The 5 Most Important Things You Need to Know About Atrial Fibrillation

John D. Day, MD
Director, Intermountain Heart Rhythm Specialists
Disclosures

• None
The 5 Most Important Things You Need to Know About Atrial Fibrillation

1. Lifestyles cause, prevent, or reverse AF
2. Dementia may be the real risk of AF
3. AF drugs aren’t perfect
4. Ablation often curative in early AF
5. Must change lifestyle for late AF ablations
Global AF/Flutter Burden

Prevalence of atrial fibrillation and flutter (per 100,000) by region, 2010

Asia vs. North America

Incidence per 100,000 Person-years

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>19.8</td>
<td>33.8</td>
</tr>
<tr>
<td>North America</td>
<td>196.3</td>
<td>264.5</td>
</tr>
</tbody>
</table>

Incidence of AF in California
Medicare patients per 1,000 Person Years

- 13,967,949 patients
- 375,318 incident AF episodes over 3.2 years

Circulation. 2013 Dec 3;128(23):2470-7
Some Physical Activity
~50% Reduction

Circ Arrhythm Electrophysiol. 2014;7:620-625
Long-Term Effect of Goal Directed Weight Management in an Atrial Fibrillation Cohort: A Long-term Follow-Up Study (LEGACY Study)

Rajeev K. Pathak, MBBS¹; Melissa E. Middeldorp¹; Megan Meredith¹; Abhinav B. Mehta, M Act St²; Rajiv Mahajan, MD, PhD¹; Christopher X. Wong, MBBS¹; Darragh Twomey, MBBS¹; Adrian D. Elliott, PhD¹; Jonathan M. Kalman, MBBS, PhD⁵; Walter P. Abhayaratna, MBBS, PhD⁶; Dennis H. Lau, MBBS, PhD¹; Prashanthal Sanders, MBBS, PhD¹
LEGACY Study

- 355 overweight A-Fib patients
- Average baseline weight: 220 pounds
- 38% successful, lost average of 36 pounds
- Kept weight off for 1-2 years
How Important is Losing 36 Pounds?

- 46% of A-Fib patients went into remission
- Systolic blood pressure down 18 mmHg
- Inflammation decreased 76% (CRP)
- Diabetes into remission: 88%
- LDL down 16%, triglycerides 31%
- Heart disease reversed
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Atrial fibrillation is independently associated with senile, vascular, and Alzheimer’s dementia

T. Jared Bunch, MD,*† J. Peter Weiss, MD,*† Brian G. Crandall, MD,*† Heidi T. May, PhD, MSPH,† Tami L. Bair, RN,† Jeffrey S. Osborn, MD,*† Jeffrey L. Anderson, MD,† Joseph B. Muhlestein, MD,† Benjamin D. Horne, PhD, MSPH,† Donald L. Lappe, MD,† John D. Day, MD, FHRSA†

From the *Intermountain Heart Rhythm Specialists, Intermountain Medical Center, Murray, Utah; †Department of Cardiology, Intermountain Medical Center, Murray, Utah.

Heart Rhythm 2010;7:433-437
37,026 patients, 5 years follow-up
MRI/neurologist confirmed diagnosis
AF + Alzheimer’s → rapid decline

Heart Rhythm 2010;7:433-437
Dementia and Alzheimer's Disease

Odds Ratio

Increased Risk

Age (years)

Heart Rhythm 2010;7:433-437
Heart Rhythm. 2012 Nov;9(11):1761-8

Study, Year (Ref. #) | Adjusted HR (95% CI)
---|---
Primary analysis
Tilvis et al. 2004 | 2.88 (1.26-6.06)
Elias et al. 2006 | 4.01 (1.84-8.74)
Forti et al. 2007 | 1.10 (0.40-3.03)
Marengoni et al. 2009 | 0.90 (0.50-1.70)
Peters et al. 2009 | 1.03 (0.62-1.72)
Bunch et al. 2010 | 1.36 (1.13-1.63)
Dublin et al. 2011 | 1.38 (1.10-1.73)
Marzona et al. 2012 | 1.41 (1.13-1.76)
OVERALL | 1.42 (1.17-1.72) P < 0.001
Sensitivity analysis
Rastas et al. 2007 | 0.86 (0.50-1.47)
OVERALL | 1.36 (1.12-1.65) P = 0.002

Lower dementia risk with AF | Higher dementia risk with AF
A COMPARISON OF RATE CONTROL AND RHYTHM CONTROL IN PATIENTS WITH ATRIAL FIBRILLATION

The Atrial Fibrillation Follow-up Investigation of Rhythm Management (AFFIRM) Investigators*
Cognitive Changes Immediately

<table>
<thead>
<tr>
<th>Domains</th>
<th>Controls (N = 90)</th>
<th>PRX AF (N = 90)</th>
<th>PER AF (N = 90)</th>
<th>p PRX / controls</th>
<th>p PER / controls</th>
<th>p PRX / PER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domains</td>
<td>92.4 ± 15.4</td>
<td>86.2 ± 13.8</td>
<td>82.9 ± 11.5</td>
<td>&lt; 0.01</td>
<td>&lt; 0.01</td>
<td>0.08</td>
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<tr>
<td>1-Immediate Memory</td>
<td>95.6 ± 17.5</td>
<td>89.9 ± 14.7</td>
<td>87.1 ± 16.9</td>
<td>0.02</td>
<td>&lt; 0.01</td>
<td>0.24</td>
</tr>
<tr>
<td>2-Visuo-spatial abilities</td>
<td>93.8 ± 16.7</td>
<td>89.9 ± 18.2</td>
<td>84.8 ± 14.8</td>
<td>0.14</td>
<td>&lt; 0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>3-Language</td>
<td>92.9 ± 11.4</td>
<td>88.8 ± 9.1</td>
<td>88.1 ± 8.7</td>
<td>&lt; 0.01</td>
<td>&lt; 0.01</td>
<td>0.59</td>
</tr>
<tr>
<td>4-Attention</td>
<td>101.4 ± 21.2</td>
<td>96.6 ± 16.6</td>
<td>94.9 ± 15.6</td>
<td>0.09</td>
<td>0.02</td>
<td>0.47</td>
</tr>
<tr>
<td>5-Delayed memory</td>
<td>93.5 ± 11.7</td>
<td>88.7 ± 14.7</td>
<td>87.7 ± 14</td>
<td>0.02</td>
<td>&lt; 0.01</td>
<td>0.64</td>
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How good are antiarrhythmics?

