EP Lab Digest

20 YEARS

A product, news & clinical update for the electrophysiology professional

EP Lab Spotlight

Monument Health Rapid City Hospital

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When and by whom was the electrophysiology (EP) program started at your institution?

The EP program was started in 1993 by Jose Teixeira, MD. He started as a locums physician, but transitioned to a full-time electrophysiologist for this facility in 1995.

What is the size of your EP lab facility?

We currently have two EP labs, with room for growth in the near future. Our volumes have increased considerably within the last three years with the addition of two electrophysiologists from New York state: Ethan Levine, DO, FHRS, and Saverio Barbera, MD, FHRS, Director of the EP Lab.

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In This Issue

Podcast Interview

Same-Day Discharge After Atrial Fibrillation Ablation

The EP Edit
An EP Lab Digest Podcast

Podcast discussion hosted by Jodie Elrod

In the next episode of The EP Edit podcast, we're featuring a discussion on same-day discharge for atrial fibrillation (AF) ablation. Andre Gauri, MD, Chief of Electrophysiology at Spectrum Health in Grand Rapids, Michigan, is joined by Marc Deyell, MD, MSc(Epi), FHRS, FRCPC, EP Lab Director at St. Paul's Hospital in Vancouver, British Columbia, to discuss their approach to same-day discharge.

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Cover Story

Multidisciplinary Ventricular Arrhythmia Program: Novel Approach Combines Expert EP Care With Psychosocial Support

Interview by Jodie Elrod

In this article, we speak with Babak Nazer, MD, cardiac electrophysiologist and Director of the Ventricular Arrhythmia Program at the Oregon Health & Science University (OHSU) Knight Cardiovascular Institute in Portland, Oregon.

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HMP Global

Multidisciplinary Ventricular Arrhythmia Program: Novel Approach Combines Expert EP Care With Psychosocial Support

Interview by Jodie Elrod

OHSU's Multidisciplinary Ventricular Arrhythmia Program, co-founded with a psychologist, is unique in that it combines expert care for ventricular arrhythmias along with treatment for the psychosocial symptoms associated with ventricular tachycardia (VT) and defibrillator shocks.

Tell us about OHSU's Ventricular Arrhythmia Program.

Broadly, we aim to care for ventricular arrhythmia patients. Our ventricular arrhythmia program has an inpatient/outpatient component, clinical and research areas, as well as an NIH-funded translational research laboratory, where we're developing new devices to improve ablation procedures.

However, the unique element of our program is the integration of psychology into our outpatient care. Every patient coming through our clinic is offered a visit with our cardiac psychologist on their first visit, and the vast majority accept. Most of our patients have either had a prior cardiac arrest or a defibrillator shock (implantable or external) from a ventricular arrhythmia.

As the only academic center in this state, our patients travel from outside the region, including the southwest quadrant of Washington, parts of Idaho, and the northern tip of California. So we have integrated our clinic and structured it so that patients can get "one-stop shopping." We have a shared team model approach to care, so patients can visit with an electrophysiologist, device clinic nurses and techs, and psychologist on the same half day. Depending on the substrate for their ventricular arrhythmia, they may also see an advanced heart failure cardiologist, hypertrophic cardiomyopathy (HCM) specialist, or an adult congenital heart disease (ACHD) specialist. Patients are scheduled for up to four visits in one half day.

When was this program created? What can you tell us about the program structure?

I had always had a long-standing interest in VT ablation. When I joined OHSU right out of fellowship, I set out a goal to build a comprehensive VT program. The vision came together once I met Adrienne Kovacs, a PhD psychologist who had also recently been hired to join the Knight Cardiovascular Institute a few months before me. Dr. Kovacs has extensive experience in the psychological care of ACHD patients (in fact, she recently finished her term as president of the International Society for Adult Congenital Heart Disease) and also in the care of patients with implantable cardioverter-defibrillators (ICD). Initially, I referred her a few of my VT patients who were having trouble coping with either the psychosocial symptoms of previous ICD shocks or adapting to their ICD. These patients came back to my clinic almost unrecognizable, with decreased anxiety about their condition, device, and future risks, and more willing to accept treatment, especially higher risk treatments. That got me thinking that if I was going to build something, it should be something that no one else has built. So Adrienne and I decided to co-found the program together. We spent a year thinking it through, meeting with leadership, and crafting it. We formally launched the program in January 2018 and it has been growing since then. Sadly, Dr. Kovacs recently announced her departure from our institution to return to Canada, but we are actively recruiting multiple psychologists to further grow our program.

