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Arrhythmias and cognitive function

Main points from the European Heart Rhythm Association (EHRA), Heart Rhythm Society (HRS), Asia Pacific Heart Rhythm Society (APHRS) and Latin American Heart Rhythm Society (LAHRS) 2018 expert consensus

Cognitive function is of paramount importance for the well-being of the individual and its social environment. Diseases may affect cognitive function, and medical interventions may avert this impairment or, on the contrary, worsen it. There is sufficient evidence that this constellation has significant clinical relevance also in the field of cardiac arrhythmias and their management. To increase awareness of this context among physicians treating patients with arrhythmias and to provide useful guidance for everyday practice with the goal to minimize the risk of cognitive impairment, the major heart rhythm societies of the world, the European Heart Rhythm Association (EHRA), the Heart Rhythm Society (HRS), the Asia Pacific Heart Rhythm Society (APHRS), and the Latin American Heart Rhythm Society (LAHRS) have recently published a joint expert consensus document.¹

In the following, we describe the major conclusions of this document as well as the most relevant recommendations for clinical practice.

Cognitive decline may range from mild cognitive impairment to dementia. There are several non-modifiable risk factors for dementia, such as age, but also modifiable ones, such as lifestyle factors and cardiovascular risk factors. There is a whole variety of tools that may be used for assessment of cognitive function; a long list with appropriate description of these tools is provided in the document.¹ Availability of translated versions of the different tools, local preferences, and familiarity vary, and the results of cognitive function assessments need to be considered in the context of all other evidence. Two tools that are commonly used in clinical routine and have been validated in large populations are the two-step general practitioner assessment of cognition (GPCOG) and the Informant Questionnaire for Cognitive Decline in the Elderly (IQCODE).

The best evidence for association of arrhythmias with cognitive impairment as well as for the impact of arrhythmia management on cognitive function comes from the field of atrial fibrillation (AF).² Consequently, the recommendations given in the document¹ refer mainly to measures for prevention of cognitive dysfunction in AF and less to other arrhythmias.

Atrial fibrillation may lead to cognitive decline or even dementia through various mechanisms with stroke being the most obvious one. As well documented, AF in the presence of risk factors significantly increases the risk of stroke, and stroke may affect cognitive function. Thus, prevention of stroke is a major pathway for the prevention of dementia in patients with AF. Apart from clinically apparent strokes, silent strokes that are frequently observed in AF may also lead to cognitive impairment. However, the association of AF with cognitive impairment goes beyond the mechanism of clinically apparent or silent stroke and seems to be mediated by further pathways that are to date insufficiently understood.

Oral anticoagulation seems to play a crucial role for prevention not only of stroke but also of cognitive impairment in AF. Evidence from

large observational studies suggests that oral anticoagulation in patients with AF and risk factors significantly lowers the risk of cognitive decline. The quality of anticoagulation also plays a role. A high percentage of time in therapeutic range in patients receiving vitamin K antagonists (VKA) has been reported to be associated with lower risk of dementia while supratherapeutic international normalized ratio values are associated with higher dementia risk. There is also some, still relatively limited, evidence that non-vitamin K oral anticoagulants (NOACs) may be more beneficial than VKA for prevention of cognitive impairment. Importantly, there are no large randomized trials to confirm these assumptions, but several trials with cognitive function as one of the outcome parameters are currently being conducted in patients with AF, mainly examining the impact of anticoagulation in various settings.

Thus, for the time being, in patients with AF and stroke risk factors an anticoagulation regimen of good quality seems to be the most promising way to prevent cognitive decline.

Interventional treatment and, in particular, catheter ablation for AF may lead to asymptomatic silent embolic lesions. The effect of interventional techniques and of these silent events on cognitive function is not well established. A recent expert consensus statement provides practical guidance for the performance of the procedures.³

It seems reasonable to assume that, given the association between AF and cognitive decline, prevention of AF altogether would have, apart from other significant benefits, an additional beneficial effect concerning the prevention of cognitive decline. The risk of AF occurrence may indeed be influenced by general measures as recently described in a dedicated EHRA position paper.⁴

Apart from these, general measures have been proposed for prevention of dementia, and these may also be applied in patients with arrhythmias. However, the evidence for the efficacy of such measures is relatively limited.

In conclusion, arrhythmias and particularly AF may negatively affect cognitive function. Physicians treating patients with arrhythmias should be aware of this association and of the potential impact of treatment modalities. Evidence for the efficacy of measures to avert cognitive impairment is limited but is expected to increase with the completion of ongoing randomized trials. Until then, anticoagulation regimens of good quality seem the most promising tool to reduce cognitive impairment.

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References are available as [supplementary material](#) at *European Heart Journal* online.

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People's corner: Professor Rod H Stables

New EHJ International Editorial Board Member

Prof. Rod Stables is a consultant cardiologist and is the Director of the Cardiac Catheterisation Laboratories at the Liverpool Heart and Chest Hospital (LHCH), UK—a specialist cardiothoracic unit and, in terms of procedure volume, one of the largest cardiac units in Europe. He is the Chair of the Academic and Research Committee of the British Cardiovascular Society and holds academic appointments at the University of Liverpool and Imperial College, London.

Prof. Stables graduated in medical sciences from Churchill College, Cambridge, and read clinical medicine at St Edmund Hall, Oxford. He trained in cardiology at The John Radcliffe Hospital in Oxford and at the Royal Brompton Hospital in London, completing specialist training in 1998.

Rod Stables has an established, leading reputation for practice and research in interventional cardiology. His clinical interests include coronary intervention including emergency Primary Percutaneous Coronary Intervention (PPCI), TAVI, and non-surgical septal reduction in hypertrophic cardiomyopathy. He founded the Clinical Trials and Evaluation Unit at the Royal Brompton Hospital and led its initial flagship ventures.

His research interests are focused on the democratization of clinical research, seeking to simplify the design, conduct and reporting of clinical trials, and other forms of outcomes analysis. This is exemplified in the conduct of the HEAT-PPCI trial (the largest ever single-centre trial and the only study to recruit 100% of eligible patient presenting with the clinical syndrome of interest).

Currently, his group is co-ordinating the RIPCORDER2 trial in 17 UK centres, testing the use of electronic site files to create a trial governance system that is 100% paper-free.