

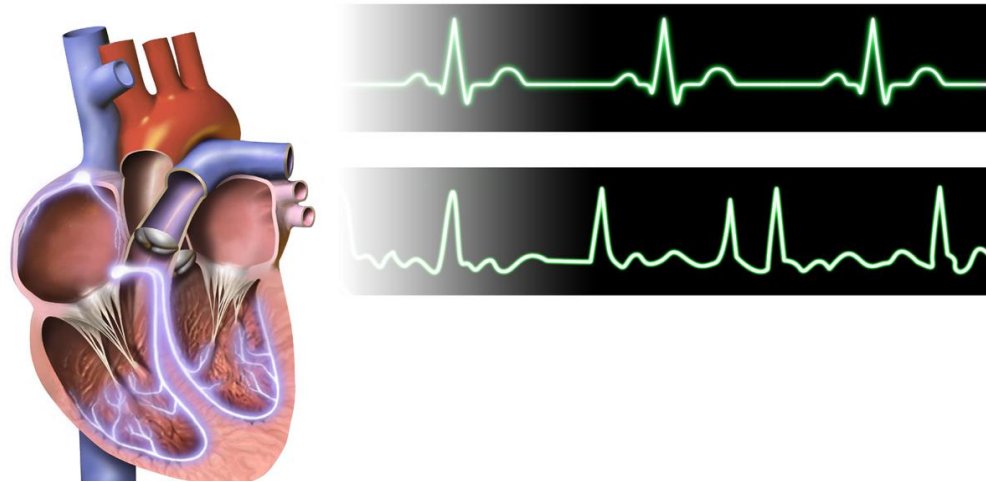


# Women and Atrial Fibrillation Challenges in Disease and Treatment

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# What Is Atrial Fibrillation?



**Atrial fibrillation is an irregular and often rapid heart rhythm, caused by extremely rapid and chaotic electrical impulses within the heart's atria (the two upper cardiac chambers).**

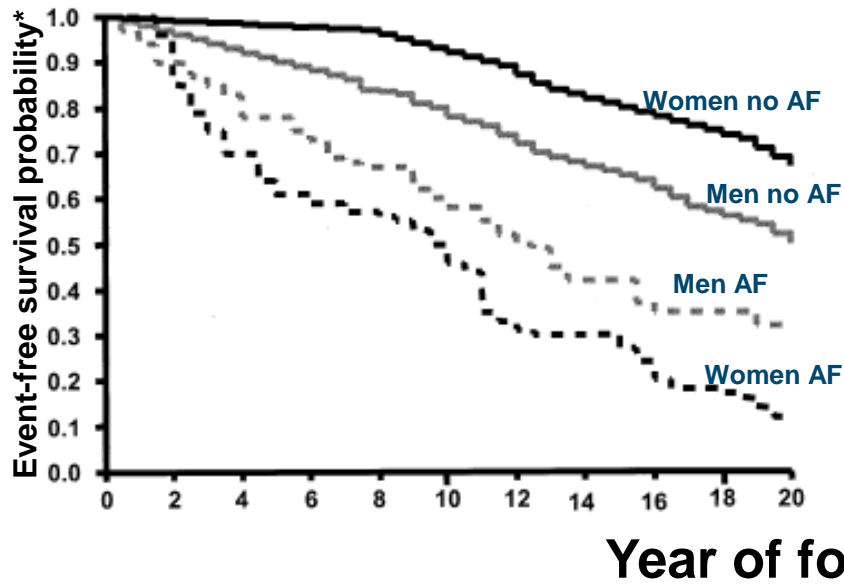
**The two main adverse effects of this heart rhythm are:**

- 1. Stroke (due to clots that form in the heart and travel to the brain)**
- 2. Heart Failure (due to rapid and irregular heart beats that cause the heart muscle to weaken)**

