Top Ten Things to Know
Atrial Fibrillation Burden—Moving Beyond AF as a Binary Entity

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1. This Scientific Statement discusses the published literature and knowledge gaps related to: the measurement of atrial fibrillation (AF) burden, the relationship of AF burden to cardiovascular and neurologic outcomes, the effect of risk factor modification on AF burden, and future directions for research.

2. Post hoc analyses of the prospective trials of direct oral anticoagulants have shown lower rates of stroke among patients with paroxysmal AF as compared to persistent AF even after adjustment for baseline characteristics. A meta-analysis which pooled data from randomized controlled trials, cohort studies, and case series in which clinical outcomes were stratified by AF type demonstrated a multivariable adjusted HR of 1.4 for thromboembolism in non-paroxysmal AF compared to paroxysmal AF.

3. Data from AF registries and population-based studies have not reliably demonstrated an independent relationship between AF pattern and stroke risk. This may be due to residual confounding and differential treatment patterns which could have attenuated risk attributable to AF pattern.

4. Current guidelines recommend using only patient characteristics included in the CHA2DS2-VASc score, and not AF burden, to estimate stroke risk and make decisions regarding anti-coagulation.

5. Data on the association between AF burden and non-stroke outcomes such as heart failure and dementia are scarce. In an American registry, permanent AF was associated with a higher risk of incident Heart Failure than paroxysmal AF. A single small cross-sectional study demonstrated that persistent AF may be associated with lower cognitive function than paroxysmal AF.

6. A sedentary lifestyle, obesity, obstructive sleep apnea, and hypertension have each been associated with risk of developing atrial fibrillation. Risk factor modification as part of a structured and comprehensive program has been shown to decrease AF burden.

7. In studies of patients with cardiac implantable electronic devices (CIEDs), the cutoffs for AF burden were arbitrarily pre-specified rather than empirically derived. Although AF burden is associated with stroke risk in this population, the majority of strokes are temporally discordant from the AF episodes and the threshold in terms of duration of individual episodes is not well characterized. The clinical significance of very brief AF episodes (less than 5-6 minutes) remains unknown.

8. The lack of temporal association between episodes of AF and stroke in patients with CIEDs raises questions regarding the mechanism of stroke in AF that warrant further investigation. Although this could be explained by the ability of left atrial clots to form and remain dormant, another hypothesis is that AF burden may simply be a marker of the severity of atrial disease, or atriopathy.

9. As implantable and wearable monitoring technologies become smaller and more affordable, long-term cardiac monitoring will become more common. It is conceivable that much greater numbers of patients with and without known AF will be monitored indefinitely in the near future.

10. A critical knowledge gap that needs to be addressed is the threshold of AF burden that confers an increased risk of stroke in conjunction with clinical factors and warrants anti-coagulation. In observational studies of patients with CIEDs, the threshold of AF duration conferring increased thromboembolic risk varies from 5 minutes to 24 hours. Ultimately, randomized controlled trials of anti-coagulation in asymptomatic patients with a pre-defined AF burden will be needed to answer this question.