

# Long Term Rhythm Monitoring (the more you look, the more you find)

## What has been used?

1. 24 - 72 hr, 7 d ambulatory (Holter) ECG @ 3, 6, and q6 mos
2. Intermittent ECG event monitor
  - a. Call in with symptoms
  - b. Call in without symptoms
    - i. daily, twice daily, x days/wk
  - c. Call in with symptoms
3. Continuous loop ECG event monitor  $\pm$  automatic arrhythmia detection algorithm

# **Long Term Rhythm Monitoring (the more you look, the more you find)**

## **What has been used?**

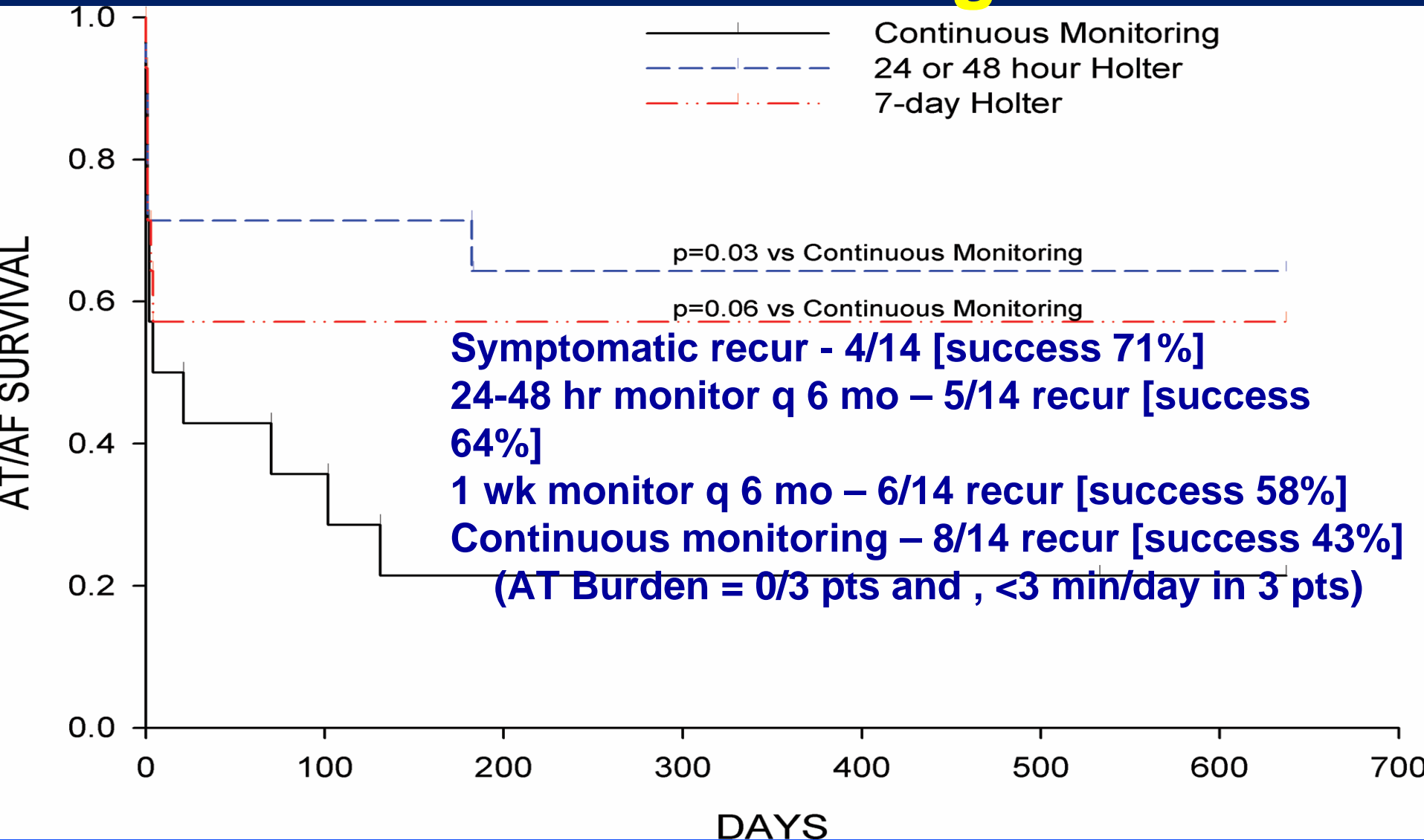
### **4. Implanted device**

- a. Pacemaker with atrial lead**
- b. Implantable loop recorder**
- c. Problem of how often they are interrogated**
- d. Era of home monitoring with daily assessment**