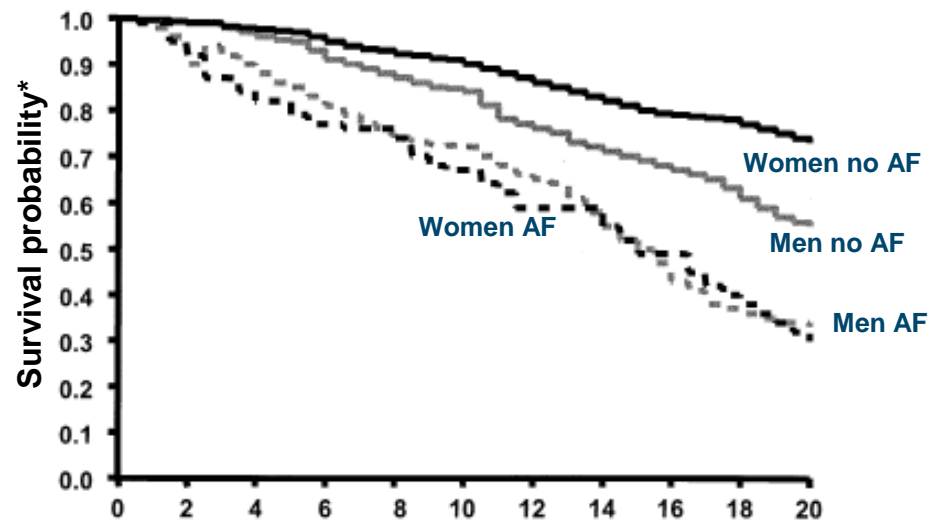
# Renfrew / Paisley Study: Long-Term Risks Associated with AF

N = 15,856 aged 45–64 years

## CV hospitalizations or deaths

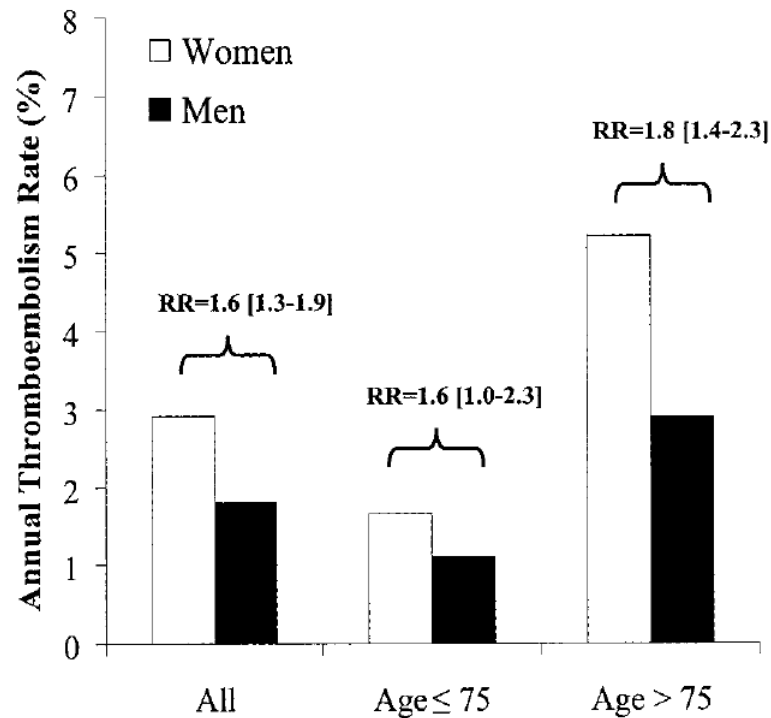


## Mortality



\*Age-adjusted

# Men v. Women Stroke Risk of AF



Annual Thromboembolism Rate (95% CI)

Risk Factor	Women	Men
Age ≥75 y	5.0 (4.3–5.7)	2.8 (2.3–3.4)
Prior ischemic stroke	9.7 (7.0–13.6)	7.3 (5.2–10.3)
Diagnosed hypertension	4.0 (3.4–4.7)	2.4 (2.0–3.0)
Diagnosed congestive heart failure	5.7 (4.7–6.9)	2.5 (1.9–3.2)
Diagnosed coronary artery disease	4.7 (3.8–6.0)	2.4 (1.9–3.1)
Diabetes mellitus	5.0 (3.7–6.6)	3.1 (2.3–4.2)
CHADS <sub>2</sub> score		
0	0.6 (0.2–1.2)	0.5 (0.3–0.9)
1	1.8 (1.3–2.4)	1.2 (0.9–1.7)
2	4.4 (3.6–5.4)	1.9 (1.4–2.6)
3	6.1 (4.8–7.8)	3.9 (2.8–5.3)
4	9.1 (6.2–13.3)	6.5 (4.2–10.0)
5	7.7 (3.6–16.5)	2.6 (0.8–8.1)
6	11.4 (2.5–51.9)	16.2 (7.4–35.6)

