Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

Emerging Challenges in Primary Care: Update 2013

Faculty

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• Louis Kuritzky, MD
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Faculty Disclosure

• Jan Basile, MD
  – Speaker – Boehringer Ingelheim, Daiichi Sankyo, Forest Labs, Takeda
  – Consultant - Forest Labs, Takeda

• Keith C. Ferdinand MD, FACC, FAHA
  – Consultant – Takeda, Novartis, Forest, Daiichi Sankyo
  – Speaker – AstraZeneca, Takeda

• Valerian L. Fernandes, MD, MRCP, FACC
  – Spouse is a Consultant for Ipsen

• Louis Kuritzky, MD
  – Nothing to disclose

Learning Objectives

• Use the CHADS2 Score to Risk Stratify AF patients
• Choose appropriate pharmacologic Rx for AF patients
• Recognize the role of catheter ablation in AF patients
• Effectively manage antithrombotic therapy in the perioperative setting
ARS #1
Clinical Scenario: Steve E.

Steve E, a 79 y/o hispanic male with a history of HTN and a left hemispheric stroke 2 years ago, was asymptomatic until 2 days ago when he developed intermittent palpitations and presented to your office. EKG: AF at 120 bpm.

Steve’s CHADS2 score is:
1) 1
2) 2
3) 4
4) 6
5) Not sure

ARS #2

A 62 year dermatologist has recently been diagnosed with AF. He has hypertension and type 2 diabetes, both of which are well controlled. Being a physician, he asks "I've read about all the treatments; which is the best treatment for my AF?" You should answer

1) All of the newer agents are statistically superior to warfarin for stroke risk reduction
2) The major reason to provide warfarin is because overall costs with warfarin are much less than other agents
3) In the absence of head-to-head trials, it is not possible to know if any one of the newer agents is superior to another
4) Major bleeding risk with newer agents is markedly less than with warfarin
ARS #3
**Perioperative Management of Tomas, a 62 Y.O. with AF, HTN, DM**

Tomas is undergoing CV surgery. His INR has been in the therapeutic range about 75% of the time on warfarin 5 mg/d. What should be done about his warfarin dose perioperatively?

1) Continue 5 mg/d without interruption
2) Discontinue warfarin 3 days preop, resume 12-24 hrs after adequate hemostasis
3) Discontinue 5 days preop, resume 12-24 hrs after adequate hemostasis
4) Switch to clopidogrel 75 mg/d 3 days preop, then resume warfarin 12-24 hrs after adequate hemostasis and discontinue clopidogrel

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ARS #4
**Which Patient is Best Suited for RF Ablation?**

1. 80 year old with persistent atrial fibrillation
2. 68 year old symptomatic patient after 2 trials of antiarrhythmic Rx with paroxysmal atrial fibrillation
3. Obese asymptomatic patient with sleep apnea and paroxysmal atrial fibrillation
4. 64 year old with EF of 35% and LA size of 5.5 cms
5. 74 year old hypertensive with atrial fibrillation for the past 2 years and symptomatic palpitations
ARS #5 Clinical Scenario: Allison M
A 58 y.o. Woman with Resistant Symptomatic AF

Allison has new onset AF resistant to several steps of pharmacotherapy. She has well controlled HTN and T2DM. She has a high level of awareness of her rapid heart rate, which impairs her QOL. She has heard of catheter ablation. If she undergoes successful ablation and is in sinus rhythm, what should be done about anticoagulation?

1) Anticoagulation can be omitted once she is in sinus rhythm
2) Anticoagulation should be used for 4-6 weeks post ablation
3) Anticoagulation should be used indefinitely despite sinus rhythm
4) Anticoagulation should be used for 2-3 months post ablation

On a scale of 1 to 5, please rate how confident you would be in treating a patient with atrial fibrillation.

