WELCOME

Rate vs Rhythm Control
Civil War or Common Ground

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Disclosures

Consulting relationship with Biosense Webster.

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Rate Control vs AAD

- AFFIRM- AAD vs rate control
  - 2000 patients in each arm
  - Amiodarone 2/3 of rhythm control patients

- More adverse events in the rhythm control arm
  - Driven by amiodarone
  - Mortality not statistically different

AFFIRM Inv*, NEJM*, 347 (23):1825-33, Dec. 2002

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Fellow's Dream

Rhythm control vs Ablation

Krittayaphong et al (2003)[54]	30	Paroxysmal, persistent	55 (45–65; ablation); 47 (32–62; AAD)	No	Radiofrequency, PVI with LA lines; with CTI ablation and RA lines	79%	40%	0·02
Wazni et al (RAAFT study; 2005)[55]	70	Mainly paroxysmal	53 (45–61; ablation); 54 (46–62; AAD)	Yes	Radiofrequency, PVI	87%	37%	<0·001
Stabile et al (CACAF study; 2006)[52]	245	Paroxysmal, persistent	62 (53–71; ablation); 62 (52–72; AAD)	No	Radiofrequency, PVI with LA lines; with or without CTI ablation	56%	9%	<0·001
Oral et al (2006)[56]	245	Persistent	57 (48–66)	No	Radiofrequency, CPVA	70%	4%	<0·001
Pappone et al (APAF study; 2006)[57]	198	Paroxysmal	55 (45–65; ablation); 57 (47–67; AAD)	No	Radiofrequency, CPVA with CTI ablation	86%	22%	<0·001
Jais et al (A4 study; 2008)[58]	112	Paroxysmal	51 (40–62)	No	Radiofrequency, PVI with or without LA lines; with or without CTI ablation	89%	23%	<0·001
Forleo et al (2008)[59]	70	Paroxysmal, persistent	63 (54–72; ablation); 65 (59–71; AAD)	No	Radiofrequency, PVI with or without LA lines; with or without CTI ablation	80%	43%	0·001
Wilber et al (Thermocool study; 2010)[60]	167	Paroxysmal	56 (ablation); 56 (AAD)	No	Radiofrequency, PVI with or without LA lines with or without CFAEs; with or without CTI ablation with or without RA lines	66%	16%	<0·001
Cosedis Nielsen et al (MANTRA-PAF study; 2012)[21,51]	294	Paroxysmal	56 (ablation); 54 (AAD)	Yes	Radiofrequency, circumferential PVI with voltage abatement	85%	71%	0·01
Packer et al (STOP-AF study; 2013)[61]	245	Paroxysmal	57 (ablation); 56 (AAD)	No	Cryoablation, PVI; with or without LA lines	69·9%	7·3%	<0·001
Morillo et al (RAAFT2 study; 2014)[50]	127	Mainly paroxysmal	56 (ablation); 54 (AAD)	Yes	Radiofrequency, circumferential PVI with electrical isolation	45%	28%	0·02
Mont et al (SARA study; 2014)[53]	146	Persistent	55 (ablation); 55 (AAD)	No	Radiofrequency, PVI with or without LA lines with or without CFAEs	70%	44%	0·002
Di Biase et al (AATAC study; 2016)[29]	203	Persistent with heart failure, LVEF <40%, ICD	62 (ablation); 60 (AAD)	No	Radiofrequency, PVI with or without LA posterior wall isolation with or without LA lines with or without CFAEs with or without SVC isolation	70%	34%	<0·001

Piccini, J, *Lancet*, 388:829-40 (2016)

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12 Years Later

- Complications: 5% →1%
- Stay in the hospital: yes → no
- Success rate: 67% → >85%
- Duration: 5 hours → < 2 hours
- Pre-operative CT scan: yes → ?no
- Radiation: >60 minutes of xray → <3 minutes