Figure 1. OHSU Multidisciplinary Ventricular Arrhythmia Program team. From left: John Dornblaser (Medical Assistant and Research Coordinator), Adrienne Kovacs, PhD (Co-Founder, Psychologist), Babak Nazer, MD (Director, Co-Founder, Electrophysiologist), Charles Henrikson, MD, MPH (Electrophysiologist), Mary Rich (Scheduling Coordinator). Not pictured: Karen Paladino, RN, BSN (Nursing Coordinator). *(Image courtesy of OHSU/Fritz Liedtke.)*

Figure 2. Dr. Nazer and Dr. Kovacs provide integrated electrophysiology and psychology care to ventricular arrhythmia patients during the same clinic visit, often in conjunction with their cardiology, advanced heart failure, or adult congenital heart disease colleagues. *(Image courtesy of OHSU/Fritz Liedtke.)*

Regarding program structure, every patient sees her, and either me or another electrophysiologist at the first visit, along with the two other visits they often need that same day. Then, based on how they are doing psychosocially at the first visit with her, we decide how often the patient needs to see her compared to how often they need to see me. It's amazing to see the variability among patients. Some of them need to see Dr. Kovacs on a much more regular basis than me, because even though their arrhythmias are now well controlled, the psychosocial impact of what happened in the past is profound, so they see her more regularly. For other patients, it's the reverse: some patients have strong coping mechanisms that make them not that psychosocially impacted by their previous or recurring shocks, so they need to see me frequently for medical treatment and ablation, but rarely see her, if at all.

Typically in our psychology clinic visits, we employ more cognitive-behavioral therapy-based interventions. We don't practice psychopharmacology, so we do not prescribe antianxiety and antidepressant medications. However, we partner with primary care physicians and psychiatrists as needed for these medications.

We have also employed the use of patient-reported outcome measures (PROMs), which are validated healthcare questionnaires that have the patient report back on his or her symptom burden. There are PROMs in every field of medicine, but these PROMs are specific to shock anxiety related to ICDs. We administer these at every clinic, so the patients complete that same packet every time they see us. We track those scores to assess their psychosocial symptoms as well as for research purposes.

In addition, our electrophysiologists use a shock plan with our ICD patients. A shock plan provides the patient with a written-out plan outlining what they should do if they get shocked, such as what they should do if they get one shock and feel fine, what they should do if they get one shock and don't feel fine, and so on.

How are patients referred to the clinic?

We meet about half of the patients in the inpatient setting. For these patients, it's often a new diagnosis of VT or it's the first time they were shocked by their defibrillator and they get admitted or transferred to our hospital for a higher level of care. We provide these patients with whatever treatment is necessary during the index hospitalization and then formally loop them into our clinic at their first outpatient follow-up.

The other half are referred to me by EP colleagues around the Pacific Northwest. Since VT is sort of a subset of electrophysiology, most of my referring providers are other electrophysiologists, but there are some general cardiologists who will send VT patients directly to me from other institutions.

Tell us about the multidisciplinary care team.

We give everyone a coordinating role and ownership over one aspect of the program. Therefore, we have coordinators at every level. Our patient access support (PAS) scheduling coordinator (Mary Rich) does the pre-visit scheduling and coordination of multiple appointments and imaging studies for patients coming from far away. Our medical assistant coordinator (Scott Webster) manages the logistics of up to four clinic visits in the same day, as well as administers the PROMs. Our nurse coordinator (Karen Paladino, BSN, RN) does the ICD device checks and also coordinates nursing-level care, such as antiarrhythmic drug surveillance, post-ablation checks, etc. We recently hired a research coordinator (John Dornblaser) as well.

How has care for ventricular arrhythmias evolved in recent years?