1. Not at all confident
2. Slightly confident
3. Moderately confident
4. Pretty much confident
5. Very confident
AF: Major Teaching Points

- Stroke reduction with antithrombotic therapy (warfarin, dabigatran, rivaroxaban, apixaban) is VERY SUBSTANTIAL (±66% or more)
- ICH risk with warfarin is VERY LOW (<1%/yr) and EVEN LOWER with new agents (dabigatran, rivaroxaban, apixaban)
- Perioperative regimens for antithrombotic and antiplatelet therapies are specific to individual agents
- Catheter ablation for AF is promising, and often provides excellent symptom relief
- Antithrombotic therapy post-ablation is continued indefinitely, despite restoration of sinus rhythm

Atrial Fibrillation
What’s The Risk of Stroke?
Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

**AF Warfarin Trials: Reduction in Stroke Rates and Mortality**

- N=2,900
- Mean age = 69
- 20% > age 75
- Stroke rates reduced 62%


**Intracranial Hemorrhage During Long-Term Anticoagulation With Warfarin**

Atrial Fibrillation: Gaining Confidence in Risk Stratification

How to Use the CHADS<sub>2</sub> Score

Case: Martha T, a 74 y.o. Black Female

- Brought by 46 y.o. daughter for HTN & DM re-check
- Hx: No prior arrhythmia, but reports ‘my heart seems to go a little faster sometimes in these last couple months’
- Sister deceased due to stroke
- Meds: metformin, simvastatin, chlorthalidone, lisinopril
Martha T, a 74 y.o. Black Female: PE
- HR 94, irregularly irregular
- BP 138/84
- BMI: 30.4
- Cardiac: No Murmur
- Chest: Clear
- Abd: WNL
- Neuro: WNL
- Extremities: no edema, pulses good

Martha T, a 74 y.o. Black Female: LAB
- EKG Today: Atrial Fib HR 94
- Previous EKG (1 yr ago)
  - NSR (72)
  - LVH (voltage)
  - No-ST-T wave abnormalities
- CBC, CMP WNL (3 months ago)
- A1c 7.3 (3 months prior)
- TSH = 2.1, LDL = 80
Martha T, a 74 y.o. Black Female with Diabetes and Hypertension

• What is Martha’s CHADS₂ Score?
  1) 1
  2) 2
  3) 4
  4) Unsure
  5) What’s a CHADS₂ Score?

CHADS₂ Risk Stratification Scheme

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Congestive heart failure</td>
<td>1</td>
</tr>
<tr>
<td>H Hypertension</td>
<td>1</td>
</tr>
<tr>
<td>A Age ≥75 years</td>
<td>1</td>
</tr>
<tr>
<td>D Diabetes mellitus</td>
<td>1</td>
</tr>
<tr>
<td>S₂ History of stroke or TIA</td>
<td>2</td>
</tr>
</tbody>
</table>

Why CHADS$_2$?

“The CHADS$_2$ score is the most validated risk scheme, having been independently tested in at least 10 separate cohorts after its original derivation.”


When MIGHT THE CHA$_2$DS$_2$-VASc Score Help?
**CHADS\textsubscript{2}VASC Case Study**

Tina is a 72 y.o. woman with incidentally discovered atrial fibrillation when pulse irregularity was noted. She is asymptomatic, and takes no chronic medications. Her only chronic medical problem is tinnitus, for which she receives no treatment. Will this patient be better served by CHADS or CHADS\textsubscript{2}VASC?

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**Tina, a 72 y.o. White Female**

- What is Tina’s CHADS\textsubscript{2} Score?
  1) 0
  2) 1
  3) 2
  4) Unsure
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CHADS₂ Risk Stratification Scheme

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Congestive heart failure</td>
<td>1</td>
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<tr>
<td>H Hypertension</td>
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</tr>
<tr>
<td>A Age ≥75 years</td>
<td>1</td>
</tr>
<tr>
<td>D Diabetes mellitus</td>
<td>1</td>
</tr>
<tr>
<td>S₂ History of stroke or TIA</td>
<td>2</td>
</tr>
</tbody>
</table>

CHADS₂: Risk of Stroke

National Registry of Atrial Fibrillation Participants (NRAF)