	Time Off Warfarin, person-years	Women, %	Events, n	Relative Risk, Women vs Men
ATRIA cohort	15 494	44	369 Ischemic strokes, 25 peripheral emboli	1.6 (1.3–2.0)*
AFI <sup>2</sup>	3432	34	81 Ischemic strokes, 10 peripheral emboli	1.2 (0.8–1.8)†
SPAF <sup>3</sup>	3977	28	130 Ischemic strokes	1.6 (P=0.01)†
Framingham cohort <sup>5</sup>	2844	48	83 Strokes (both ischemic and hemorrhagic)	1.9 (1.2–3.1)†

Studied 13 559 adults with AF and recorded patients' clinical characteristics and the occurrence of hospitalizations for ischemic stroke, peripheral embolism, and major hemorrhagic events

# Severity of Stroke with AF

- 1061 patients admitted with new stroke
  - 20.2% had AF
- Bedridden state
  - With AF 41.2%
  - Without AF 23.7%
- A stroke in the setting of Afib is 2.2x more likely to leave a patient bedridden
- No Difference in Risk with Intermittent and Persistent AF

# CHADS<sub>2</sub>

# CHA<sub>2</sub>DS<sub>2</sub>-VASc

## High-Risk Factors= 2 points

Previous CVA / TIA / Embolism  
Mitral Stenosis

Prosthetic heart valve