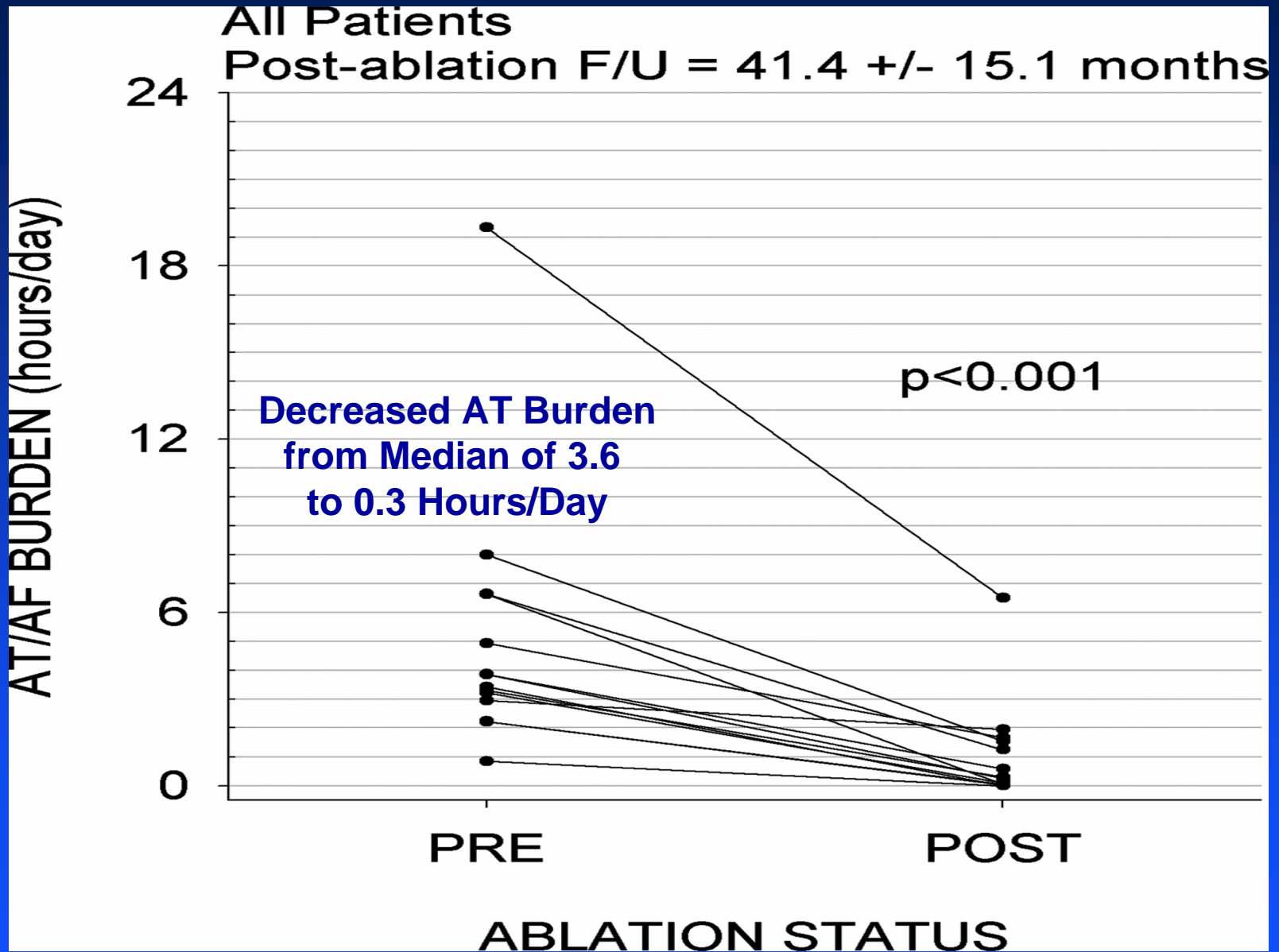
### **5. Pulse (palpated or using a device)**

