EP Lab Digest 20 YEARS

A product, news & clinical update for the electrophysiology professional

EP Lab Spotlight

Morristown Medical Center

Stephen L. Winters, MD, Director, Cardiac Rhythm Management Program; Michael Katz, MD, Director, Inherited Arrhythmia Program; Karen Quinlan, RCVT, Lead Registered Cardiovascular Invasive Specialist Morristown, New Jersey

In this issue we welcome back Morristown Medical Center, the first EP program to be featured in *EPLD*'s Spotlight Interview, in September 2001.

When was the EP program started at your institution? By whom?

Stephen Winters, MD, initiated a full-time, hospital-based EP program at Atlantic Health System's Morristown Medical Center (MMC) in November 1991. He came from the Mount Sinai Medical Center in New York where he was co-director of the EP program and director of the arrhythmia clinic.

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In This Issue

Cover Story

Lead Extraction: From Traction to Technology

Shashank Jain, MD[1], and Jude F. Clancy, MD, FHRS[2]
[1]System Director Lead Extraction, Assistant Clinical Professor, Medicine - Cardiology, Case Western Reserve University School of Medicine, Cleveland, Ohio; [2]Director of Lead Management, Associate Professor of Medicine, Yale University School of Medicine, New Haven, Connecticut

As we celebrate the 20th year of *EP Lab Digest*, the age-old expression "need necessitates invention" could not be more accurate, and in no field of cardiology is this more evident than the evolution of lead extraction. Within a decade of the initial pacemaker implant in October 1958[1], the need to remove these devices was realized and the concept of lead extraction was born. Case reports of pacemaker lead extraction, for indications such as infection and lead malfunction, began to appear in the literature in the late 1960s.[2] The earliest methods available were surgical intervention and manual traction. Surgical techniques ranged from limited thoracotomy to open chest procedures requiring cardiopulmonary bypass.[3] The surgical approach was usually seen as a final solution given the significant morbidity and prolonged recovery times associated with these procedures.

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Cover Story

History of Ventricular Tachycardia Ablation

Uyanga Batnyam, MD[1], and Usha Tedrow, MD, MSc[2]
[1]Clinical Fellow in Medicine, Cardiac Arrhythmia Service, Brigham and Women's Hospital, Boston, Massachusetts; [2]Clinical Director, Ventricular Arrhythmia Program, Brigham and Women's Hospital, and Associate Professor of Medicine, Harvard Medical School, Boston, Massachusetts

Ventricular arrhythmias can be responsible for worsening heart failure, painful shocks from implanted defibrillators, and sudden death in patients with structural heart disease and inherited channelopathies. Antiarrhythmic drugs often provide incomplete control of ventricular tachycardia (VT), worsen underlying heart failure, and expose the patient to risk of toxicities. For these reasons, catheter ablation for VT has evolved into a critically important part of arrhythmia management for patients with structural heart disease. Figure 1 demonstrates the critical points in the history of VT catheter ablation related to the historical and technological limitations in delivery of ablative strategies to the target tissue of interest, and shows the progress in understanding the underlying mechanisms of arrhythmogenesis.

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HMP Global

Morristown Medical Center

Stephen L. Winters, MD, Director, Cardiac Rhythm Management Program; Michael Katz, MD, Director, Inherited Arrhythmia Program; Karen Quinlan, RCVT, Lead Registered Cardiovascular Invasive Specialist

He was the sole electrophysiologist at Morristown until October 1994, working with one full-time nurse, one part-time nurse, and two cardiovascular technologists. The EP lab was housed in an old cardiac cath lab, equipped with a cradle, an Electronic for Medicine (E for M) analogue recorder, a Bloom rack amplification system (requiring off-site EPROM reprogramming, as needed), and a mingograph. Unlike today, vascular and cardiac surgeons implanted all rhythm control devices in the operating room.

What is the size of your EP lab facility?