## Moderate-Risk Factors= 1 point

Age  $\geq$  75 yrs

HTN

CHF / EF  $\leq$  35%

DM

## Weaker-Risk Factors= no points

Female

CAD

Thyrotoxicosis

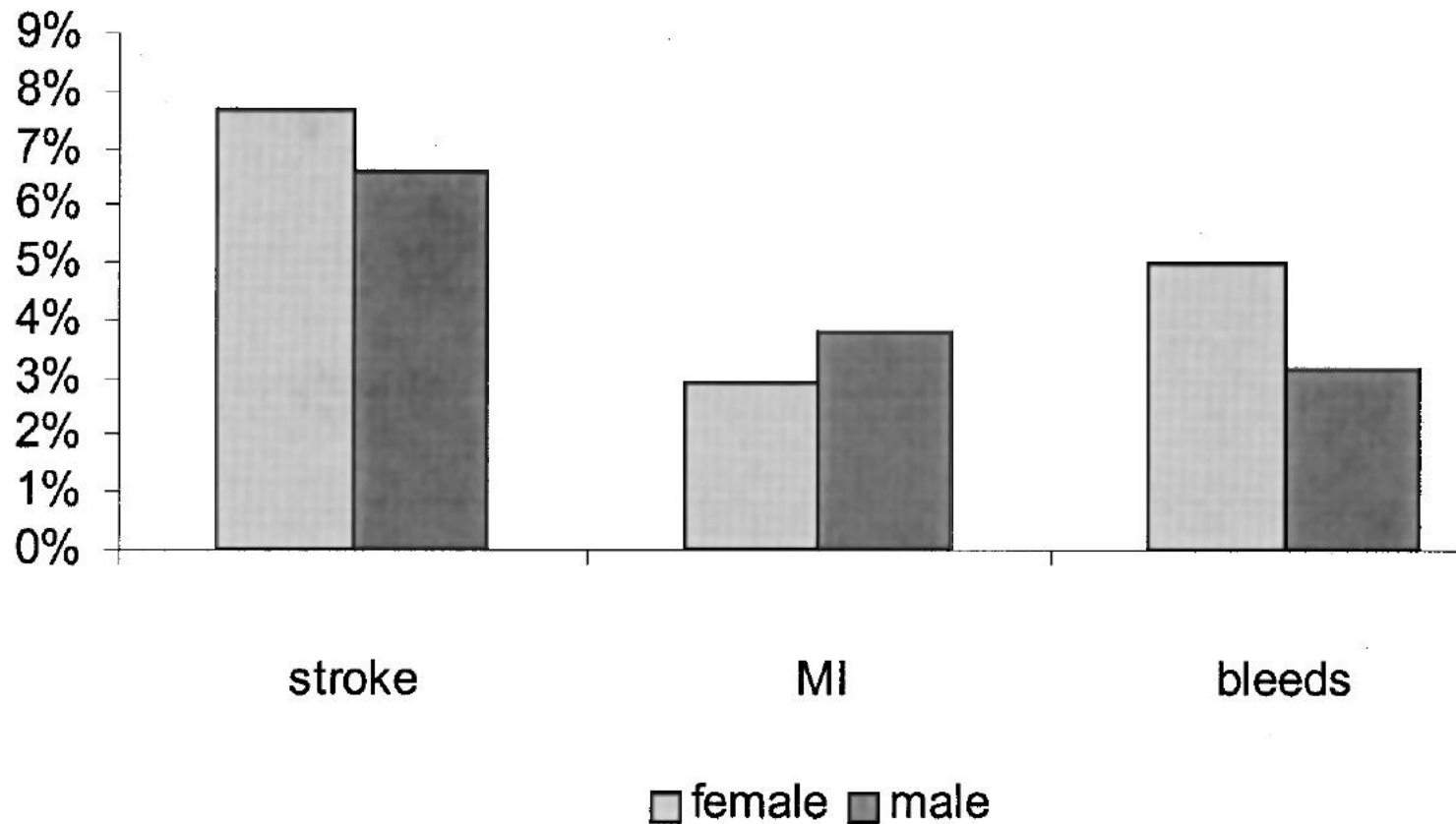
Age 65 – 74 yrs

Vascular disease

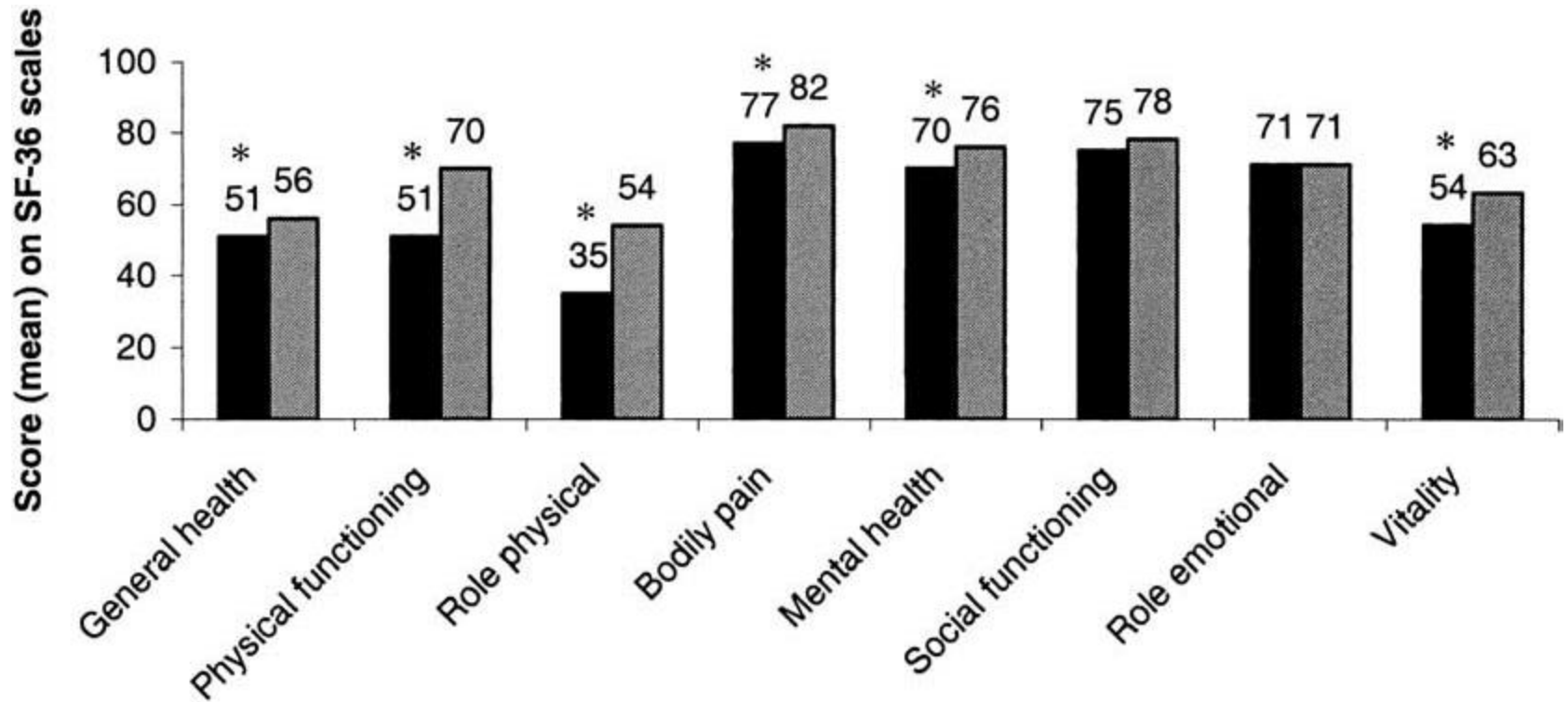
(a) Risk factors for stroke and thrombo-embolism in non-valvular AF	
'Major' risk factors	'Clinically relevant non-major' risk factors
Previous stroke, TIA, or systemic embolism Age $\geq$ 75 years	Heart failure or moderate to severe LV systolic dysfunction (e.g. LV EF $\leq$ 40%) Hypertension - Diabetes mellitus Female sex - Age 65–74 years Vascular disease <sup>a</sup>
(b) Risk factor-based approach expressed as a point based scoring system, with the acronym CHA <sub>2</sub> DS <sub>2</sub> -VASc (Note: maximum score is 9 since age may contribute 0, 1, or 2 points)	
Risk factor	Score
Congestive heart failure/LV dysfunction	1
Hypertension	1
Age $\geq$ 75	2
Diabetes mellitus	1
Stroke/TIA/thrombo-embolism	2
Vascular disease <sup>a</sup>	1
Age 65–74	1
Sex category (i.e. female sex)	1
<b>Maximum score</b>	<b>9</b>

