next day. If there is something unusual, for example, very challenging femoral access indicating we may need to look for alternative access, our valve coordinator will bring that to both the surgeon and interventionalist's attention immediately, so that we can make decisions as to the proper approach. There is no need to wait for a follow-up appointment to make those decisions, which would then slow the process. The advantage of our system is in our very close-knit team. We have 3 cardiac surgeons and 3 interventionalists, all co-localized in our basement-level location. Our valve coordinator is also housed in the same location and she has been working with me as my research coordinator for 16 years. This dynamic allows us to communicate together continuously throughout the day so we can still maintain a heart team approach, but essentially on the fly, as information becomes available, versus having to schedule set days, which are really convenient for the doctor, not the patient. If you think about it from their perspective, our patients have been diagnosed with a tight aortic valve that is leading them to have symptoms, and one of their physicians has probably expressed to them that there is a 50% mortality within two years if nothing is done. Imagine what that is like for the patient, knowing that it could be almost two months until they can get their valve fixed. For patients to go through a traditional valve clinic means a lot of steps and different trips for the patient. It is a process that is not centered around the patient, but around the efficiencies of the workflow for the physician. Our concept is to bring the process back to the patient.

Key Elements for Implementing a Virtual Valve Clinic Model

John Wang, MD: Implementing a virtual valve clinic model will require a meeting with the heart team and an agreement by all members to trial it, and I do encourage facilities to trial it. You wouldn't necessarily want to replace the traditional heart team meeting for more complex patients that may require more formal discussion with other members of the team. But for the vast majority of TAVR patients, this is not the case. In trialing the virtual valve clinic model, start with the straightforward cases, and try and streamline the process for those patients. It is also important to implement a pre-brief meeting before the procedure, the same day, with every member involved. Since the inception of our program, we have never once deviated from having a pre-brief meeting. Everybody involved comes together in a conference room where we present that patient on a PowerPoint and discuss any last-minute issues, just to make sure we are on the same page. It is critically important because with a virtual valve clinic, we are constantly dealing with multiple different patients, CT scans, surgical consults, and a lot of moving pieces. We refocus everyone for 5 minutes right before the procedure to make sure we all know what we're doing. I don't believe it adds time; I actually think it is more efficient and

saves time in the long run. Be very strict about having a formal pre-brief right before each procedure.

How Could Heart Teams Implement a Virtual Valve Clinic?

John Wang, MD: Try it one time, on one patient, and prove to yourself it will work. The next time there is a TAVR patient, meet with your team first to tell everybody what the expectations are, and give it a trial. Start with the right and left heart catheterization. Afterwards, call your cardiac surgeon. Have the surgeon see the patient. Discuss amongst yourselves, based on whether or not you think this would be a good TAVR candidate, of course, without the CT yet. Get the CT the next morning. Have the valve coordinator load the CT up, and you are going to realize that, in under 24 hours, you have actually been able to explain to the patient the procedure, have done their right and left heart catheterization, had a cardiac surgery consult, and had the CT done. You have the information back and are actually ready to schedule this patient. It sounds so simple to do, but medicine is a fairly conservative field that is rooted in tradition and is sometimes very resistant to change. People ask, "Why do we do things this way?" and you don't really question why we do things a certain way. I've even heard the response, "Well, this is the way we've always done it." This is one of those examples. It is re-evaluating the whole paradigm.

TAVR – The Road Ahead: Planning, Optimizing the Patient Care Pathway, and Increasing Communication

James McCabe, MD: No one is quite ready to say, "Well, that whole COVID thing is done, period and paragraph. Let's just start back up again." There are still some concerns about having effective PPE, and having space in the ICUs, and having all the things necessary to be able to be nimble in our response to whatever recurrence there might be in virus rates. So, we're being asked to open partially, and from my perspective, the best way to open is to create schemes where it's not, "I want to treat Ms. Jones today and Mr. Ralph three weeks from now." It's, "We want to take care of everyone who meets X, Y, and Z criteria now. People who have A, B, and C, can wait." Trying to match those schemes to the volume that hospitals want in order to open while also retaining that flexibility has been the biggest challenge. I think closing down was probably less difficult than this process of trying to open up, because there's this feeling that we need a graduated or sort of tiered opening, which is probably more difficult to figure out than knowing how you turn the spigot off.