We have three EP laboratories (comprising 1,675 square feet), moderate-sized control rooms, one procedure room, and a dedicated room where transesophageal echocardiography and DC cardioversions are performed. Currently, we have a core group of five full-time, board-certified electrophysiologists and one part-time office-based electrophysiologist. The core group works as a vertically integrated medical team and performs all of their procedures at Morristown Medical Center. Six additional electrophysiologists split their time, work independently, and perform their procedures at MMC and other facilities. We interact closely with the five hospital-based cardiac surgeons, the dedicated structural heart program, and the hospital-based core echocardiography group. The core electrophysiologists have dedicated use of two of the EP laboratories. The EP lab coordinator and lead nurse share a common office in the area of the electrophysiology labs. Two of the laboratories share a spacious common monitoring area. The third laboratory also has a distinct monitoring room that is approximately 50 feet away from the other labs. In the event of a rare surgical emergency, our EP laboratories are situated within 200 feet of the cardiac operating rooms and are adjacent to the cardiac catheterization laboratories. The core EP group collaborates closely with cardiac surgery, vascular surgery, and interventional radiology on complex cases and may sometimes utilize the hybrid endovascular / fluoroscopic surgical suites.

Has the EP lab recently expanded in size, or will it soon?

The Cardiac Rhythm Program at Morristown Medical Center has continued to grow in volume and scope of service, which has increased the demand for EP lab time. We are in the process of finalizing construction plans for a fourth EP lab that has been approved and will be getting underway soon.

What is the number of staff members? What is the mix of credentials at your lab?

All 12 electrophysiologists who perform procedures in our hospital are ABIM certified in cardiac electrophysiology. We are fortunate to have 15 registered nurses, 11 formally trained cardiovascular technologists, one radiology technologist, and one individual who focuses on inventory control. All of the cardiovascular technologists are registered cardiovascular interventional specialists (RCIS). In our pacemaker and implantable defibrillator outpatient surveillance center, we have five RNs, three cardiovascular technologists, and three staff for scheduling, reception, and registration. We have three dedicated physician assistants (PAs) who aid with management of the inpatient service and help expedite throughput to the EP lab. In our outpatient office, we have five medical assistants, two schedulers, one receptionist, an RN office manager, one per diem and two full-time registered nurses, and one nurse practitioner. Our Atrial Fibrillation (AF) Program has a data coordinator, dedicated RN, and a PA, all of whom coordinate program activities.

Post-COVID shutdown, we have returned to a weekly average of 15-20 cardiac device placements, 10 catheter ablation procedures, 1-2 WATCHMAN procedures, and 1-2 loop monitor insertions/removals. We had over 20,000 patient encounters in our device surveillance program in 2020, and growth continues.