# Afib Patients with $\geq 1$ risk for stroke

## Men (44%) were more likely to be on Coumadin than Women (24%)



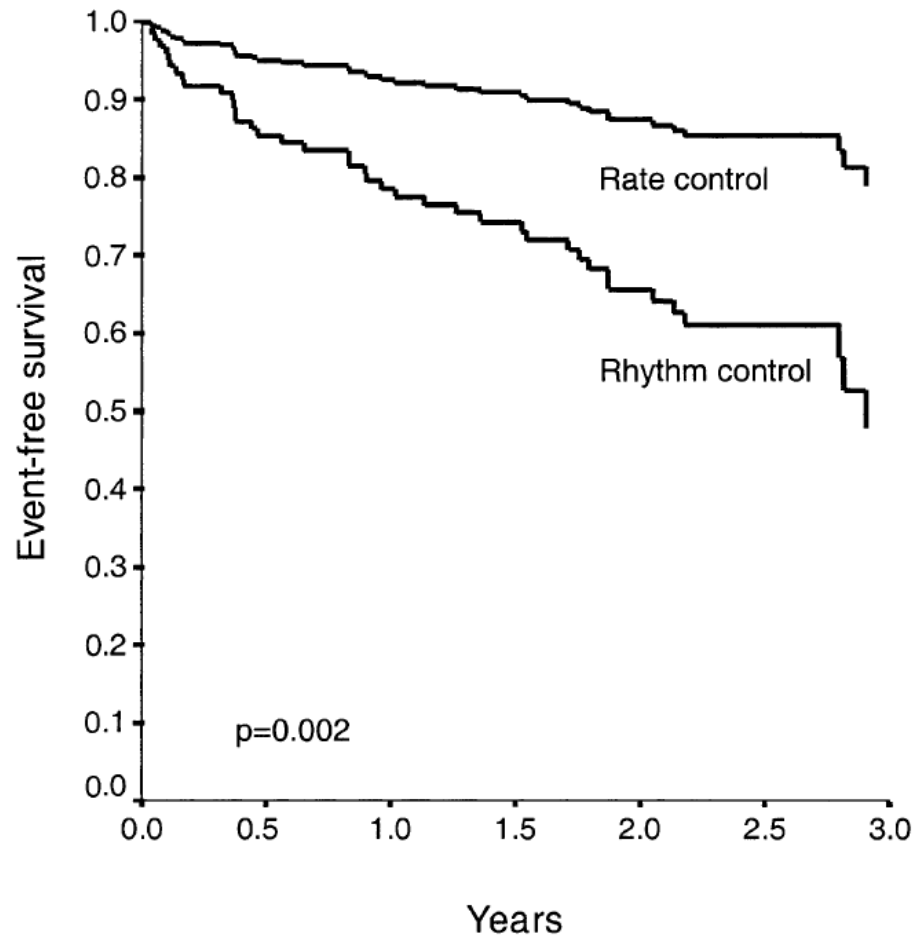
# Quality of Life Scores



**Men (grey shaded bars) outscored Women (black bars) in 6 of 8 categories**



# Women's