

Clinical and Economic Model of Management Strategies for Atrial Fibrillation

Model Revisions Based on Evidence Review Group Mid-Cycle Call

Key Issue #1: Stroke Risk after Catheter Ablation

- 1) Stroke risk in AF is lower in recent years (Singer, 2009) than in the years when the CHADS₂ risk score was validated (Gage, 2001)
- 2) Available evidence on the impact of catheter ablation on stroke risk is limited to a few retrospective cohort studies examining whether to stop oral anticoagulation therapy (OAT) after ablation (Themistoclakis, 2010, Oral, 2006, Nademanee, 2008), with issues of generalizability, selection bias, and variability in setting and clinical criteria employed
- 3) *Base case: baseline stroke risk by CHADS₂ from ATRIA study; no impact on stroke risk from catheter ablation*
- 4) *Alternative analysis: Assume CHADS-specific risk reduction from catheter ablation among patients with CHADS₂ scores of 0-3, using data from Themistoclakis and Singer. Patient count in Themistoclakis too small (n=25) to develop estimates for CHADS 4-6:*

CHADS ₂	Baseline Stroke Risk*	Stroke Risk post-ablation, in NSR*
0	0.38	0.026
1	0.59	0.059
2	1.26	0
3	1.86	0
4-6	3.25	<i>No impact on stroke risk assumed</i>

NSR: Normal sinus rhythm

*Annual, per 100 person-years

Key issue #2: Continuation of Oral Anticoagulation Therapy (OAT)

1. The effect of anticoagulation management after catheter ablation depends on the risk of stroke after catheter ablation (for patients in NSR) and the effectiveness of warfarin in reducing stroke risk in this setting.
2. ERG members cited 3 studies (see above) that reported low rates of stroke for patients after catheter ablation for patients in NSR for whom anticoagulation had been discontinued.

3. Cakulev and Waldo recommend adhering to HRS/EHRA/ECAS guidelines (JACC, 2010) in an editorial accompanying the study by Themistoclakis, 2010, citing study issues described above.
4. *Base case: Adhere to HRS/EHRA/ECAS guidelines for anticoagulation – lifetime warfarin therapy post-ablation for patients with CHADS₂ score ≥ 2 .*
5. *Alternative analysis: Discontinue warfarin therapy for patients post-ablation with CHADS₂ scores of 0-3.*

Key Issue #3: Repeat catheter ablation

1. Our model assumed an initial catheter ablation with PVI and one repeat catheter ablation with other lines or other targets for ablation.
2. Several ERG members suggested that it would be more accurate to allow for additional catheter ablations, but noted that the proportion of patients with more than 3 ablation procedures was “very low.”
3. Crude pooled estimate from preliminary systematic review suggested that 1.8 ablation procedures are performed on average.
4. Nademanee, 2008 reported the distribution of number of catheter ablations for 635 patients with AF: 1 procedure (52%), 2 procedures (32%), 3 procedures (12.6%), and 4 procedures (3.5%).
5. Dr. Rosenberg offered the use of Wellpoint data to conduct a claims-based study of patterns of AF ablation; we would appreciate learning of any other published (or unpublished data) describing the distribution of number of catheter ablation procedures, to assist in our probability estimates.
6. *Action: Data from Wellpoint and other sources will be used as necessary to develop contingent probabilities of additional repeat ablation procedures.*

Key issue #4: Indications for catheter ablation in rhythm control strategy

1. Our model currently includes a strategy with a 6-month trial of initial rhythm control and catheter ablation for patients who have had an episode of recurrent AF at 6 months.
2. Several ERG members suggested that many clinicians would make the decision to refer for ablation earlier in the treatment course – essentially, after the first documented episode of AF.
3. *Action: We will modify our model to refer for catheter ablation after a 3-month trial of rhythm control therapy among patients who have experienced an episode of recurrent AF.*