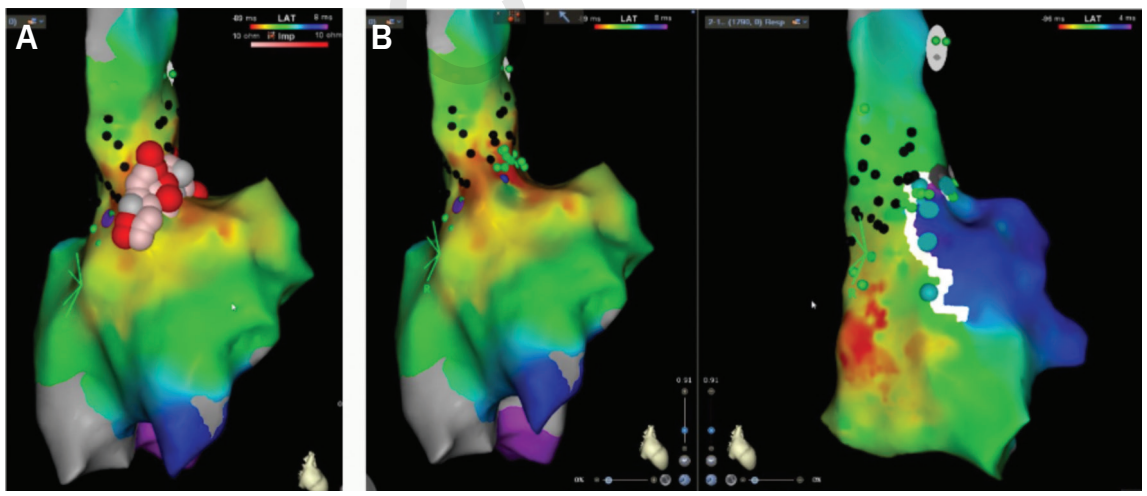

Figure 1. (A) Demonstrates a 3D electroanatomic map with superimposed latency activation mapping of the sinoatrial node at 120 bpm. The ultimate lesion set is demonstrated with pink and red dots. Note the proximity of phrenic nerve capture with high pacing output, delineated with black dots. Safety was ensured during radiofrequency delivery by continually pacing the phrenic nerve from the high SVC while continually evaluating for diaphragmatic movement. (B) Demonstrates gross movement of the sinonodal exit site to the inferolateral aspect of the right atrium.

What types of procedures are performed at your facility?

We perform a broad range of EP procedures, including diagnostic EP studies, catheter ablations (SVT, ventricular tachycardia, AF), pacemaker implants (standard, leadless, biventricular, His bundle), automatic defibrillator implants (standard, subcutaneous, CRT), left atrial appendage occlusion (LAAO) procedures (WATCHMAN, Boston Scientific), loop monitor implants, DC cardioversions, and tilt table tests. We work closely with our full-time cardiac surgeons to enable lead extractions, hybrid AF ablations, and surgical Maze procedures in the operating rooms.

Approximately how many catheter ablations (for all arrhythmias), device implants, lead extractions, and LAA closures were performed in 2020?

In 2020, despite several months in which only the most emergent/urgent procedures were performed, we implanted over 400 ICDs and 600 pacemakers, and performed 610 catheter ablations, 170 loop monitor implants, 40 lead extractions, and 27 WATCHMAN procedures. Our volumes for the year 2020 were down due to the COVID-19 crisis. Post-COVID shutdown, we have returned to a weekly average of 15-20 cardiac device placements, 10

catheter ablation procedures, 1-2 WATCHMAN procedures, and 1-2 loop monitor insertions/removals. We had over 20,000 patient encounters in our device surveillance program in 2020, and growth continues.

What types of EP equipment are most commonly used in the lab?

We mainly use diagnostic and specialty mapping electrode catheters from Biosense Webster, as well as ablation catheters from Biosense Webster and Medtronic. We use a wide range of guiding sheaths and rely on the NRG RF Transseptal Needle (Baylis Medical) for transseptal catheterizations. To obtain vascular access, we use ultrasound guidance. We also frequently use micropuncture vascular access. We use the CARTO 3 electroanatomic mapping system (Biosense Webster), as well as the SMARTABLATE radiofrequency generator (Biosense Webster), the CryoConsole Cardiac Cryoablation System (Medtronic), and manual Bloom stimulators. In addition to the CardioLab (GE Healthcare) amplification and recording systems, we utilize large Odyssey fluoroscopic monitors (Stereotaxis). We have three biplane fluoroscopic systems by GE. The rhythm control devices we implant are made by Medtronic, Abbott, and Boston Scientific.

Who manages your EP lab?

Karen Quinlan, RCVT, manages the EP labs. In her absence, a senior nurse is designated to assume team leadership. They are supervised by the cath/EP lab director, who reports to the director of cardiovascular services. In addition to frequent meetings with the EP lab coordinator and lead nurse, the medical director of the cardiac rhythm management program meets at least monthly with the cath/EP lab director and the department director. We are fortunate to have a very supportive administrative staff in addition to our department chair, Linda D. Gillam, MD, MPH, MACC.

Tell us about your device clinic, including its staffing model.

The outpatient consultation office and device surveillance center are on opposite sides of the same 5,035 square foot suite. This suite includes five physicians' consultation offices, four patient exam rooms, and a work space for the medical assistants and receptionists on one side of the suite. There are four dedicated device surveillance rooms, two offices for the practice nurses, a conference room, a large work room for the physician extenders, a small kitchenette, and a restroom. A modest patient waiting area is located at the entrance to the suite with a patient restroom as well.

In what ways has the COVID-19 pandemic impacted your hospital, EP lab, or practice?