Major Bleeding in Patients With Atrial Fibrillation Receiving Apixaban or Warfarin

The ARISTOTLE Trial (Apixaban for Reduction in Stroke and Other Thromboembolic Events in Atrial Fibrillation): Predictors, Characteristics, and Clinical Outcomes

- Definition: 2 units PRBCs at a critical site or death
- Brain, eye, spine, joint, pericardium, retroperitoneal
- 18,140 patients, average CHADS score of 2.1
- Warfarin: 3.09% per year
- Apixaban: 2.13% per year
Cerebral Microbleeds

Lancet Neurol. 2009 Feb;8(2):165-74
Annual Warfarin Microbleeds

Charidimou, Front Neurol, 2012
### Reverse CHADS-VASc Score

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<tr>
<th>CHA$_2$DS$_2$-VASc</th>
<th>CHA$_2$DS$_2$-VASc$^*$</th>
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<tbody>
<tr>
<td>Congestive HF</td>
<td>✔</td>
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<tr>
<td>Hypertension</td>
<td>✔</td>
</tr>
<tr>
<td>Age $\geq 75$ y</td>
<td>✔</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>✔</td>
</tr>
<tr>
<td>Stroke/TIA/TE</td>
<td></td>
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<tr>
<td>Vascular disease (prior MI, PAD, or aortic plaque)</td>
<td></td>
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<tr>
<td>Age 65-74 y</td>
<td></td>
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<tr>
<td>Sex category (i.e., female sex)</td>
<td></td>
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<tr>
<td>Maximum score</td>
<td></td>
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<tr>
<th></th>
<th>1</th>
<th>0</th>
<th>0</th>
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</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>1</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Age $\geq 75$ y</td>
<td>2</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>Stroke/TIA/TE</td>
<td>2</td>
<td>4</td>
<td>4.0</td>
</tr>
<tr>
<td>Vascular disease (prior MI, PAD, or aortic plaque)</td>
<td>1</td>
<td>5</td>
<td>6.7</td>
</tr>
<tr>
<td>Age 65-74 y</td>
<td>1</td>
<td>6</td>
<td>9.8</td>
</tr>
<tr>
<td>Sex category (i.e., female sex)</td>
<td>1</td>
<td>7</td>
<td>9.6</td>
</tr>
<tr>
<td>Maximum score</td>
<td>9</td>
<td>8</td>
<td>6.7</td>
</tr>
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2014 AHA/ACC/HRS Atrial Fibrillation Treatment Guidelines
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Ablation Success by Fibrosis

329 patients, 15 centers

DEECAF Multicenter Study: JAMA. 2014;311(5):498-506
AF Begets AF…Fast…

- Electrical remodeling within 30 minutes
- Fibrosis within 5 weeks

Circulation 1996;94:2968-74, Circulation 1999;100:87-95
AF Diagnosis to Ablation: Success Rates

<table>
<thead>
<tr>
<th>1-3 months</th>
<th>3-12 months</th>
<th>&gt; 1 year</th>
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<tbody>
<tr>
<td>82%</td>
<td>81%</td>
<td>77%</td>
</tr>
<tr>
<td>81%</td>
<td>77%</td>
<td>75%</td>
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<tr>
<td>80%</td>
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<td>79%</td>
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<td>78%</td>
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<td>77%</td>
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<td>76%</td>
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<td>75%</td>
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<tr>
<td>74%</td>
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<tr>
<td>73%</td>
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<tr>
<td>72%</td>
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Ablation Success

Heart Rhythm. 2013 Sep;10(9):1257-62
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   ablations
Impact of sustained weight loss on AF draws more attention to benefits of lifestyle change

Atrial fibrillation is a complicated and vexing disorder, placing patients at high risk for a number of events, particularly stroke. In 2015, results of a new study called LEGACY gave physicians and patients with atrial fibrillation some hope. Findings presented at the American College of Cardiology Scientific Sessions demonstrated that sustained weight loss was associated with reduced burden of atrial fibrillation, improved symptom severity and greater odds of arrhythmia-free survival.

The LEGACY study clarified what some have previously suspected: Weight management is an essential part of treatment for AF. The attention that the study has received since the data were presented and subsequently published in the Journal of the American College of Cardiology may prompt physicians who treat AF to change their practice to place greater emphasis on helping their patients lose weight and maintain weight loss.

"The study is already making its way into clinical guidelines and surely will change current clinical practice," Prashanthan Sanders, MBBS, PhD, FHRs, Knappman-National Heart Foundation chair of cardiology.

John D. Day, MD, FHRs, FACC, performs catheter ablation on a patient with atrial fibrillation; he says treating obesity in these patients may have beneficial effects.
Lifestyle Modification After AF Ablation

One Ablation

2 Ablations

n = 165

Lifestyle Changes

No Changes

Sanders P. 2014 Annual Scientific Sessions of Heart Rhythm Society
Increased AF Recurrence Risk Following AF Ablation: If Unable to Lose 3% of Weight

- n=407
- 3 Year Follow Up
Questions?

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