

Spotlight Interview

University of Virginia's Atrial Fibrillation Center

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What is the size of your EP lab facility and number of staff members? What is the mix of credentials at your lab?

We currently have two dedicated EP labs and a third which we share with the cath lab. A fourth room is used for cardioversions and drug infusions. The dedicated EP labs have single-plane fluoroscopy. All labs are equipped with EP Med recording systems and EnSite advanced mapping systems.

We are currently in a significant renovation/building phase. The transition is a bit challenging. However, within 1 year, we will have four dedicated EP labs. The plan is that the third dedicated EP lab will come online by the end of October and the other three brand new labs will open before June 2007 (one of which will be equipped for Stereotaxis).

We currently have 15 staff members that are comprised of both nurses (10) and technologists (5).

When was the EP lab and Atrial Fibrillation Center started at your institution?

The EP lab was started in 1981 and was the first in the state of Virginia. Dr. John P. DiMarco has been the director of the lab since that time. The Atrial Fibrillation Center was started in 2004 under the direction of Dr. J. Michael Mangrum after several years of this being a focus of our group.

What types of procedures are performed at your facility?

We perform about 2,200 cases each year, and are a full-service facility. We do 99% of all pacemakers/ICDs/CRT device implants at the University of Virginia as well as all of the laser lead extractions. We perform all types of ablations, with 70% comprising of complex ablations (atrial fibrillation [AF], atypical atrial flutter, atrial tachycardia, and ventricular tachycardia).

What are the primary goals of your program?

The primary goals of the Atrial Fibrillation Center are to: 1) Be a comprehensive educational resource for physicians and patients on AF (www.afibcenter.org), 2) Provide the best state-of-the-art treatments for patients with AF, 3) Have the ability to measure and compare outcomes of different AF treatment modalities, and 4) Maintain and enhance our clinical research program in AF.

In conjunction with the EP lab, AF ablation is the main focus. Work on this front began in the early 1990s in the EP animal research lab. Our clinical program for AF ablation began in 1998, with continued growth such that in 2005, AF ablation became our most common ablation procedure.

Approximately how many are performed each week?

We perform approximately five AF ablations each week.

What complications do you find during these procedures?

The most common complication is hematoma formation post AF ablation due to anticoagulation therapy. Other infrequent complications have included cardiac perforation and pericarditis. Over the past seven years, we have had four embolic events and one asymptomatic PV stenosis. We have not had any esophageal fistulae.

What is the structure/operation of the Atrial Fibrillation Center?

There are currently 4.5 staff members dedicated to the operation of the Atrial Fibrillation Center (2 administrative assistants, 1.5 nurse practitioners, 1 data/research coordinator). However, the overall operation is dependent upon the additional 15 staff members of the EP lab, 5 clinic nurses and 2 additional research coordinators.

All patients referred for management of AF come through the Atrial Fibrillation



Figure 1. Atrial fibrillation ablation. Dr. J. Michael Mangrum, director of the University of Virginia Atrial Fibrillation Center, performing an atrial fibrillation ablation with the aid of a prior CT scan, NavX® three-dimensional mapping system, intracardiac echocardiography, fluoroscopy, and intracardiac electrograms.



Figure 2. Staff and physicians of the University of Virginia's Atrial Fibrillation Center and EP Labs. Front row (L to R): Ashish Bhatia, MD (EP Fellow), Sharon Dickerson*, Liza A. Prudente, RN, ACNP-C*, Heather Greenbaum*, James Canty, J. Michael Mangrum, MD (Director, Atrial Fibrillation Center). Middle row (L to R): Sue Lucas, RN, Libby Smith, RN, Neelye Kochanowicz, RN, Tad Adams, Ken Allmon, RN, Dwayne Davis. Back row (L to R): J. Paul Mounsey, B.M., BCh, PhD, John P. DiMarco, MD, PhD (Director, EP Lab), James Choffel, RN (Administrative Coordinator, EP Lab), Scott Gilles, Srijoy Mahapatra, MD, Pam Mason, MD (EP Fellow). Not pictured: John D. Ferguson, MBChB, MD, Greg Wozneak, RN (Manager, EP Lab), Ann Rossi, RN, ACNP-C*, Vicki Serrano*, Amanda Irons, PA-C, Randall B. Leake, Russ Gallop, RN, Ellen Sposa-Morin, RN, Cathy Balsley, RN, Annette Kirtner, RN, Karen Magri, RN (* = staff of the Atrial Fibrillation Center).