<table>
<thead>
<tr>
<th>CHADS₂ Score</th>
<th># Patients (n = 1733)</th>
<th># Strokes (n = 94)</th>
<th>NRAF Crude Stroke Rate per 100 Patient-yrs</th>
<th>NRAF Adjusted Stroke Rate (95% CI)†</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>120</td>
<td>2</td>
<td>1.2</td>
<td>1.9 (1.2-3.0)</td>
</tr>
<tr>
<td>1</td>
<td>463</td>
<td>17</td>
<td>2.8</td>
<td>2.8 (2.0-3.8)</td>
</tr>
<tr>
<td>2</td>
<td>523</td>
<td>23</td>
<td>3.6</td>
<td>4.0 (3.1-5.1)</td>
</tr>
<tr>
<td>3</td>
<td>337</td>
<td>25</td>
<td>6.4</td>
<td>5.9 (4.6-7.3)</td>
</tr>
<tr>
<td>4</td>
<td>220</td>
<td>19</td>
<td>8.0</td>
<td>8.5 (6.3-11.1)</td>
</tr>
<tr>
<td>5</td>
<td>65</td>
<td>6</td>
<td>7.7</td>
<td>12.5 (8.2-17.5)</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>2</td>
<td>44.0</td>
<td>18.2 (10.5-27.4)</td>
</tr>
</tbody>
</table>

Scoring:
1 point: Congestive heart failure, HTN, ≥75 years, and DM
2 points: History of stroke or transient ischemic attack

† Expected stroke rate per 100 pt-yrs, assuming aspirin not taken


Tina, a 72 y.o. White Female

• What is Tina’s $\text{CHA}_2\text{DS}_2\text{-VASc}$ Score?
  1) 1
  2) 2
  3) 4
  4) Unsure

$\text{CHA}_2\text{DS}_2\text{-VASc}$

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>C CHF</td>
<td>1</td>
</tr>
<tr>
<td>H HTN</td>
<td>1</td>
</tr>
<tr>
<td>$A_2$ Age $\geq 75$ years</td>
<td>2</td>
</tr>
<tr>
<td>D Diabetes mellitus</td>
<td>1</td>
</tr>
<tr>
<td>$S_2$ History of stroke or TIA</td>
<td>2</td>
</tr>
<tr>
<td>V Vascular disease (MI, peripheral arterial disease, aortic atherosclerosis)</td>
<td>1</td>
</tr>
<tr>
<td>$A$ Age 65-74 years old</td>
<td>1</td>
</tr>
<tr>
<td>$S_c$ Sex category (female)</td>
<td>1</td>
</tr>
</tbody>
</table>

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**CHADS\(_2\)-VASc When CHADS\(_2\) Score 0**

Refines stroke risk stratification in AF patients: nationwide cohort

<table>
<thead>
<tr>
<th>CHADS(_2) Score 0–1</th>
<th>1 Year Follow-up</th>
<th>12 Years Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person Yrs</td>
<td>Events</td>
<td>Person Yrs</td>
</tr>
<tr>
<td>CHADS(_2) score 0</td>
<td>40,272</td>
<td>1,405</td>
</tr>
<tr>
<td>CHADS(_2) score 1</td>
<td>6,919</td>
<td>58</td>
</tr>
<tr>
<td>CHADS(_2) score 2</td>
<td>11,863</td>
<td>435</td>
</tr>
<tr>
<td>CHADS(_2) score 3</td>
<td>11,473</td>
<td>660</td>
</tr>
<tr>
<td>CHADS(_2) score 4</td>
<td>1,137</td>
<td>93</td>
</tr>
</tbody>
</table>

**AF Rx as Per CHADS\(_2\) Score: AT9 (2012)**

<table>
<thead>
<tr>
<th>CHADS(_2)</th>
<th>Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Rx (2B)</td>
</tr>
<tr>
<td>1</td>
<td>Oral Anticoagulant (1B)</td>
</tr>
<tr>
<td>≥ 2</td>
<td>Oral Anticoagulant (1A)</td>
</tr>
</tbody>
</table>

Refines stroke risk stratification in AF patients: nationwide cohort


Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

**FDA-Approved Antithrombotics**

- **Unfractionated Heparin**
- **Low Molecular Weight Heparin**
- **Warfarin**
- **New Oral Xa Inhibitors**
  - Rivaroxaban
  - Apixaban
- **New Oral IIa (Direct Thrombin) Inhibitor**
  - Dabigatran

**RE-LY**
**Dabigatran vs Warfarin for AF**

**BASELINE CHARACTERISTICS**
- Mean age = 71
- Prior long-term warfarin: 50%
- Male:Female = 2:1
- CHADS$_2$ = 2.1
- ASA (<100 mg/d) = 40%
- Statin = 44%
- Beta Blocker = 62%