- a. Daily, twice daily (or more, or less) even if no symptoms**
- b. PRN with symptoms**
- c. Compliance/reliability (? 60%)**

# Time to 1<sup>st</sup> AF Recurrence Post 3 Month Blanking Period



# AT/AF Burden (Hrs/Day) Pre & Post RFA



# **CURRENT MONITORING STUDIES**

**1.MOST – retrospective**

**2.TRENDS – completed**

**3.ASSERT**

**4.RATE**

**5.IMPACT**

**6.Others**

# Evaluation of Monitoring Data

1. Not all mode switching = AF
2. How important is the duration of an AF episode?
3. Concept of AF burden
4. How much AF should trigger an intervention?
  - a. For oral anticoagulation
  - b. For antiarrhythmic drug therapy
  - c. For rate control therapy
  - d. For ablation

# Problems with Periodic Monitoring

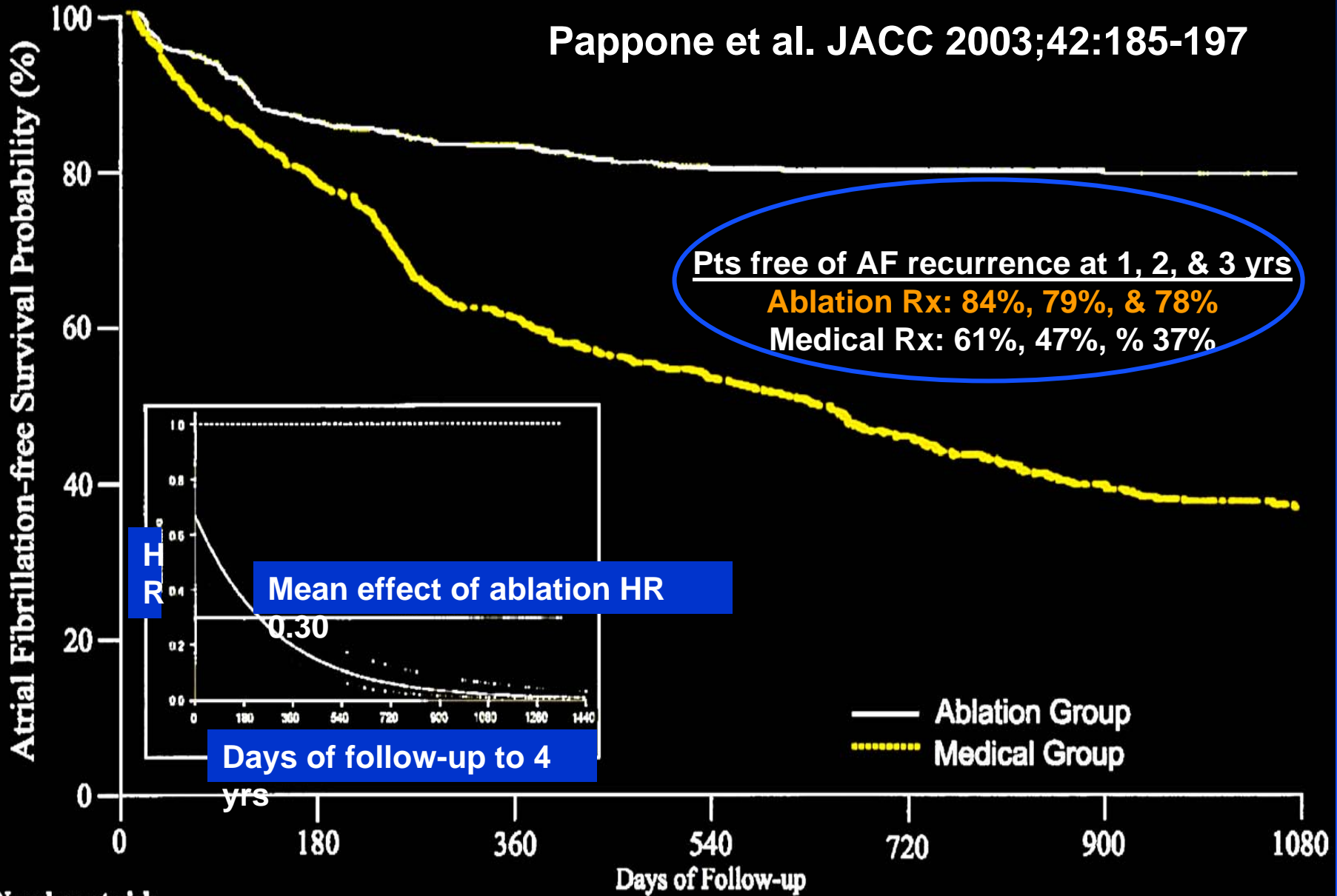
1. Incidence of asymptomatic AF said to be up to 7 times more common post RFA than pre RFA
2. Cost and practicality of most monitoring modes
3. Physician and patient compliance
4. What is the threshold for initiating or terminating various therapies?
  - a. Oral anticoagulation
  - b. Antiarrhythmic drug therapy
  - c. Rate control therapy
  - d. Reablation