Outcomes With AF Treatment Strategy



# Bottom Line

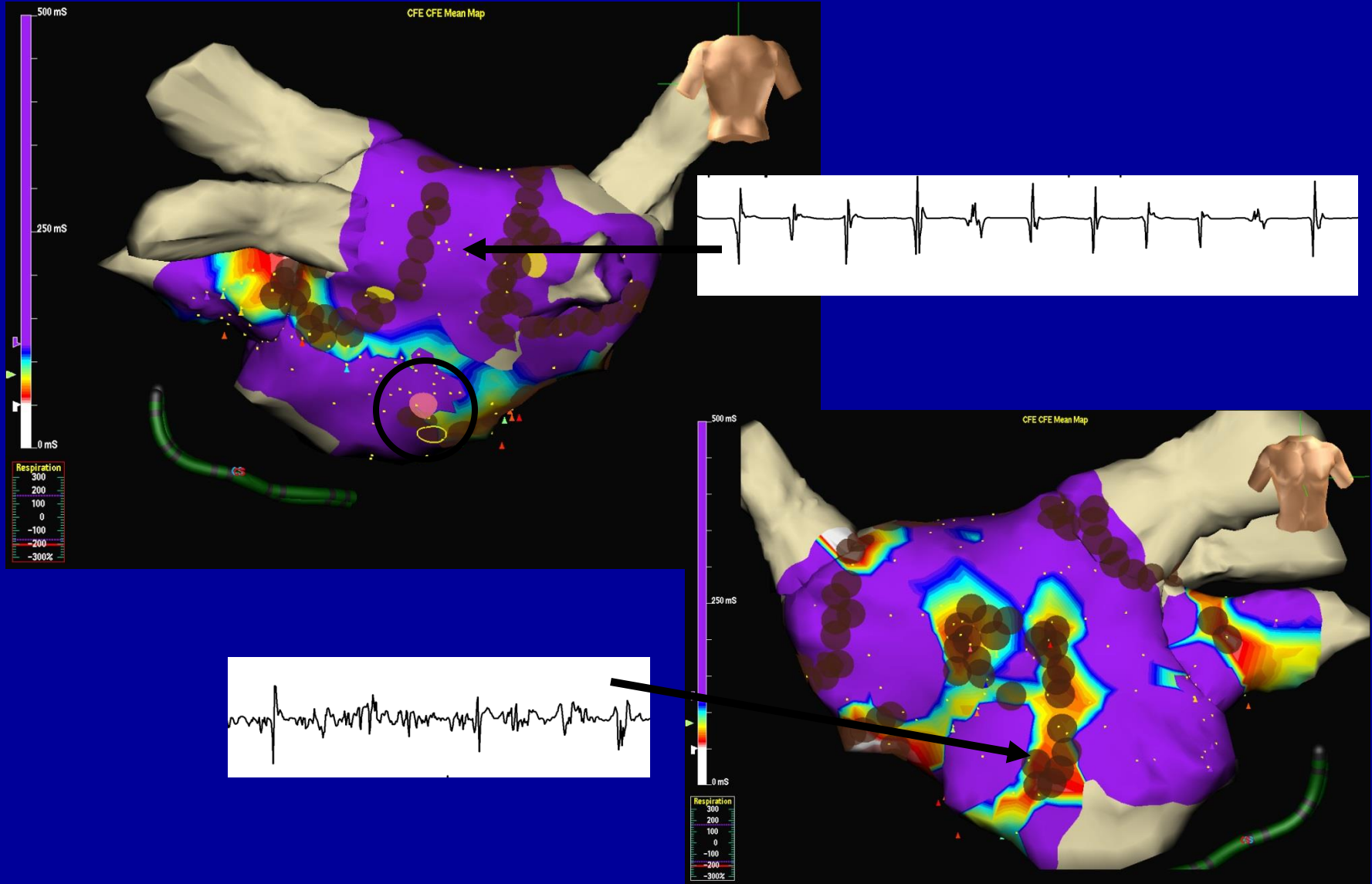
- Women have a higher risk of stroke than men and a greater loss of quality of life.
- Treatment with medications yield a higher risk of morbidity and mortality for women than for men.