Connolly SJ et al "Dabigatran vs Warfarin in Patients with AF" NEJM 2009;361:1139-51
Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

**RE-LY**

**Stroke/Systemic Embolism**

- **Warfarin**
- **Dabigatran 110 mg**
- **Dabigatran 150 mg**

HR

Months

<table>
<thead>
<tr>
<th>Months</th>
<th>Warfarin</th>
<th>Dabigatran 110 mg</th>
<th>Dabigatran 150 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RR = 0.66  
*p < 0.001*

**RE-LY: Major Bleeding**

- **warfarin**  
  - 3.36%  
  - *p = 0.31*

- **dabigatran 110 mg bid**  
  - 2.71%  
  - *p = 0.003*

- **dabigatran 150 mg bid**  
  - 3.11%  

Connolly SJ et al “Dabigatran vs Warfarin in Patients with AF” NEJM 2009;361:1139-51
Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

**RE-LY: Hemorrhagic Stroke**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>CNS bleed (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warfarin</td>
<td>0.38</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Dabigatran 110 mg bid</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>Dabigatran 150 mg bid</td>
<td>0.10</td>
<td></td>
</tr>
</tbody>
</table>

Connolly SJ et al “Dabigatran vs Warfarin in Patients with AF” NEJM 2009;361:1139-51

**RE-LY: Mortality**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mortality (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warfarin</td>
<td>4.13</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Dabigatran 110 mg bid</td>
<td>3.75</td>
<td>0.051</td>
</tr>
<tr>
<td>Dabigatran 150 mg bid</td>
<td>3.64</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Connolly SJ et al “Dabigatran vs Warfarin in Patients with AF” NEJM 2009;361:1139-51
**Dabigatran Dosing**

- **Dosing**
  - 150mg PO b.i.d.
- **Renal impairment:**
  - CrCL 15-30 mL/min: 75mg b.i.d.
  - CrCL <15 mL/min/dialysis: unknown
- **Hepatic impairment:** No dose adjustment

Dabigatran Prescribing Information 2010

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**ROCKET AF**

Rivaroxaban vs Warfarin for AF

- **Study:** High Risk AF pts (n=14,269) with Hx of stroke/TIA/embolism OR ≥2 of
  - CHF
  - Age ≥ 75
  - DM
  - HTN
- **Rx (≤ 32 months):**
  - Rivaroxaban 20 mg QD
  - 15 mg QD if eGFR 30-49
  - Warfarin INR target 2.5 (INR 2.0-3.0)

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**ROCKET-AF**

Stroke/Systemic Embolism

- **Warfarin**
- **Rivaroxaban 20 mg QD**

<table>
<thead>
<tr>
<th>Days</th>
<th>% Events/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>0</td>
</tr>
<tr>
<td>240</td>
<td>1.7%</td>
</tr>
<tr>
<td>360</td>
<td>2.2%</td>
</tr>
<tr>
<td>480</td>
<td>3%</td>
</tr>
<tr>
<td>600</td>
<td>4%</td>
</tr>
<tr>
<td>720</td>
<td>5.5%</td>
</tr>
<tr>
<td>840</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

RR = 0.79  
Noninferiority p < 0.001


**ARISTOTLE**

Apixaban vs Warfarin

- **Study:** High Risk AF pts (n=18,201) with ≥1 event:
  - Stroke or TIA
  - CHF: EF < 40% or ≥ NYHA II
  - Age ≥ 75
  - DM
  - HTN

- **Rx** (x 1.8 yrs median):
  - Apixaban 5 mg b.i.d.
  - Warfarin (to INR 2.0-3.0)

Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

ARISTOTLE
Stroke/Systemic Embolism


ARISTOTLE
Apixaban vs Warfarin: Outcomes

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>Apixaban %/yr</th>
<th>Warfarin %/yr</th>
<th>HR</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke/Systemic Embolism</td>
<td>1.27</td>
<td>1.60</td>
<td>0.79</td>
<td>0.01</td>
</tr>
<tr>
<td>Stroke</td>
<td>1.19</td>
<td>1.51</td>
<td>0.79</td>
<td>0.01</td>
</tr>
<tr>
<td>Hemorrhagic stroke</td>
<td>0.24</td>
<td>0.47</td>
<td>0.51</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>All-cause mortality</td>
<td>3.52</td>
<td>3.94</td>
<td>0.89</td>
<td>0.047</td>
</tr>
<tr>
<td>MI</td>
<td>0.53</td>
<td>0.61</td>
<td>0.88</td>
<td>0.37</td>
</tr>
</tbody>
</table>

Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

Apixaban vs Warfarin: Safety Outcomes

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>Apixaban %/yr</th>
<th>Warfarin %/yr</th>
<th>HR</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Bleeding</td>
<td>2.13</td>
<td>3.09</td>
<td>0.69</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Intracranial Bleed</td>
<td>0.33</td>
<td>0.80</td>
<td>0.42</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Non-Intracranial Bleed</td>
<td>1.79</td>
<td>2.27</td>
<td>0.79</td>
<td>0.004</td>
</tr>
<tr>
<td>GI Bleed</td>
<td>0.76</td>
<td>0.86</td>
<td>0.89</td>
<td>0.37</td>
</tr>
</tbody>
</table>


AF Warfarin Comparison Trials

<table>
<thead>
<tr>
<th></th>
<th>RE-LY</th>
<th>ROCKET-AF</th>
<th>ARISTOTLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>18,113</td>
<td>14,264</td>
<td>18,201</td>
</tr>
<tr>
<td>Age (mean)</td>
<td>72</td>
<td>73</td>
<td>70</td>
</tr>
<tr>
<td>Prior CVA</td>
<td>20%</td>
<td>55%</td>
<td>19%</td>
</tr>
<tr>
<td>CHADS (mean)</td>
<td>2.1</td>
<td>3.5</td>
<td>2.1</td>
</tr>
<tr>
<td>TTR (mean)</td>
<td>64%</td>
<td>55%</td>
<td>62%</td>
</tr>
<tr>
<td>CVA %/yr</td>
<td>1.11 vs 1.71  p &lt; 0.001</td>
<td>2.12 vs 2.42  p = 0.12</td>
<td>1.27 vs 1.60  p &lt; 0.001</td>
</tr>
<tr>
<td>Bleed (major) %/yr</td>
<td>3.32 vs 3.57  p = 0.31</td>
<td>3.45 vs 3.6  p = 0.58</td>
<td>2.13 vs 3.09  p &lt; 0.001</td>
</tr>
<tr>
<td>Bleed (ICH) %/yr</td>
<td>0.3 vs 0.74  p &lt; 0.001</td>
<td>0.49 vs 0.74  p = 0.019</td>
<td>0.24 vs 0.47  p &lt; 0.001</td>
</tr>
<tr>
<td>Mortality</td>
<td>NS</td>
<td>NS</td>
<td>3.52 vs 3.94  p 0.047</td>
</tr>
</tbody>
</table>

Adapted from Table 2 and 3 Katsnelson M et al. Stroke 2012;43: 1179—1185.
ARS Question
Which Patient is Best Suited for Radiofrequency Catheter Ablation?

1. 80 year old with persistent atrial fibrillation
2. 68 year old symptomatic patient after 2 trials of antiarrhythmic Rx with paroxysmal atrial fibrillation
3. Obese asymptomatic patient with sleep apnea and paroxysmal atrial fibrillation
4. 64 year old with EF of 35% and LA size of 5.5 cms
5. 74 year old hypertensive with atrial fibrillation for the past 2 years and symptomatic palpitations

Treatment Goals and Strategies

Rate control
- Pharmacologic
  - Ca²⁺ blockers
  - β-blockers
  - Digitalis
  - Amiodarone
- Nonpharmacologic
  - Ablate and pace

Rhythm Control
- Pharmacologic
- Nonpharmacologic
  - Catheter ablation
  - Pacing
  - Surgery
  - Implantable devices

Antithrombotic Rx
- Pharmacologic
  - Warfarin
  - Aspirin
  - Thrombin Inhibitor
  - Factor Xa inhibitor
- Nonpharmacologic
  - Removal/isolation
  - LA appendage
Antiarrhythmic Drug Efficacy for Chronic AF:

**MUCH less than Perfect**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Mean (range)</th>
<th>No. Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>No drug</td>
<td>31 (15 - 56)</td>
<td>12</td>
</tr>
<tr>
<td>Quinidine</td>
<td>41 (11 - 54)</td>
<td>11</td>
</tr>
<tr>
<td>Disopyramide</td>
<td>49 (44 - 54)</td>
<td>3</td>
</tr>
<tr>
<td>Propafenone</td>
<td>39 (30 - 46)</td>
<td>3</td>
</tr>
<tr>
<td>Flecaainde</td>
<td>62 (49 - 81)</td>
<td>3</td>
</tr>
<tr>
<td>Sotalol</td>
<td>42 (37 - 49)</td>
<td>3</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>53 (36 - 83)</td>
<td>4</td>
</tr>
</tbody>
</table>

Studies followed patients for at least 6 months after cardioversion


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**Pulmonary Vein Isolation**

- The most common triggers of AF are ectopic atrial beats that arise from the muscle sleeves of the pulmonary vein (PV), clustered in the vicinity of the pulmonary vein-left atrial junction.
Catheter Placement During AF Ablation


Ablation for AF: Typical Indications/Candidacy

Indications
- Symptomatic (ie. palpitations, fatigue, effort intolerance)
- Antiarrhythmic drugs ineffective or not tolerated

Better candidacy
- Younger (age < 70 y)
- paroxysmal>persistent>longstanding
- Minimal structural heart disease or L atrial enlargement

Worse candidacy
- Age > 70 y
- Minimal Sx
- LA enlargement >5.0 cms,
- LV dysfunction, severe pulmonary disease, OSA

Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

Ablation vs Antiarrhythmic Meds For Preventing AF Recurrence
N = 432 with AF; Meta-analysis of 4 randomized clinical trials

<table>
<thead>
<tr>
<th>Source</th>
<th>ADT more effective</th>
<th>CPVA more effective</th>
<th>Risk ratio (95% CI)</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pappone et al, 2006</td>
<td></td>
<td></td>
<td>3.86 (2.65-5.63)</td>
<td>37.5</td>
</tr>
<tr>
<td>Stabile et al, 2006</td>
<td></td>
<td></td>
<td>6.43 (2.91-14.21)</td>
<td>18.1</td>
</tr>
<tr>
<td>Wazni et al, 2005</td>
<td></td>
<td></td>
<td>4.22 (2.14-8.32)</td>
<td>22.0</td>
</tr>
<tr>
<td>Krittayaphong et al, 2003</td>
<td></td>
<td></td>
<td>2.00 (1.02-3.91)</td>
<td>22.4</td>
</tr>
<tr>
<td>Overall (95% CI)</td>
<td></td>
<td></td>
<td>3.73 (2.47-5.63)</td>
<td></td>
</tr>
</tbody>
</table>

Risk ratio
ADT = antiarrhythmic drug therapy
CPVA = circumferential pulmonary vein ablation


AF Ablation Outcomes

• 1-year post ablation: 11-44% recurrence rate.
• Re do: 15-30% success rate
• Antithrombotic Rx: Rx based on CHADS2 score, indefinitely at this point as sxs can’t be relied upon for the recurrence of atrial fibrillation

Asymptomatic Episodes More Common After Catheter Ablation for Atrial Fibrillation (DISCERN)*

- Implantable Cardiac Monitor (ICM) placed 3 months before and for a mean of 18 months after RF ablation for AF in 50 pts
- The ratio of asymptomatic to symptomatic AF episodes increased from 1.1 to 3.7 (p=0.002)
- Post-ablation state is the strongest predictor of asymptomatic AF with 12% of patients having asx recurrences only
- The presence of sxs can not be used to predict recurrence of AF

(DISCERN) Discerning Symptomatic and Asymptomatic Episodes Pre and Post Radiofrequency Ablation of Atrial Fibrillation

Summary of AF Ablation

- Ablation should generally be considered only after the failure of at least 1 AA drug.
- The success of AF ablation depends on patient selection. AF responds best to ablation in its early stages. Paroxysmal AF responds better than persistent AF which responds better than permanent AF.
- Recurrent AF post ablation occurs in up to 30% to 40% of patients. In nearly all redo procedures, the problem was the unrecognized gaps in conduction between the pulmonary vein and left atrium making the first ablation ineffective.