During the initial surge last spring, COVID-19 patients occupied more than half of our hospital's inpatient beds. We quickly switched our outpatient consultations and follow-ups to "virtual" encounters. In addition, we rapidly converted most of our office device surveillance visits to remote checks. We had team members who required leaves due to contracting COVID-19. We rapidly learned and practiced donning and doffing of PPE (personal protective equipment) when performing procedures on COVID-19 patients. Several of our physicians, nurses, and technologists selflessly helped staff the COVID-19 inpatient units. We continue to be very thorough in requiring COVID-19 PCR tests for patients undergoing invasive procedures and mandating patient self-quarantining in advance of coming to the hospital for elective procedures. We had daily departmental briefings during the spring surge and continue to have biweekly departmental briefings regarding ongoing pandemic-related concerns.

Figure 2. To the left of the table, from left to right: Stephen Winters, MD; Elizabeth O'Gorman, RN; Cindy Levine, RN. To the right of the table, front row (L to R): Nicole Lipinski, RT; Karen Quinlan, Lead RCVT; Anthony Richardson, RCVT; Michael Katz, MD. Back row: Timothy Mahoney, MD.

Figure 3. From left to right: Stephen L. Winters, MD, Director, Cardiac Rhythm Management Program; Karen Quinlan, RCVT, Lead Registered Cardiovascular Invasive Specialist; and Michael Katz, MD, Director, Inherited Arrhythmia Program.

What initiatives have recently been added to the EP lab, and how have they changed the way you perform procedures?

To enhance patient comfort and satisfaction as well as reduce vascular complications, our core EP group has embraced the use of VASCADE (Cardiva Medical) and Perclose (Abbott) closure devices. This has improved EP lab throughput and turnaround.

Figure 4. To the left of the table, front row (L to R): Jonathan Sussman, MD; Robert Coyne, MD; Anthony Richardson, RCVT. To the right of the table, front row (L to R): Carrie Redick, Director, Interventional Cardiology and Structural Heart; Timothy Mahoney, MD; Olena Bilyk, PA-C; Nicole Lipinski, RT. Second row (L to R): Elizabeth O'Gorman, RN; Stephen Winters, MD; Michael Katz, MD; Joseph Milcetic, RCVT. Back row, L to R: Dustin Reithmeier, PA-C; Cindy Levine, RN.

Figure 5. Since the COVID shutdown last year, the EP program has returned to an average of 15-20 device placements, 10 ablations, 1-2 WATCHMAN procedures, and 1-2 loop monitor insertions/removals per week.

Our EP lab has also acquired several Point of Care Ultrasound (GE Healthcare) devices. The use of ultrasound has enhanced the recognition of early pericardial tamponade in the EP lab and post-operative care units, often obviating the need for larger echocardiographic machines for early diagnosis. The core EP group is working closely with anesthesiology staff to provide "regional blocks," which we suspect improves patient comfort and reduces overall narcotic pain medication use. In addition, we recently initiated evening-dinner Zoom meetings with the implantable device manufacturers to enhance and update our knowledge on the systems we implant.

Tell us what a typical day might be like in your EP lab.

The staff arrives at 6:00-6:30 am. Outpatients arrive for procedures starting at 5:30 am and are prepared in an adjacent large combined interventional cath/EP cardiac access unit. The core electrophysiologists assemble with the lab coordinator and the nurse designated as the lead for the day, together with the PAs at 7:30 am to review the inpatient census, clinical status updates, outpatients scheduled for the day, add-on cases, and procedural plans for the day. Our core electrophysiologists and extenders typically confer again with the lab coordinator and/or team nurse leader for the day late in the afternoon to discuss patient updates and outstanding issues. In the event that the assigned electrophysiologist cannot be present due to a scheduling conflict, one of the other electrophysiologists reviews the case, meets the patient, and performs the procedure. Although the labs are formally scheduled to run from 7 am – 7 pm, Monday through Friday, we frequently have unexpected lengthy procedures or add-on cases that keep the labs running past 9 or 10 pm.

Do you utilize a same-day discharge approach for AF ablation cases?

We utilize a same-day discharge approach for many SVT ablation procedures, and we have recently started to discharge select patients who undergo AF ablations in the early part of the day. The electrophysiologists consider the location of the patient's home, comorbidities, whether a vascular closure device was utilized, and the absence or presence of clinical symptoms or procedural-related problems in making such decisions. The bulk of our new device implant patients spend one night in the hospital, in an extended cardiac stay unit.

