

Expert consensus on catheter ablation of ventricular arrhythmias

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A call to action for more research to be undertaken into catheter ablation in the field of ventricular arrhythmia (VA) has been issued in a joint consensus document from the European Heart Rhythm Association (EHRA) a registered branch of the European Society of Cardiology (ESC) and the US Heart Rhythm Society (HRS). The consensus document - launched at Heart Rhythm 2009, the Heart Rhythm Society's 30th Annual Scientific Sessions, to be held 13 to 16 May in Boston - provides an up to date review of indications, techniques and outcomes of catheter ablation for treatment of ventricular arrhythmias, a technique now being offered to increasing numbers of patients.

"In the last few years there has been a substantial evolution of techniques for [catheter ablation](#) in VA. We hope this document will help identify the areas in catheter ablation that require further research, and encourage clinicians to embark on more clinical and registry studies," says Etienne Aliot, the European co-chair from Nancy, France. "It is only by conducting more clinical trials and registries that we can begin to get an idea of exactly how catheter ablation fits into the whole VA treatment paradigm including Implantable Cardio Defibrillators (ICDs) and antiarrhythmic drugs."

The document - authored by 20 leading European and US electrophysiologists - recognises there is still "very limited" data establishing the long term impact of catheter ablation on morbidity and mortality.

Unanswered questions highlighted by the joint document include:

- the long term efficacy of catheter ablation
- the comparative success rates of drug and ablative therapies
- can ablation slow the progression of ventricular remodelling in structural heart disease?
- definition of patients with different underlying cardiac and non cardiac diseases.

"Over the past decade there has been great progress with important advances in methods for mapping and ablating ventricular arrhythmias, but there are also many gaps in our knowledge where more work is needed. EHRA and HRS recognized that a document summarizing where we are now, where there is agreement and where we need to go would be timely and important," says William Stevenson, the US co-chair from Brigham and Women's Hospital, Boston, MA - USA.

The document is the third joint consensus document to be issued by EHRA and HRS at the Heart Rhythm meeting, with EHRA taking the lead this year.

"Having one document between Europe and the US is vitally important since it gives both clinicians and patients the confidence that they are doing the right thing. Having different documents on both sides of the Atlantic is a recipe for confusion," says Professor Aliot.

In an area with few clinical trials, but many single centre reports, the consensus document summarised the opinion of task force members based on their own experience of treating patients, in addition to a

review of the literature. For each topic, two members of the task force drafted a discussion document that was then considered and edited by all members of the team.

The document examines indications, outcomes, and contraindications of catheter ablation, which are important concerns for physicians and their patients with ventricular arrhythmias that require treatment. In addition, specific technical aspects of ablation procedures important for electrophysiologists are discussed including methods for mapping to identify ablation targets, roles for newer technologies, the use of anticoagulation, analgesia and anesthesia, and antiarrhythmic drug management. The knowledge base that physicians need, and the support staff and equipment required, are also considered.

There are two major types of ventricular arrhythmias. Those associated with heart disease are often due to abnormal electrical circuits originating from diseased areas of scar in the ventricular myocardium. A prior heart attack is a common cause. The second type concerns those where there is no structural disease, known as idiopathic ventricular arrhythmias.

Ventricular arrhythmias may cause symptoms such as syncope and palpitations, and in the most severe cases, cause cardiac arrest and sudden death. Many patients with ventricular arrhythmias and structural [heart disease](#) have implantable defibrillators that terminate VA when they occur, but these episodes may still cause symptoms and in some cases require painful shocks for termination. Catheter ablation has an important role in preventing or reducing recurrent attacks of symptomatic VA in these situations and can be life-saving for patients with incessant arrhythmias.

Most idiopathic VA are benign, but careful evaluation is required to distinguish idiopathic from potentially dangerous VA. Ablation is an

important alternative to antiarrhythmic drug therapy in many patients with idiopathic VA.

Catheter ablation, the procedure used to selectively eliminate the cells responsible for the arrhythmia, involves inserting catheters (thin flexible wires) into blood vessels, usually in the groin, and threading them through the blood vessels into the heart ventricle under X-ray guidance.

The next step is for the electrophysiologist to use the catheter to identify the source of the abnormal electrical activity in a procedure known as mapping. Mapping may involve triggering VA, or identifying abnormal areas that contain the substrate for VA based on findings during sinus rhythm. Radiofrequency energy is then applied through the catheter to destroy the abnormal area. Finally, testing is performed to determine if ablation has been sufficient to prevent the VA. The process of "mapping and ablation" continues until the electrical disturbance can no longer be triggered by catheters or no further substrate can be identified.

Recent innovations in catheter ablation include:

- 3D mapping systems that superimpose electrical maps of the heart on 3D images of the heart from echocardiography, which gives recordings in relation to anatomic locations in the heart and facilitate identification of the arrhythmia substrate during stable sinus rhythm.
- Percutaneous epicardial mapping and ablation of ventricular tachycardias that originate from the epicardial surface of the heart.
- The delineation of the relation between cardiac anatomy and focal ventricular tachycardia origins in the right and left

ventricular outflow tracts and papillary muscles.

Source: European Society of Cardiology ([news](#) : [web](#))

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