I would say that the field is generally becoming more comfortable with the role of catheter ablation for VT. Before my training, this was something that was only done at a handful of very experienced, innovative centers. Our ability to do epicardial ablation is expanding to more centers, although it is still mostly restricted to more experienced and high-volume centers like ours. Endocardial ablation has become quite commonplace. In the past few years, more data from randomized clinical trials in the VT space have been published that have helped us determine the patient subsets in which ablation versus addition or augmentation of antiarrhythmic medications would be the next best step. Our industry partners have developed a few novel mapping and diagnostic catheters that help us map more efficiently, and my EP colleagues have innovated new mapping techniques and ways to extrapolate data to help us achieve more efficient ablation.

Where I would like to see the field evolve is in the psychological care of these patients. This is our goal. I think it takes some humility for all of us to accept that VT ablation is not perfect. Even in experienced, high-volume centers, recurrence rates are still high. As people who have committed ourselves to a procedural specialty, we're often not comfortable, myself included, with admitting or discussing our recurrences, because at least subconsciously, we view them as failures. Even though we're striving to get better, our recurrence rates are between 20%-50%, depending on the myocardial substrate of the patient. So it's important to separate "failure" from those patients with recurrent shocks, and instead view those patients holistically. So I would like to see the field evolve to focus on not just the technologies and procedures that ablate the VT, but also the treatments available for managing the psychological aspects of these patients. Even if we are successful in getting rid of the VT, what happened before the procedure can leave an lifelong impact on the patient.

Tell us about your procedural workflow.

Our procedural workflow is fairly standard for an academic center. I tend to do the vast majority of my endocardial ablations without the use of general anesthesia. I strongly employ the use of monitored anesthesia care (MAC) or conscious sedation instead of general anesthesia for ablations. I personally feel that this helps the patient hemodynamically tolerate the procedure better and increases the chances of them being able to maintain tolerable

blood pressures when they're in VT, which often allows us to map VT more accurately.

We also highly utilize preprocedural sympatholytic therapy. So if a patient is receiving ICD shocks despite IV antiarrhythmics while waiting for their scheduled ablation, our anesthesia pain service will place a stellate ganglion block at the bedside in the ICU. No sedation is required. It's an ultrasound-based procedure from the neck in which lidocaine-type medications are used for the block. We recently published on our experience with stellate ganglion blocks[1], particularly our strategy of leaving the catheter in and continuously infusing the sodium channel-blocking agent (versus just a bolus injection). We use stellate ganglion blocks probably more than the average institution, and if patients are particularly responsive, we often do a surgical sympathectomy, which is a surgical procedure where our surgeon will remove the stellate ganglia and the ganglia below it. In our practice, we do the stellate ganglion block before we intubate the patient. The classic teaching used to be that if a patient is getting shocked and the IV antiarrhythmic medications haven't worked, put them under general anesthesia and intubate them. We will certainly do that if necessary, but we prefer to do the block before intubating the patient, because intubation comes with complications.

How are quality metrics and safety outcomes measured?

We are part of the International Ventricular Tachycardia Catheter Ablation Registry (IVTCC), which is led by UCLA and comprised of about 20 centers worldwide that have combined efforts to share their data on VT ablation outcomes. We submit our procedural data there, as well as keep an internal registry on the patient recurrence rates and follow-up. Our internal registry includes all of our patients, not just the ones who've undergone ablation. We track not only their clinical outcomes, but the PROM scores from every single visit. Data on VT ablation is submitted to the IVTCC, but we use our own registry to track patient progress and PROMs.

We waited a few years to build our registry data before diving into a formal analysis, so a lot of that data is forthcoming. One of our research fellows presented the baseline data to assess how this cohort was doing psychosocially. The data was presented at the American Heart Association's 2020 Scientific Sessions, and hopefully will be formally published soon. What was found was that the typical factors that were hypothesized as being predictors for psychosocial symptoms based on our PROMs (eg, the number of shocks that a patient has received before their first visit with us) were not a predictor of how the patient was doing psychosocially. You would think patients who were having more shocks would have more anxiety. Well, it turns out that this wasn't the case. You would also think that patients who were sicker (eg, with a lower ejection fraction) would be more anxious, but it turns out that wasn't the case, either. You might also think that a recent ablation would be a predictor, but it wasn't. We found a couple of predictors for psychosocial symptoms, but they weren't the ones that we expected. This just highlights the need to at least offer psychological counseling to VT/ICD shock patients, since the clinical characteristics that one would THINK would predict anxiety and depression did not do so.