Center. All charts are processed by the administrative assistants, screened for clinical research studies by our research/data



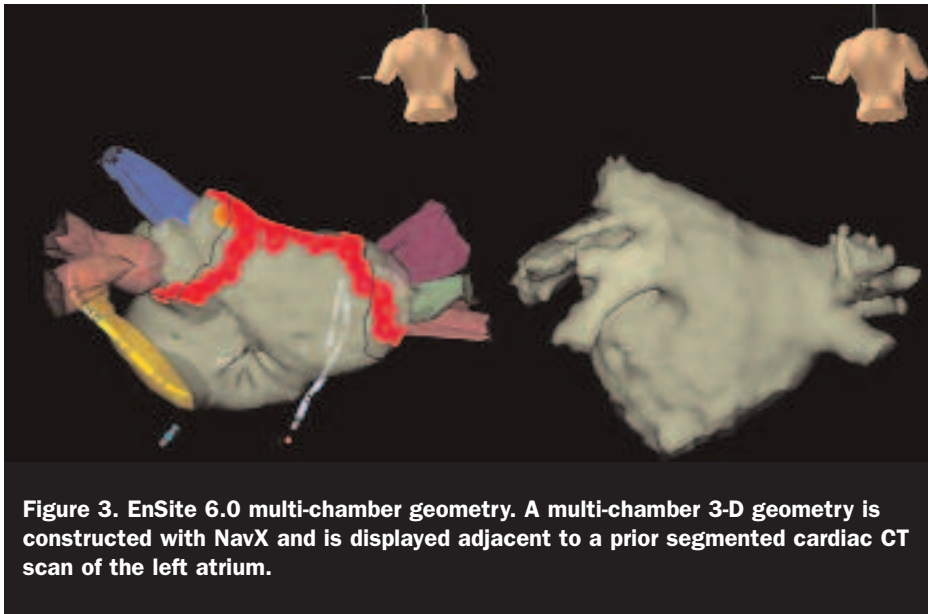


Figure 3. EnSite 6.0 multi-chamber geometry. A multi-chamber 3-D geometry is constructed with NavX and is displayed adjacent to a prior segmented cardiac CT scan of the left atrium.

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coordinator, and are then assigned a nurse practitioner. The nurse practitioner enters clinical patient data into the comprehensive database and then sees the patients in conjunction with an EP attending in the Atrial Fibrillation Center clinic, which runs daily.

Approximately one-third of patients referred for management of atrial fibrillation undergo an AF ablation.

Who manages your EP lab?

We have a RN Clinical Coordinator who is responsible for all the day-to-day operations. He then reports to the Heart Center Manager, who manages both the EP and Cath labs.

Is the EP lab separate from the cath lab? How long has this been? Are employees cross-trained?

Yes, they are dedicated labs. Currently they are located on different floors of the hospital; however, with our current renovations, all labs will remain dedicated but will be physically located in the same region. We will also share a 19-bed pre- and post-procedural unit.

The EP labs have been separate from the cath labs since the EP lab opening in 1981. Currently, employees are not cross-trained.

What new equipment, devices and/or products have been introduced at your lab lately?

We have just obtained CardioOptics' infrared intracardiac imaging system. Additionally, with the new renovations, we are building a Stereotaxis lab and adding a CARTO mapping system.

Who handles your procedure scheduling? Do you use particular software?

Each physician has a clinic nurse who

schedules procedures and pre-procedure testing.

At the moment, we use Microsoft Outlook along with A2K3 (hospital system) to schedule patients. Soon this system will be replaced by Patient Logistics software, in which a patient can be tracked during their entire procedure from arrival until they are discharged.

What types of quality control/quality assurance measures are practiced in your EP lab?

We have a tracking program that tracks patient outcomes after the procedure until discharge and then with a follow-up phone call and/or follow-up clinic visit. We also do conscious sedation audits along with other hospital-wide quality assurance audits.

How is inventory managed at your EP lab? Who handles the purchasing of equipment and supplies?

We are currently in the process of switching our inventory process to the Witt Biomedical inventory supply system to keep track of inventory.

One of our nurses handles most of the ordering of day-to-day supplies such as catheters and sheaths. Our manager handles most of our device purchases.

Has your EP lab recently expanded in size and patient volume, or will it be in the near future?

We have seen a dramatic increase in AF patient volume through the Atrial Fibrillation Center. As such, we are in a significant expansion/renovation period, which should almost double our capacity.

How has managed care affected your EP lab and the care it provides patients?