### Perioperative Management of Antithrombotic Therapy

**Primary Source Materials**

**Perioperative Management of Antithrombotic Therapy**

*Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: ACCP Guidelines*

**Douketis JD et al Chest 2012;141;e326-e350S**

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### Risk Stratification for Perioperative Thromboembolism: AF

<table>
<thead>
<tr>
<th>Risk</th>
<th>AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>CHADS score ≥5</td>
</tr>
<tr>
<td></td>
<td>Stroke/TIA within 3 months</td>
</tr>
<tr>
<td></td>
<td>Rheumatic heart valve disease</td>
</tr>
<tr>
<td>Moderate</td>
<td>CHADS 3-4</td>
</tr>
<tr>
<td>Low</td>
<td>CHADS 0-2</td>
</tr>
</tbody>
</table>

**Douketis JD et al Chest 2012;141;e326-e350S**
Primary Recommendations When Warfarin Must Be Withheld for Surgery

- Stop VKA 5 days preop (not less)
- Resume VKA 12-24 hr postop (not later) assuming adequate hemostasis
- AF, Mechanical Heart Valve, VTE
  - LOW risk: no bridging
  - HIGH risk: bridging
  - INTERMEDIATE: individualize

Douketis JD et al Chest 2012;141:e326-e350S

Where Did the Warfarin ‘5 days before surgery’ thing come from?

- Study: prospective cohort study of warfarin DC 5 d pre-op (n=224)
- Measured: INR 1 day pre-op
- Outcome (% INR >1.5) = 7%
- Prior trial DC 2-3 d pre-op → mean INR = 1.8

Douketis JD et al Chest 2012;141:e326-e350S
Primary Recommendations
Minor Surgery & VKA

<table>
<thead>
<tr>
<th>Procedure</th>
<th>VKA</th>
<th>Additional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor dental</td>
<td>Continue</td>
<td>Pro-hemostatic agent OR</td>
</tr>
<tr>
<td>Minor dental</td>
<td>D-C 2-3 days pre-op</td>
<td>None</td>
</tr>
<tr>
<td>Minor dermatologic</td>
<td>Continue</td>
<td>Optimize local hemostasis</td>
</tr>
<tr>
<td>Cataract</td>
<td>Continue</td>
<td>None</td>
</tr>
</tbody>
</table>

Douketis JD et al Chest 2012;141;e326-e350S

Peri-operative Risk From Dental Surgery in Perspective

“In reviewing the available literature, there are no well-documented cases of serious bleeding problems from dental surgery in patients receiving therapeutic levels of continuous warfarin… but there were several documented cases of serious embolic complications in patients whose warfarin therapy was withdrawn for dental treatment.”

### Primary Recommendations

#### Non-cardiac Surgery & ASA Monotherapy

<table>
<thead>
<tr>
<th>Baseline CV Risk</th>
<th>ASA</th>
<th>Additional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate-High</td>
<td>Continue</td>
<td>None</td>
</tr>
<tr>
<td>Low</td>
<td>D-C 7-10 d pre-op</td>
<td>None</td>
</tr>
</tbody>
</table>

Douketis JD et al Chest 2012;141;e326-e350S

### Primary Recommendations

#### Noncardiac Surgery & Dual Antiplatelet Therapy

<table>
<thead>
<tr>
<th>Baseline CV Risk</th>
<th>ASA</th>
<th>Additional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate-High</td>
<td>Continue</td>
<td>None</td>
</tr>
<tr>
<td>Low</td>
<td>D-C 7-10 d pre-op</td>
<td>None</td>
</tr>
</tbody>
</table>

Douketis JD et al Chest 2012;141;e326-e350S
What About The New Kids On the Block Peri-operatively?
- Apixaban (Eliquis)
- Dabigatran (Pradaxa)
- Rivaroxaban (Xarelto)

Surgery: Dabigatran (Pradaxa)

- GFR ≥50 mL/min: DC 1-2 days pre-op
- GFR < 50 mL/min: DC 3-5 days pre-op
- Consider longer for
  - major surgery
  - spinal puncture
  - spinal or epidural catheter/port
  - Need for complete hemostasis
Evolving Trends in Atrial Fibrillation Management and Stroke Risk Reduction