Brian Whisenant, MD: I don't know that there is a magic button to turn everything back on, but patients are interested in their own healthcare. As they become short of breath and have other symptoms, we will see them. My sense is that we're going to be doing a dance here for quite some time. Intermountain has different levels of availability: red, orange, yellow, and green. We may go in and out of these different levels. I anticipate that when we have more availability, we'll treat as many patients as possible, and that there is pent-up demand. We will be prepared to scale back if we start seeing COVID-19 numbers rise. This may not happen, but we will be prepared.

I don't know that there is a magic button to turn everything back on, but patients are interested in their own healthcare.

Michael Reed, MD: When the COVID pandemic first hit, there was a wave of fear that was astronomical, and as we have learned more about the prevalence of this virus in our country and the prevalence in our own individual communities, with time, people have been able to make more informed decisions about what are appropriate things to do and what aren't. I am hopeful that the ability to triage procedures that are life-sustaining against the risk of exposure to the virus will become more informed with time and more refined. Both in the minds of the patients and the referring doctors, and in the minds of the operators. There will be a backlog, particularly of coronary disease and heart failure patients that hadn't been seeking care and maybe had symptoms that normally would have prompted them to seek care. This will also include elective procedures that turned out not to be so elective once you did the coronary angiogram and identified a critical left main.

Benjamin Galper, MD: If you're not doing what we call fast-track TAVR or minimally invasive TAVR, now is the time to be thinking about not having patients go to the ICU and not using general anesthesia for TAVR. TAVR, in this day and age, for 95% of patients really should be a 24-hour hospital stay, with the use of conscious sedation, minimal resources, and no central line. We don't want patients in the ICU right now. We need ICU beds for COVID patients and we don't want to take up those beds if our patients don't need it. Now is the time to be thinking about those kind of things if you're not already doing so as a program.

Bassem Chehab, MD: Since COVID, we have figured out new techniques to help us have patients seen and the workup done in an expedited fashion outside of the hospital system. We opened up our ancillary outpatient clinics, our outpatient imaging centers, for echos and ancillary

services. We started using CT imaging, for example, in our ambulatory centers. Seeing these patients in smaller outpatient locations offers more options and time, and has added value to how we are seeing and streamlining these patients.

I don't think I will let go of that even when COVID risk relents, because it has made my time more efficient. It has also made the patients and the families' time more efficient, since they are spending less time getting the workup done. We are becoming more like a one-stop shop, rather than requiring patients to come back and forth multiple times.

Augustin DeLago, MD: Teams need to be more efficient, in general. There is going to be some pent-up demand when COVID breaks. There may be a tremendous amount of people that are going to need to be treated in a short period of time. If hospitals are not working on their efficiencies now, they are going to have difficulties. Hospitals are not going to be able to go back to the old way of doing things.

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Communication is Key With Referrers

Brian Whisenant, MD: We haven't seen the same referrals that we were seeing before. Many of the cases that we have been doing have been patients transferred from an outside facility or admitted through the ER with acute heart failure. Referring physicians have questions about what we're doing and what we can do. When we have a chance, we tell them that we are here to take care of patients and available, and invite them to call us.

Augustin DeLago, MD: I've had good luck with our referring physicians. The primary care doctors continue to refer, even though the volume that they are referring is probably less, because they are not seeing as many patients. We communicate with them on a regular basis. Every time I do a TAVR, I call the primary care physician after the procedure. For me, that is probably the best way to communicate, because they always ask, "You're at the medical center with all these COVID patients. How's it going? What are you treating?" I have been in practice for 30 years and I never lose that opportunity to talk to a primary care physician who is referring. It is probably the best way to keep that referral base open and educated.

