Appendix D: Stroke Risk Assessment in Atrial Fibrillation: $CHADS_2$ Score

The following is provided to aid in the counselling of patients for or against anticoagulants usage in atrial fibrillation (AF) for the prevention of stroke.

Establish the risk of stroke in AF using the **C**ardiac failure, **H**ypertension, **A**ge, **D**iabetes, **S**troke score ($CHADS_2$):[1]

Letter	Clinical Characteristic	Score (if present)
C	Congestive heart failure	1
H	Hypertension	1
A	Age 75+	1
D	Diabetes	1
S	Prior Stroke or TIA	2
	Total $CHADS_2$ Score	Maximum score = 6

These scores have been validated to be approximately equivalent to the following stroke risks (see below). In diabetic patients, the $CHADS_2$ score may underestimate the risk.[2] Generally speaking, the risks of being on anticoagulants are less than the risk of a stroke. The higher the baseline risks of stroke, the greater the benefit of anticoagulants.

Annual stroke risk with or without treatment based on $CHADS_2$ score[a]

$CHADS_2$ Score	Approximate annual stroke risk without treatment (%)	Annual stroke risk with treatment (%)	
		ASA	Anticoagulants[b]
0	1.9	1.3	1.0
1	2.8	2.0	1.4
2	4.0	2.8	2.0
3	5.9	4.1	3.0
4+	8.5 or more	6.0 or more	4.3 or more

Annual bleeding complications due to treatment based on $CHADS_2$ score[a]

$CHADS_2$ Score	Bleeding complication	Annual risk of bleeding complication (%)[c]	
		ASA	Anticoagulants
All scores	Major bleed (all types)	0.25	Up to 1.04[3]
	Intracranial bleed	< 0.1[4]	0.2 to 0.8[d]

Foonotes:

a. Throughout the table these point estimates are shown without respective confidence intervals and represent a range of results. Confidence intervals, if applied, are broad.

b. Based on an estimate of relative risk reduction (RRR) of 30% for ASA and 50% for anticoagulants. (Benavente, 1999) For elderly populations, RRR is estimated at 0.48 (Estimates range as high as 0.68 RRR) (Mant, 2007; Albers, 2001).

c. Increased absolute risk of hemorrhage associated with ASA alone compared to placebo ranges from < 0 (a reduction) to 0.5 % annually in 4 studies. Harms of warfarin are also taken from this same reference. Harms of warfarin may be more than this in the very old. A recent study of major hemorrhage among elderly patients found cumulative risk of major hemorrhage of 13.1 per 100 patient years for patients ≥80 years of age.

d. The higher rates of intracranial bleeds exist in those on warfarin compared to NOACs.

References:

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3. Patel MR, Mahaffey KW, Garg J, et al. Rivaroxaban versus warfarin in nonvalvular atrial fibrillation. N Engl J Med. 2011;365:883-91.
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