# The True Magnitude of the Problem



"The doctor is too frightened to see you"

# Pulmonary Vein and Scar Ablation



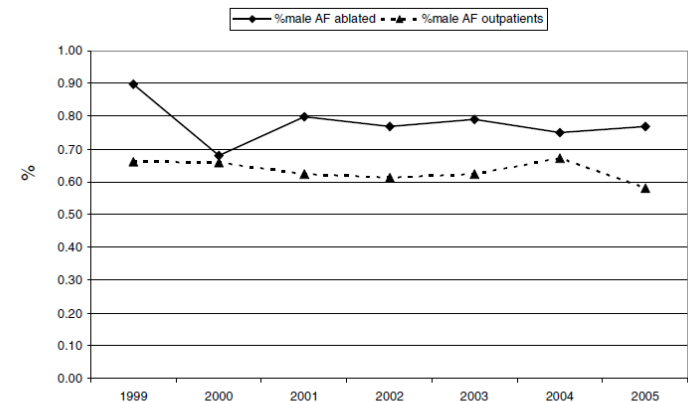
# Characteristics of Patients Undergoing Atrial Fibrillation Ablation: Trends Over a Seven-Year Period

Patient Characteristics by Year

Characteristic	1999 (N = 29)	2000 (N = 47)	2001 (N = 109)	2002 (N = 187)	2003 (N = 200)	2004 (N = 221)	2005 (N = 265)	P
Age (years)	47.1	52.4	53.5	55.1	54.8	56.8	55.7	<0.01
Gender (% male)	90	68	80	77	79	75	77	NS
Prior AF duration (years)	7.6	7.7	5.7	7.6	7.1	6.7	7.4	NS
# Prior AA drugs	3.9	3.6	3.3	3.0	3.1	2.6	2.0	<0.01
Left atrial size (cm)	4.0	4.2	4.1	4.5	4.4	4.5	4.4	<0.01
LV ejection fraction (%)	55	54	56	60	59	59	58	NS
Prior stroke/TIA (%)	3.4	2.1	3.6	3.7	6	6.2	10	NS
Prior cardiomyopathy (%)	0	0	0.9	5.3	5.5	7.7	16	<0.05
Obstructive sleep apnea (%)	10.3	12.8	9.2	7.5	10.5	11.8	12	NS
Body mass index	31.2	29.6	29.1	30.8	29.1	30.7	28.6	NS

68-90% of Afib ablations are done in men

Larger % of men are ablated than % of men with AF seen in clinic



Ablated (N)	29	47	109	187	200	221	265
Outpatient (N)	4187	4397	4826	5277	5796	5814	4000