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How do you ensure timely case starts and patient turnover?

Efficient turnover in the EP lab begins with the lab coordinator reviewing the cases scheduled for the next day, assigning specific staff members to each case, and pulling supplies in advance for the first case in each lab. The EP or PA meet all outpatients when they arrive in the cardiac access unit and ensures that all labs and consents are in good order. At 7:30 am, the physicians, lab coordinator, and PAs meet to discuss the day's plan. As needed, the operating room scheduling desk is notified of any need for additional anesthesiology support. For non-elective procedures, an electrophysiologist from the core group is assigned.

However, if needed, the cases are reassigned as the day progresses to whichever electrophysiologist in this group is available. A lab transporter typically brings the next patient to the lab as the preceding case is winding down.

What are the best features of your EP lab's layout or design?

The proximity of each lab to the cardiac access patient unit, the cardiac catheterization labs, and the cardiac operating room enable optimal efficiency and safety. Each lab is standardized with an anesthesia cart, very similar biplane fluoroscopy systems, as well as identical recording, amplification, mapping, intracardiac ultrasound, and ablation systems. The close proximity of each lab to the other enables prompt physician, nursing, and technologist assistance and consultation as may be needed. Our clinical offices are one floor above the EP labs within the Gagnon Cardiovascular Institute.

In what ways have you cut or contained costs in the lab and device clinic?

With few exceptions, one vendor's EP catheters and peripheral equipment is utilized. We allocate 70% of all implantable devices to one vendor across the system for best pricing. Our physicians minimize use of multiple costly mapping and ablation catheters for each individual case. In addition, our physicians comply with standardization of most peripherals. To minimize costly delays in procedures, the electrophysiologist is typically in the EP lab or control room as each patient is being prepped and has the opportunity to consult with the anesthesiologist in a timely manner. With our physician outpatient offices on one side of the cardiac rhythm management suite, located one floor above the EP labs, and the device surveillance center on the other, an electrophysiologist is always present to promptly help troubleshoot any device-related problems that may be suspected, ensuring optimal patient care. We have integrated our PACEART system (Medtronic) with the Epic EMR and are in the process of eliminating all paper recordings to enable more efficient use of space currently being utilized for chart storage.

What types of continuing education opportunities are provided to staff? What options for continuing education are available to your mid-career staff?

The core electrophysiologists continuously discuss EP concepts with the lab and device surveillance staffs. The staff has to complete core competencies each year with respect to cardiac rhythm management. In addition, we encourage our industry representatives to hold periodic in-services and education programs with the staff. On a rotating basis, staff members also attend the annual Heart Rhythm Society conference.

Figure 6. There is a core group of five full-time electrophysiologists and one part-time office-based electrophysiologist. The core group works as a vertically integrated medical team and performs all of their procedures at Morristown Medical Center.

Figure 7. Robert Coyne, MD, and Justin Starling, RT, during an EP procedure.

Describe a particularly memorable case from your EP lab and how it was addressed.

One memorable case illustrates our biopsychosocial approach to cardiac electrophysiology and how medical judgment, electrophysiologic procedures, and multimodality imaging/mapping may be leveraged to improve the lives of our patients. A young woman was intermittently hospitalized with debilitating sinus tachycardia with rates as fast as 200 bpm over a six-month period. In view of associated symptoms that may have indicated systemic illnesses, she underwent extensive assessments with physicians from multiple medical disciplines. After exhausting all medical therapies, she underwent sinoatrial (SA) nodal modification with the understanding that this might only provide partial and temporary relief, and that ongoing medical therapy could be required. We constructed a detailed 3D frequency activation map of the right atrium, with attention to phrenic nerve capture to ensure safety. The team performed latency activation mapping of the sinoatrial node during isoproterenol infusion, with separate maps created for quartiles of increasing heart rate. This was done with the knowledge that the sinoatrial nodal exit site may "travel" superiorly with progressively higher heart rates. Ultimately, the superior aspect of the sinoatrial node was modified with the following criteria for success: blunted P wave voltage amplitude in the inferior EKG leads, 10% reduction in maximum heart rate while maintained on high-dose isoproterenol, and 3D electroanatomic

Figure 8. Another view from the EP lab. There are 3 EP labs (comprising 1,675 square feet), moderate-sized control rooms, one procedure room, and a dedicated room where TEE and DC cardioversions are performed.