There are two ways in which managed care has recently affected some patients who have been referred for atrial

fibrillation ablation: 1) Some carriers will deny pre-procedure CT or MRI scans, and 2) Some carriers do not recognize pulmonary vein isolation.

Have you developed a referral base?

Through the Atrial Fibrillation Center we track all patient referrals for AF management and keep detailed maps. About 50% of our atrial fibrillation patients come from outside of our primary and secondary service areas, and 15% come from out-of-state.

What measures has your EP lab implemented in order to cut or contain costs? In addition, in what ways have you improved efficiencies in patient throughput?

We currently look at patient trends and physician preferences and try and cater to these by purchasing in bulk. This keeps costs low and provides a steady flow of inventory available whenever it is needed.

We have a standing committee consisting of EP lab staff members to try and find ways to help solve any inefficiencies. We also have weekly EP staff meetings and monthly 'process' meetings with physicians and managers to address these issues. We expect that the new pre- and post-procedure unit will significantly help in decreasing patient turnover time.

Does your EP lab compete for patients?

We are seeing some local competition for device implantation, but not for EP procedures.

Has your institution formed an alliance with others in the area?

No.

What procedures do you perform on an outpatient basis?

Most of our procedures are performed on an outpatient basis; this includes atrial fibrillation ablation. However, we do admit patients for biventricular devices.

How are new employees oriented and trained at your facility?

New employees are given a minimum 12-week orientation period. This may be longer, though, depending on the employee's self-evaluation and peer evaluation.

What types of continuing education opportunities are provided to staff members?

There is a weekly EP conference on Thursday mornings and EP staff in-services every Friday morning. We also have various in-services during the week for vendors to share information about their new products or services. Additionally, there are

opportunities to attend regional and/or national conferences for those who are interested.

How is staff competency evaluated?

The hospital requires yearly hospital-based competencies; additionally, written competencies are required based on skill sets for the EP lab.

What committees, if any, are staff members asked to serve on in your lab?

We currently have a "throughput" committee and a "clinical practice" committee.

How do you handle vendor visits to your department?

Vendors sign up for scheduled in-services about their products. They are also welcomed if their services are needed or specifically requested by the physician during cases.

Please describe one of the more interesting or bizarre cases that have come through your EP lab.

We have recently seen several referrals for a catheter-based AF ablation after a failed surgical ablation. These patients frequently have very complex left-sided atrial flutters.

How does your lab handle call time for staff members? How often is each staff member on call?

Each day we have a "long-call" team, who stays until all cases are done for that particular day. We also have a nurse available from Friday evening until Saturday evening for any emergency.

Both the "long-call" team and the weekend call nurse are on a rotational schedule with all lab staff.

Does your lab use a third party for reprocessing?

Yes.

Approximately what percentage of your ablation procedures is done with cryo? What percentage is done with radiofrequency?

About 99% of all of our ablation procedures are done with radiofrequency. Cryo is generally used only for mid- or antero-septal accessory pathways or for slow pathways very close to the compact AV node.

Do you perform only adult EP procedures or do you also do pediatric cases? Is there cross

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University of Virginia Atrial Fibrillation Center Clinic Volumes

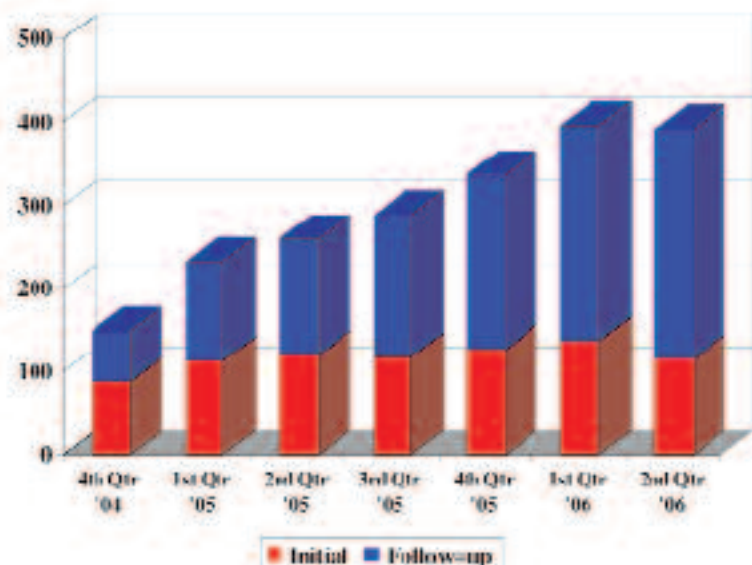


Figure 4. University of Virginia's Atrial Fibrillation Center clinic volumes.

training for pediatric cases?