Tell us about the ongoing research in ventricular arrhythmias taking place at OHSU.

In our research lab, we are continuing to develop an ultrasound ablation catheter that uses ultrasound energy instead of radiofrequency energy to generate larger and deeper lesions. We are continuing to develop that catheter and investigate it for the ablation of not only VT but also HCM. We also have projects looking at pulsed field ablation for the same purposes of VT ablation.

In the clinic, we have an ongoing study assessing how our patients' PROM scores change between before their first visit and after establishing care with our psychology group. We want to demonstrate that the psychological counseling that we're utilizing is actually improving symptoms. So we're not only comparing visit one to visit two, but we're also comparing visit one to the most recent visit to see how our integrated approach is having an effect based on the PROMs.

Tell us about the other established multidisciplinary clinics at OHSU.

Yes, our VT program interfaces with OHSU's HCM, Amyloid, and Sarcoidosis clinics. The HCM Clinic at OHSU is recognized as a Center of Excellence by the Hypertrophic Cardiomyopathy Association (HCMA). Our HCM clinic is a longstanding, high-volume program. It's led by Ahmad Masri, MD, MS. I am the dedicated electrophysiologist for the program, and there is also a dedicated surgeon who performs the surgical myectomies. We're a high-volume enroller in many of the novel HCM medication clinical trials. A lot of HCM patients also have VT and are co-managed in both the HCM and VT clinics, which both take place on Tuesdays.

In addition, we have a robust Amyloidosis clinic, which is also run by Dr. Masri. I'm also the dedicated electrophysiologist for that clinic, and we work alongside neurologists and oncologists. A lot of amyloid patients also have arrhythmia needs, although VT is a little less common.

We also have a Sarcoidosis program. Like HCM, sarcoidosis can cause ventricular arrhythmia when it affects the heart. Unlike HCM, sarcoidosis affects many other organs, particularly the lungs. So we identified a group of providers (mainly cardiologists, electrophysiologists, rheumatologists, and pulmonologists) to create the multidisciplinary, collaborative approach on sarcoidosis.

The other multidisciplinary clinics at OHSU are present at most academic cardiology institutions. We always make sure we have an attending from our adult congenital and advanced heart failure groups present on the same day as the VT clinic, because those are the other two subgroups that take care of patients with VT.

Why is it important to provide specialized care for the psychological symptoms (such as anxiety and depression) that patients encounter? What challenges still exist?

I think a lot of community psychologists and psychiatrists can often be unfamiliar with ventricular arrhythmias, ICDs, and ICD shocks, as EP is a fairly subspecialized area. Psychologists and psychiatrists in the community also often do not have an existing relationship with cardiologists or electrophysiologists. Many of our patients have said that before they engaged with our group, they had visits to a previous mental health professional, and when the patient would mention ICD shocks, the provider would appear (or admit) to sometimes being quite overwhelmed. So I think there is a big need for more specialized care in the psychological care of these patients. I realize that not every institution is going to have an in-house psychologist who has dedicated their entire career to the psychological care of cardiovascular patients. But I think the obvious need is to find a larger number of mental health professionals, psychologists, and psychiatrists, who are open to setting aside a portion of their career or work week in helping VT patients. They don't have to work for a cardiology division or be employed by one, but perhaps they could spend half a day a week in the clinic with their local electrophysiologist and try to emulate what we're doing by scheduling VT patients for that half day.

I think the next unmet need is to figure out which patients will benefit most from psychological care, since this may be a relatively scarce resource at some centers. As we're growing our volume, we're looking into our pre- and post-psychology visit data and hoping to identify predictors of patients who will benefit most from psychological counseling — this includes patient demographic predictors as well as baseline PROM scores. We have a review article on this in press.[2] We propose and hypothesize that we can use the first-visit PROM scores to determine the psychological symptom burden, and thus decide who needs to be referred to the partner psychologist. ■

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