Atrial fibrillation (AF) remains the most common arrhythmia encountered in clinical practice. With the aging population, more people are living with risk factors for AF longer, and as such the prevalence of arrhythmia is increasing. In addition, patients with AF often acquire additional cardiovascular disease states that negatively influence their outcomes as well as their response to both pharmacologic and non-pharmacologic therapies. Treatment strategies continue to evolve as the demand and need for therapy increases. Given the scope of the disease burden, pharmacologic strategies remain essential. However, many contemporarily treated patients are or have been treated with antiarrhythmic drugs, but the progression of AF and AF-related disease states progress despite drug exposure. Unfortunately, the role of and approach to catheter ablation is still not defined, and long-term trials of rhythm and other disease-related outcomes are limited. Given these data, it is not surprising that the treatment and understanding of AF dominates the field of electrophysiology.

There is no shortage of non-pharmacologic technology advances to treat atrial fibrillation. Both surgeons and electrophysiologists continually encounter a tidal wave of technology all designed to favorably influence outcomes and safety through diverse avenues. There are novel energy delivery systems, catheter tip technologies, catheter tip sensor advances, robotic ablation systems, multiple three-dimensional mapping systems, new esophageal temperature-monitoring approaches, new concepts of ablation that span from anatomic approaches to those that incorporate established electrophysiology principles, device-based stroke prevention tools, and comprehensive strategies to limit fluoroscopy exposure to patients and staff. Many of these changes appear to favorably impact safety and efficacy of AF treatments, but unfortunately disease treatments remain inadequate particularly in AF patients that are persistent or longstanding persistent, have other cardiovascular diseases, or belong to poorly studied subgroups. In addition, these technology-driven advances come at a cost. In the complex current economic climate of reimbursement and health-care delivery to an aging population, these technologies will be scrutinized not only for efficacy and safety, but also on a cost–benefit ratio.

So in this complex AF environment, what is the role of AV node ablation and pacemaker implantation? In this issue of the journal, Vaidya and colleagues provide an excellent and comprehensive review of the topic of AV node ablation and pacemaker implantation. Long-term outcomes of patients that undergo AV node ablation and pacemaker implant are favorable. Specifically, survival rates after AV node ablation are similar to those observed in a similar age- and sex-matched general population. In addition, quality of life in general improves after AV node ablation as well as many metrics of heart failure. So, if the therapy improves mortality and morbidity in patients with AF, why do we largely consider it as a last option?

First, there is concern over pacemaker dependency. Fortunately, current-generation pacemakers and lead technologies are exceptionally stable and predictable. Furthermore, home monitoring in the majority of implantable devices allows continuous understanding of lead and pacemaker function, estimated longevity, and arrhythmia. Next, early reports of sudden death raised concerns about the safety of the approach, but current programming changes with a gradual reduction in ventricular rates appear to resolve this complication. Finally, one of the most pervasive concerns is exposing the patient to the long-term consequences of right ventricular apical pacing. Right ventricular pacing alone can reduce cardiac function, particularly in patients with pre-existing left ventricular dysfunction. Clearly there are patients that experience left ventricular dysfunction in the presence of right ventricular pacing, but in general most patients do not. However, the alternative, a biventricular pacing system, does not significantly increase mortality, functional status, and cardiac function in general populations after AV node ablation compared with right ventricular pacing alone when placed up front. However, ventricular pacing strategy planning may minimize risk of decline with right ventricular pacing alone by choosing to place a biventricular system in those with impaired cardiac function.
Atrioventricular Nodal Ablation

function. For example, in the PAVE trial of patients with an ejection fraction <45%, there appears to be an improvement in heart failure, functional status, and quality of life when a biventricular pacemaker is implanted rather than a right ventricular pacing system.\textsuperscript{11} I am very hopeful that The Pacing and AV Node Ablation Compared to Drug Therapy in Symptomatic Elderly Patients with Atrial Fibrillation Clinical Trial (PACIFIC trial) can be performed to provide true insight into the role of pharmacologic therapies, AV node ablation, and method of ventricular pacing after AV node ablation in the elderly population.

In general AV node ablation and pacemaker implantation is an effective durable therapy in patients with AF. It also provides comprehensive benefits in many patients by allowing the reduction of medication use and exposure to polypharmacy. As such, with only modest concerns of outcomes compared to other therapies, many of which are not substantiated, by relocating this therapy to a last resort approach are we throwing the baby out with the bath water? Certainly based upon the very nice review in this month’s issue of the Journal, the therapy deserves careful consideration in our AF patients, and in general its role in the treatment of AF re-examined.

T. Jared Bunch, MD
Thomas.bunch@imail.org
Department of Cardiology
Intermountain Heart Rhythm Specialists
Intermountain Medical Center
Murray, UT

References