Figure 9. Yana Abkin, RCVT, Neal Degnan, RCVT, and Jonathan Sussman, MD, are pictured here. A broad range of EP procedures are performed, including EP studies, catheter ablations, pacemaker and defibrillator implants, LAA occlusion procedures, loop monitor implants, DC cardioversions, and tilt table tests.

The core electrophysiologists and staff function as a family, with extreme consideration of each other and utmost concern for the best patient outcomes.

mapping, demonstrating gross movement of the SA nodal exit site to the inferolateral aspect of the right atrium. The patient has resumed many of her activities of daily living and is maintained on a minimal medical regimen. (Figure 1)

Does your lab use a third party for reprocessing or catheter recycling? How has it impacted your lab?

Contracting with one predominant vendor, as requested by administration to get best pricing, has helped us avoid any consideration of reprocessing catheters.

Does your lab perform His bundle pacing?

We routinely consider His bundle pacing as a possible pacing modality. Our EP lab has worked closely with industry to optimize implantation techniques and equipment to facilitate safe and efficacious implantation. We have also expanded physiologic pacing options to include direct left bundle pacing.

Tell us about your primary approach for LAA occlusion.

As of now, several of our electrophysiologists have trained in WATCHMAN and LARIAT (SentreHEART) LAAO techniques, and we are currently performing WATCHMAN procedures. Typically, these electrophysiologists perform all procedures together with the assistance of a certified transesophageal echocardiographer to ensure optimal outcomes.

Tell us more about your dedicated AF program.

Thanks to philanthropic funding from the Huff family, we have a dedicated AF center focused on patients undergoing catheter ablation, WATCHMAN implants, and antiarrhythmic drug therapy (eg, dofetilide, amiodarone) requiring enhanced patient surveillance. Dedicated staff includes a nurse navigator/coordinator, a data coordinator, and a point PA working in concert with the rest of the EP office and lab staffs. We participate in the Get With The Guidelines registry and have use of a hospital-developed REDCap data system to track outcomes. We are in the process of integrating the hospital Epic EMR system with our database.

What approaches has your lab taken to reduce fluoroscopy exposure? What percentage of cases are done without fluoro?

When using fluoroscopy, we operate the systems at the lowest output and pulsing needed. During ablation procedures, we routinely utilize Zero-Gravity (BIOTRONIK). During device implantation, RADPAD shields (Worldwide Innovations & Technologies, Inc.) are added to drapes over the patients' chest region. Lead-impregnated gloves are also available to electrophysiologists. We use shutters to cone down on image fields. Increasingly, AF ablation procedures are performed with minimal or no fluoroscopy,

while taking greater advantage of intracardiac echo guidance and 3D mapping. All physicians and staff working in the EP lab are required to attend an annual conference on fluoroscopy safety. The physicians have to complete a fluoroscopy safety exam when recredentialing for hospital privileges.

How do you manage radiation quality checks of the imaging equipment?

In addition to a full-time radiation technologist in the EP labs, we work closely with the medical center's radiation safety department. Members of the radiation safety department and biomedical staff check our fluoroscopy systems and lead aprons at scheduled frequencies.

What are some of the dominant trends you see emerging in the practice of EP?