Bassem Chehab, MD: I always make sure to call my referring physicians, whether other cardiologists or family doctors. Many of our referring physicians assumed we were not doing TAVRs anymore, because they thought it was an elective procedure. I personally reached out to discuss the situation and they were very happy to hear we are still treating these patients. Once I called them and had this discussion, we saw new referrals come in. Keeping open communication with the referring system is an important tool, not just for COVID, but for anything else. My mission is to spread the message to everyone that we are open.

Benjamin Galper, MD: We have been communicating with our referrers since this all started, telling them, "We're really worried about your patient. We're going to reach out to them but if you hear anything, actually anything, please let us know." We already had two patients in the last month where the primary care doctor alerted us and said, "Hey, this person is really much more short of breath," or, "This person does not sound good to me." We got them in and performedtheir TAVR within a few days of hearing about that. Something that has been augmented by this whole experience is the importance of communication both with patients and our colleagues, because we're not seeing each other anymore. Making sure that we are staying on top of things and that we are all on the same page has been important.

James McCabe, MD: We have continued to work with our referrers in the same fashion we always have. It was certainly not business as usual for the last number of months, but a lot of patients were being treated, and I was continuing to call referrers on a daily or near-daily basis while we were treating their patients. When you call to say, "Hey, Mr. So-and-So got treated," it is an opportunity to check in with them and see how their practice is going, where their head is at, what their stressors are, and so forth. And just have a chat as normal people being nervous together in an unknown time.

Benjamin Galper, MD: For patients we were concerned about, I've been talking to the referring cardiologist more often than usual, to communicate that we are keeping an eye on their patient. I think it has been very helpful to have multiple people and teams looking out for these really sick people right now.

Brian Whisenant, MD: I worry that as patients have more virtual visits, their murmurs will not be detected and echos will not be performed. Trying to gear up the systems so that we appropriately identify and treat patients is is going to take some discussion. No one knows what's around the corner, so it is possible we are going to stay slow for a while. Most seemed to be on board with a several-week slowdown to see what

happens. But already this week, patients seem to be anxious to be treated. I have seen a few more patients come in this week with things that I think they were staying home with last week.

Michael Reed, MD: There's more insight in the public about the value of cardiac treatment. This is not elective, optional surgery. Aortic stenosis is a life-threatening problem. You leave it alone, it's a mechanical obstruction that is ultimately fatal. So I really hope that we don't let people slip through the cracks. I'm confident in our system and I think that we're going to find a way to get these people treated.

James McCabe, MD: In terms of who is reaching out to patients, we have a valve clinic coordinator, a couple of nurses and advanced practice providers, and it is a rotation based on who is available that day and who knows the patient best. What I am hoping to see and what we are trying to communicate is a more broad, almost a public health messaging, that needs to unravel a bit of what was said earlier about being sure to just stay home and try not to infect anybody else. One of the lessons we will likely carry forward should this come back to the fore, is to message a little bit differently about what is safe and what is not safe, and whether or not it is a good idea to just stay home and ride it out. I think that will be different in the next go-around.

We have been calling these patients regularly. We are calling them up and trying to schedule, and saying, "It's going to be safe, you're going to be tested for COVID, and we have the equipment we need to protect you."

Roseanne Palmer, MSN, RN: As research and experience has shown us, this venerable patient population are at risk for declining health if left without treatment or close surveillance. Certainly in the coming months, we will look back over this time for lessons learned; hopefully one that will resonate is the essential role of shared decision making, particularly during times of crisis.

Benjamin Galper, MD: We have been calling these patients regularly. We are calling them up and trying to schedule, and saying, "It's going to be safe, you're going to be tested for COVID, and we have the equipment we need to protect you. You'll be in our hospital no more than 24 hours, and this is certainly safer than waiting and having something bad happen to your heart." Our organization, the Permanente Medical Group, has also been working, particularly in cardiology, to encourage patients and let them know that we are here to treat their heart. Just because COVID is here, it doesn't mean we're not here to take care of your heart. We've been sending communications on Twitter for patients, to make it clear that your heart still matters in COVID and that now is not the time to ignore your chest pain, to ignore your shortness of breath. Now more than ever, you need to come in. We'll take care of you and do it safely. ■

AdvaMed Code of Ethics NEW IN 2020

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