Monitoring in the management of atrial fibrillation

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We performed a survey on current practice of atrial fibrillation (AF) detection and monitoring and its relevance in patient management among the European Heart Rhythm Association Research Network. The focus of this questionnaire is on the use and relevance of remote AF detection in device patients and its clinical consequences like starting oral anticoagulation or improving device programming to avoid inappropriate shock therapy. Remote device data are already used by 76.8% of the centres in their implantable cardioverter defibrillator/cardiac resynchronization device patients to detect AF and trigger relevant clinical decision making! The majority of these centres are also asking for the option of remote device programming.

Keywords
Atrial fibrillation • Rhythm monitoring • Implantable cardioverter defibrillator • Remote monitoring

Introduction
Monitoring of atrial fibrillation (AF) consists of using a widespread field of different strategies and tools. Strategies range from monitoring of only symptomatic AF, e.g. post catheter ablation with or without surface electrocardiogram (ECG) documentation to continuous rhythm monitoring using either implanted pacemakers or defibrillators or specially tuned subcutaneous leadless rhythm monitoring devices.1,2 In addition, in implanted devices AF detection can be handled either in a remote monitoring fashion or in a direct device interrogation fashion.

In the clinical arena, the need for oral anticoagulation is one of the most important consequences to AF detection irrespective of whether it has been detected on a remote or direct way of interaction.3,4 In device patients, AF occurrence may increase the risk of inappropriate shock delivery and should therefore prompt careful evaluation of concomitant drug therapy and device programming. In patients with cardiac resynchronization therapy devices (CRTD), AF, which may lead to a reduction of left ventricular capture, may initiate AF or AV node ablation.5

Results
Responses were received from 43 partners of the European Heart Rhythm Association (EHRA) Research Network. There was a wide geographic distribution with responses from 18 countries (eight centres from Denmark, five from United Kingdom, four each from Spain, France, and Belgium, three from Germany, two each from Estonia, Norway, and Portugal, and one centre from nine other countries). The majority of centres had a high degree of expertise in device implantation and catheter-based AF ablation: 51.1% perform 100–250 ablations per year and more than 50 implantable cardioverter defibrillator (ICD) and CRT implantations, only 20.8% of the centres perform ≤ 50 ICD implantations per year. In addition, 76.6% of the centres have experience in surgical AF ablation; however, the majority performs ≤ 50 per year. There were 90.7% of the responders of the questionnaire who claimed to be an electrophysiologist.

To monitor for AF in their outpatient service for device patients, 73% of centres follow a defined strategy which in 33.3% consists in a combination of remote monitoring and direct device interrogation, whereas 37% of centres do not explicitly use remote AF monitoring in their device patients. Only 23.3% of centres use remote monitoring in their ICD or CRTD patients, whereas 32.6% are even frequent remote monitoring users in those device patients. When it comes to AF monitoring and detection outside ICD or pacemaker patients only 16 out of 43 centres use implantable loop recorders for AF, 73.3% of those then do not use remote monitoring. When external recordings such as Holter ECG’s are performed the amount of remote monitoring
users in combination with Holter tracings is only 6.7% and so even less than using remote monitoring in implantable loop recorders. However, the overall usefulness of remote monitoring was positively seen as summarized in Table 1.

The question of whether identification of asymptomatic paroxysmal AF using remote monitoring should prompt consideration of anticoagulation therapy was answered by a clear ‘Yes’ in 44% and with a ‘Yes depending on frequency and duration’ in 50%; only 6.3% would not consider anticoagulation even when AF is detected. The specific value of remote AF detection in ICD patients/ CRTD patients was regarded as valuable or very valuable for 50% (ICD)/53.5% (CRTD) of the centres to guide specific programming for avoiding inappropriate shocks; only 4.8% (ICD)/4.7% (CRTD) found no value in this information. Furthermore, very valuable or at least valuable was remote AF detection information in ICD patients for 59.5% (ICD) and 58.2% (CRTD) as an aid to initiate anticoagulation, for 45.3% (ICD)/32.5% (CRTD) to consider AF ablation, for 35.7% (ICD)/53.5% (CRTD) to consider AV node ablation, for 52.4% (ICD)/51.9% (CRTD) to optimize rate control, 50% (ICD)/41.9% (CRTD) to consider antiarrhythmic drugs and for 59.5% to optimize CRT pacing therapy. A total of 65.1% of all centres valued a remote programming option in the case of remote AF detection as a useful tool to avoid inappropriate shocks.

**Discussion**

This survey about monitoring for the management of AF with a focus on monitoring in device patients demonstrated that remote monitoring is already clinical reality: 44.2% use the option occasionally but 32.6% frequently in their ICD/CRTD patients to detect AF. The judgement about the value of the remote information about AF is still surprising: only 50–60% of centres think that this information is useful for a decision whether to commence anticoagulation, optimize rate control, or optimize device programming to avoid inappropriate shocks. What then are the reasons for the around 50% to decide that remote AF detection is not valuable? Is it a lack of education or imagination or is it a well-balanced scepticism against remote device information which is not validated by surface ECG tracings and not correlated to AF duration, AF frequency, nor symptoms of the patient? Those who use the remote information are probably also those who advocate the option of remote programming as a direct reaction to the diagnostic data. This is a clear signal to device manufacturers to open up for that possibility to allow at least some form of remote programming. Recommendations on how to manage AF patients with en passant detected AF episodes on devices is warranted.

**Conclusions**

Remote AF monitoring in patients with implanted electrically active devices is a clinical reality in the majority of European centres. Information is being used to start oral anticoagulation in patients with risk factors or to optimize ICD programming to avoid inappropriate shocks. Remote programming is a feature which should be evaluated and realized in the future.

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**References**