With newer legislation giving patients immediate access to a wide range of their medical records, electrophysiologists will have to continue to ensure that their notes and reports are consistent with patients' reported clinical history and written in a considerate manner. In addition, Bluetooth and near field communication from implantable devices will give patients greater access to their device function and lead to the need for more timely physician communication. As ablation and LAAO procedures improve, the number of patients seeking access to these treatments will steadily increase. We anticipate greater emphasis on leadless implantable device technology as well as remote monitoring and programming capability. Newer noninvasive strategies will be developed, incorporating modern imaging techniques (eg, cardiac MRI, phase mapping systems) and genetic profiles in addition to LV ejection fraction measurements to guide recommendations for implantation of ICDs for primary prevention against sudden cardiac death. Newer systems (eg, electroporation) to deliver energy during ablation procedures will replace established techniques. Newer catheters will be developed to deliver deeper ablation lesions. Electrophysiologists will have to work closely with radiation oncologists to perform radioablation procedures. On-demand digital technology will also hopefully lead to enhanced awareness and approaches to cardiac resuscitation in the community. Genetic profiles will become integral to guiding treatment approaches in patients with atrial and ventricular arrhythmias, particularly with the advent of targeted therapies, replacement pharmacologics, and gene therapy.

How do you utilize digital tools or wearable technologies in your treatment strategies?

We liberally use commercial extended telemetry monitoring systems, as well as patient-activated ECG rhythm recorders (eg, Kardia [AliveCor], Apple Watch, Samsung Galaxy 2 watch) to more expeditiously and accurately document, diagnose, and exclude real-time rhythm abnormalities. We are working with two of the extended telemetry vendors to have the reports and tracings flow seamlessly into our Epic EMR system. One of our EPs is extremely active on Twitter, and keeps us informed daily regarding Twitter/EP developments.

Describe your city or general regional area. How is it unique from the rest of the U.S.?

We are located in Morristown, a major New Jersey city approximately 30 miles northwest of New York City. Our catchment area includes a very diverse patient population with a wide spectrum of socioeconomic classes of individuals with a mix of rural and suburban communities. Morristown Medical Center is part of Atlantic Health System, which serves more than half of the state of New Jersey including 11 counties and 4.9 million people. The not-for-profit system offers more than 400 sites of care, including seven hospitals. The integrated Atlantic Medical Group of over 1,000 physicians and advanced practice providers represents one of the largest multi-specialty practices in New Jersey, and joins Atlantic Accountable Care Organization and Optimus Healthcare Partners as part of Atlantic Alliance, a Clinically Integrated Network of more than 2,500 health care providers throughout northern and central New Jersey. The Gagnon Cardiovascular Institute is listed in *U.S. News and World Report*'s best 40 hospitals providing cardiovascular care, and Morristown Medical Center has also been ranked as New Jersey's #1 hospital. We have an ABIM-approved fellowship training program in cardiovascular medicine.

Is your EP lab involved in clinical research studies?

The core EPs have remained active in clinical research, teaching, and medical society participation since the program's inception. Currently we are participating in the MARVEN study, the ECG Belt study, the Helios ablation trial, and the Extravascular ICD Pivotal Study, among others.

What specific challenges does your hospital face given its unique geographic service area?

Serving a broad geographic area requires sophisticated communication and transportation services. Fortunately, we have a highly sophisticated ambulance and helicopter service available to expedite patient transfers. Coordinating care of patients from medical groups other than those vertically integrated in the health care system occasionally presents challenges for acquisition and review of timely data impacting patient care due to differing EMRs. Occasionally, our cardiac units are at capacity and patients cannot be transferred from other hospitals in the system in a timely fashion. The challenges of checking COVID-19 PCR status on patients being transferred in for cardiac procedures sometimes leads to undesirable delays.

Please tell our readers what you consider special about your EP lab and staff.

The EP labs at Morristown Medical Center have modern fluoroscopic systems and the most state-of-the-art electrophysiology, mapping, ablation, and rhythm control device offerings. Our electrophysiologists have trained in some of the finest programs in the country, participate in active teaching of medical residents, cardiology fellows, and cardiovascular technologists, and participate in clinical research. Our technologists have all completed formal programs in cardiovascular technology. Most of the nurses have critical care and/or cardiac backgrounds. The core electrophysiologists and staff function as a family, with extreme consideration of each other and utmost concern for the best patient outcomes. The unified team manages care of patients from the greater community with the same skills, consideration, and respect we would expect for ourselves and our families. We are fortunate to have a modern hospital with superb facilities and nursing staffs conducive to outstanding patient outcomes and healing. The senior administrative staff of Morristown Medical Center and Atlantic Health System, and generous community philanthropists, are supportive of our endeavors and help ensure that our patients receive the best care available anywhere. ■

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