We work with both adult and pediatric cases. The staff members who are more comfortable with pediatric cases usually handle those cases.

Do your nurses/techs participate in the follow up of pacemakers and ICDs? If so, how many device visits per week do they handle? Do you use any particular software for follow up? How many of your ICD/pacemaker patients require a doctor for their visits?

The EP lab staff does not participate in device follow-up. We have dedicated clinic/device nurses who run a daily device clinic. This clinic uses the Paceart® system by Medtronic, and approximately 75 patients/week are seen. About 15–20% of our ICD/pacemaker patients require a doctor for their visits.

What trends do you see emerging in the practice of electrophysiology? How is your lab preparing for these future changes?

The greatest trend is the growing volume and the growing number of complex ablations, usually for atrial fibrillation. The establishment of the Atrial Fibrillation Center has allowed us to adapt to these changes, and our current lab renovations/expansions will help enable greater throughput.

Is your EP lab currently involved in any clinical research studies or special projects? Which ones?

We are actively involved in a multitude of research studies in the clinical

management of atrial fibrillation. Some are industry-sponsored, while others are investigator-initiated.

When was your last JCAHO inspection?

Our last JCAHO inspection was in 2005.

Are you ACGME-approved for EP training? What do you think about two-year EP programs?

Yes, we are approved for two EP fellows per year. Our program is one year in duration. For fellows with very little experience prior to the EP fellowship, additional training may be necessary for more advanced/complex ablations.

Does your lab provide any educational or support programs for patients who may have additional questions or those who may be interested in support groups?

The Atrial Fibrillation Center has several educational initiatives. All patients receive an educational package prior to their clinic visit. Also, the Atrial Fibrillation Center website (www.afibcenter.org) has a large section dedicated to patients in which all information is written in terms that patients can understand.

Give an example of a difficult problem or challenge your lab has faced. How it was addressed?

About two years ago, our lab volumes began to significantly increase, so there was also a need to increase the lab staff. With a relative nursing shortage, more

Atrial Fibrillation Ablations at the University of Virginia Atrial Fibrillation Center and EP Labs

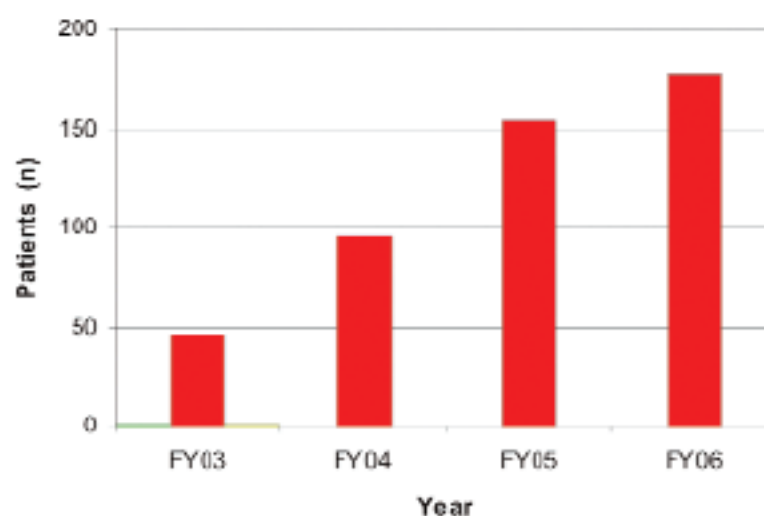


Figure 5. Atrial fibrillation ablations at the University of Virginia's Atrial Fibrillation Center and EP Labs.

technicians were hired. Now our 15-member lab staff consists of both nurses and technicians.

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

The University of Virginia's Atrial Fibrillation Center and EP lab are located in central Virginia. Charlottesville is a small University town. The setting is fairly rural; therefore, patients drive great distances to visit our center. There are no other EP physicians in Charlottesville or the surrounding counties.

Please tell our readers what you consider unique or innovative about your EP lab and staff.

The establishment of the Atrial Fibrillation Center and the EP lab's focus on atrial fibrillation ablation has been the most unique and innovative aspect about our organization.

Readers, would you like to participate in a Spotlight Interview? If you would be interested in featuring your lab, let us know! Questions can also be downloaded from our website: www.eplabdigest.com

We would love to hear from you!