**Rivaroxaban (Xarelto)**
- **DC ≥ 24 hrs pre-op**
- Restart post-op as soon as adequate hemostasis has been established

**Apixaban (Eliquis)**
- **DC ≥ 48 hrs pre-op for procedures with mod-high risk of clinically significant bleed**
- **DC ≥ 24 hrs pre-op for procedures with low risk of bleed (or non critical & easily controlled area)**

**AF: Major Teaching Points**
- Stroke reduction with antithrombotic therapy (warfarin, dabigatran, rivaroxaban, apixaban) is VERY SUBSTANTIAL (±66% or more)
- ICH risk with warfarin is VERY LOW (<1%/yr) and EVEN LOWER with new agents (dabigatran, rivaroxaban, apixaban)
- Perioperative regimens for antithrombotic and antiplatelet therapies are specific to individual agents
- Catheter ablation for AF is promising, and often provides excellent symptom relief
- Antithrombotic therapy post-ablation is continued indefinitely, despite restoration of sinus rhythm
ARS #1
Clinical Scenario: Steve E.

Steve E, a 79 y/o hispanic male with a history of HTN and a left hemispheric stroke 2 years ago, was asymptomatic until 2 days ago when he developed intermittent palpitations and presented to your office. EKG: AF at 120 bpm.
Steve’s CHADS2 score is:
1) 1
2) 2
3) 4
4) 6
5) Not sure

ARS #2

A 62 year dermatologist has recently been diagnosed with AF. He has hypertension and type 2 diabetes, both of which are well controlled. Being a physician, he asks "I've read about all the treatments; which is the best treatment for my AF?" You should answer

1) All of the newer agents are statistically superior to warfarin for stroke risk reduction
2) The major reason to provide warfarin is because overall costs with warfarin are much less than other agents
3) In the absence of head-to-head trials, it is not possible to know if any one of the newer agents is superior to another
4) Major bleeding risk with newer agents is markedly less than with warfarin
ARS # 3
Perioperative Management of Tomas, a 62 Y.O. with AF, HTN, DM

- Tomas is undergoing CV surgery. His INR has been in the therapeutic range about 75% of the time on warfarin 5 mg/d. What should be done about his warfarin dose perioperatively?
  1) Continue 5 mg/d without interruption
  2) Discontinue warfarin 3 days preop, resume 12-24 hrs after adequate hemostasis
  3) Discontinue 5 days preop, resume 12-24 hrs after adequate hemostasis
  4) Switch to clopidogrel 75 mg/d 3 days preop, then resume warfarin 12-24 hrs after adequate hemostasis and discontinue clopidogrel

ARS #4
Which Patient is Best Suited for RF Ablation?

1. 80 year old with persistent atrial fibrillation
2. 68 year old symptomatic patient after 2 trials of antiarrhythmic Rx with paroxysmal atrial fibrillation
3. Obese asymptomatic patient with sleep apnea and paroxysmal atrial fibrillation
4. 64 year old with EF of 35% and LA size of 5.5 cms
5. 74 year old hypertensive with atrial fibrillation for the past 2 years and symptomatic palpitations
Allison has new onset AF resistant to several steps of pharmacotherapy. She has well controlled HTN and T2DM. She has a high level of awareness of her rapid heart rate, which impairs her QOL. She has heard of catheter ablation. If she undergoes successful ablation and is in sinus rhythm, what should be done about anticoagulation?

1) Anticoagulation can be omitted once she is in sinus rhythm
2) Anticoagulation should be used for 4-6 weeks post ablation
3) Anticoagulation should be used indefinitely despite sinus rhythm
4) Anticoagulation should be used for 2-3 months post ablation

On a scale of 1 to 5, please rate how confident you would be in treating a patient with atrial fibrillation.

1. Not at all confident
2. Slightly confident
3. Moderately confident
4. Pretty much confident
5. Very confident
Which of the statements below describes your approach to anticoagulation of patients with atrial fibrillation?

1. I do not manage atrial fibrillation, nor do I plan to this year.
2. I did not manage patients with atrial fibrillation before this course, but as a result of attending this course I’m thinking of managing it now.
3. I do manage patients with atrial fibrillation and this course helped me change my treatment methods.
4. I do manage patients with atrial fibrillation and this course confirmed that I don’t need to change my treatment methods.