# Asymptomatic AF Pre and Post RFA

- 114 patients post ablation for symptomatic AF: 7 day Holters at 3, 6 and 12 months.
- At baseline (pre RFA) 57% had both Sx and Asx AF; only 5% exclusively had Asx AF.
- Post ablation (6 mo), 50% had documented AF.
- In 37% of patients with post RFA AF, the AF was asymptomatic (compared with only 5% pre ablation),  $p < 0.05$ .
- Mean HR for Sx and Asx were not different.



Pappone et al. JACC 2003;42:185-197



**Number at risk**

Ablation	589	507	479	379	282	217	135
Medical	582	456	354	277	207	141	97

# Back Up Slides

# MOST Trial: Atrial High Rate Events (AHREs) and Clinical Outcomes

■ With AHREs    ■ Without AHREs



# Rhythm Outcome & Perception of AF After RF Ablation

	<b>n</b>	<b>Pts w/Asympt AF</b>	<b>Pts w/ Sympt AF</b>	<b>Pts w/Sympt &amp; Asympt AF</b>
<b>Pre Abl</b>	<b>92</b>	<b>5(5%)</b>	<b>35 (38%)</b>	<b>52 (57%)</b>
<b>Post Abl</b>				
<b>Immed</b>	<b>78</b>	<b>17 (22%) p=0.027</b>	<b>16 (21%) p = 0.002</b>	<b>45 (57%) p = 0.48</b>
<b>3 Mo</b>	<b>49</b>	<b>18 (38%) p=0.021</b>	<b>8 (16%) p = 0.001</b>	<b>23 (46%) p = 0.001</b>
<b>6 Mo</b>	<b>54</b>	<b>20 (37%) p=0.021</b>	<b>14 (26%) p = 0.078</b>	<b>20 (37%) p = 0.001</b>
<b>12 Mo</b>	<b>25</b>	<b>9 (20%) p=0.05</b>	<b>5 (20%) p = 0.0725</b>	<b>11 (44%) p = 0.001</b>

# Pts without AF recurrence post procedure

Time	Modified maze procedure	Pulmonary v isolation	p
Free of AF at 3 mo (%)	89	59	0.006
Free of AF at 6 mo (%)	88	50	0.002
Free of AF at 12 mo (%)	91	69	0.06
Free of AF at last follow-up (%)	90	59	0.003

# Free of AF at 12 mos & last follow-up

Type of AF	Modified maze procedure (%)	Pulmonary v isolation (%)
<b>Paroxysmal AF</b>		
•12-mo follow-up	80	75
•Last follow-up	93	70
<b>Permanent/ persistent AF</b>		
•12-mo follow-up	94	60
•Last follow-up	96	43

# Asymptomatic Atrial Fibrillation

**In patients with a hx of AF who get AF recurrence :**

**-in more than 1/3 (38%), the AF will be both asymptomatic and of >48 hours duration**

**-16% will develop asymptomatic AF of >48 hours duration even after documentation of freedom from AF for 3 months**

**-Implication:** success rates of maintaining continuous sinus rhythm in patients with a history of AF are often grossly overestimated