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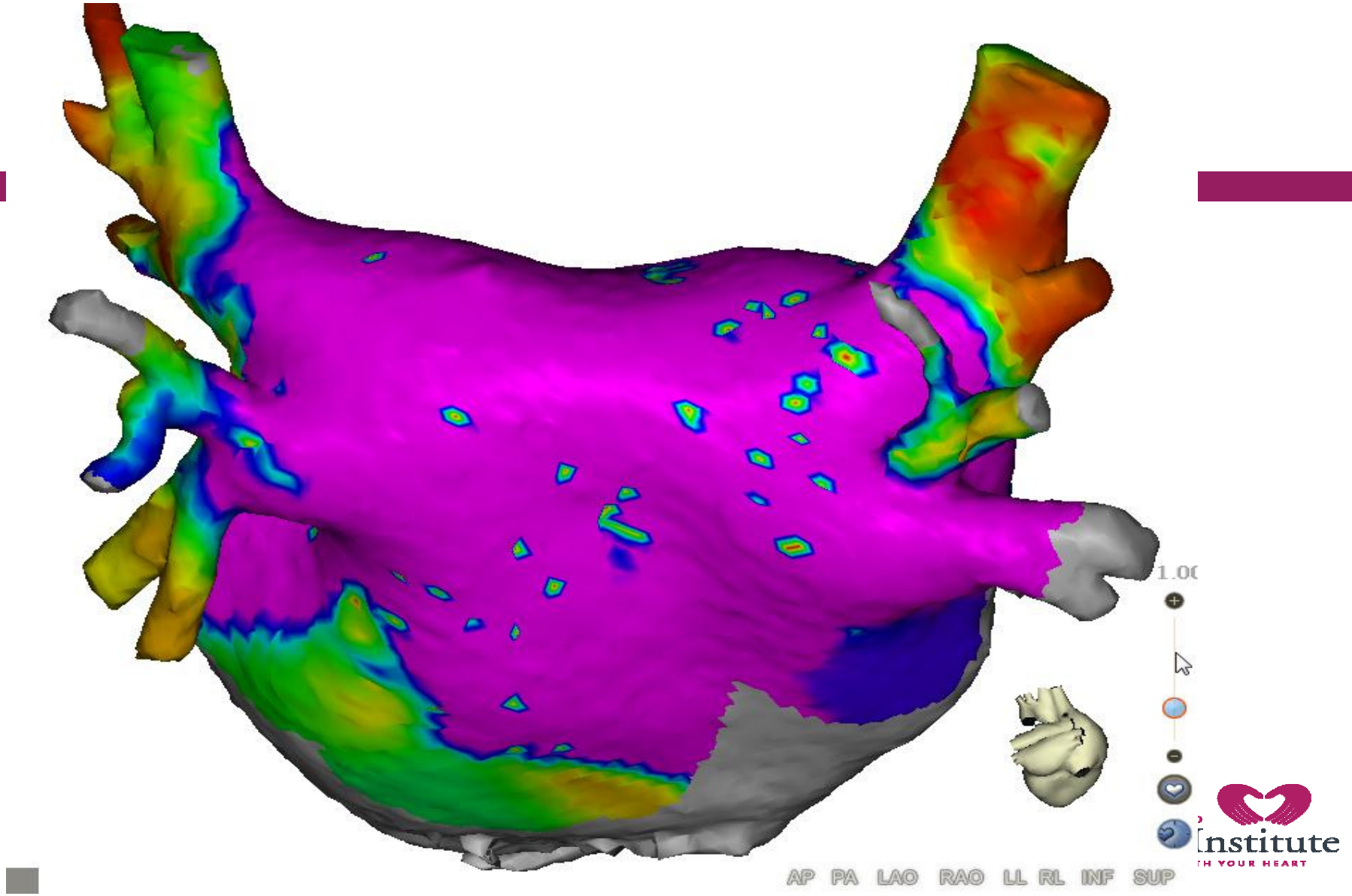
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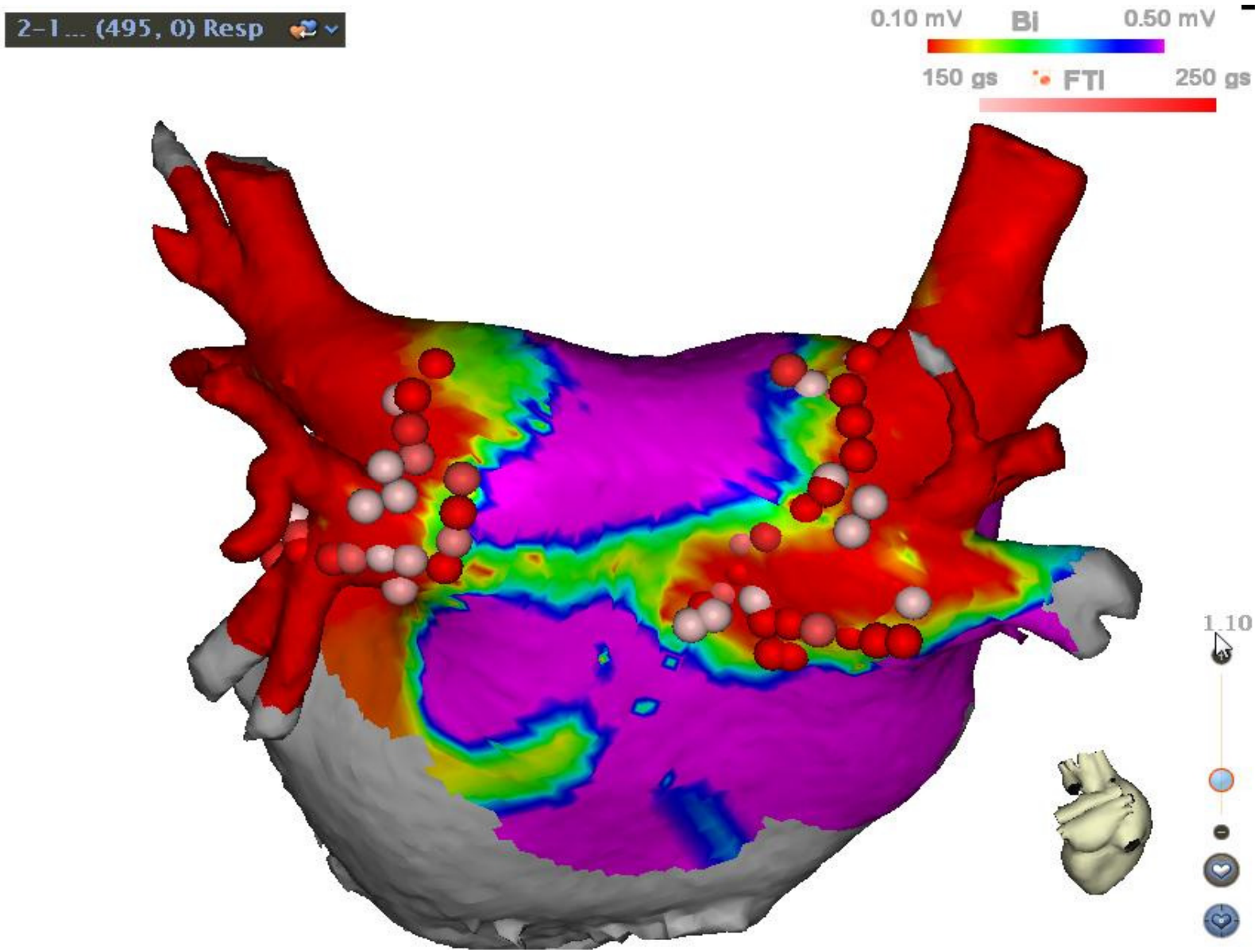
2-1 ... (495, 0) Resp
0.10 mV
Bi
0.50 mV
150 gs
FTI
250 gs
1_10

- 80 yo woman presents with pneumonia to an outside hospital. She has multiple myeloma with a normal creatinine on maintenance chemotherapy. She had a prior stent to the RCA, has moderate MR. She is found to be in atrial fibrillation. They start her on anticoagulation and amiodarone. They attempt to cardiovert her after a TEE. She recurs 24 hours later. She is referred to you for further therapy.

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Question 1

- What is the current therapy most commonly offered to this woman.

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A. Anti-arrhythmic drugs to convert her to sinus rhythm
B. Rate control with Metoprolol and/or Cardizem and/or Digoxin
C. AV node ablation and PPM
D. Ablation for control/cure of atrial fibrillation

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Does ablation reduce strokes?

- Intermountain data base
- Compared 4,212 Afib ablation patients to 16,484 patients with afib who did not have ablation and 16,484 patients who do not have afib, age/sex matched.
- Collected CHADS2 score information and followed for 3 years.

Bunch, T et al , *Heart Rhythm*, 9:1272-7, Sept 2013

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Table 3 Age-based long-term stroke rates among AF patients who underwent ablation compared to those AF patients who did not underwent ablation

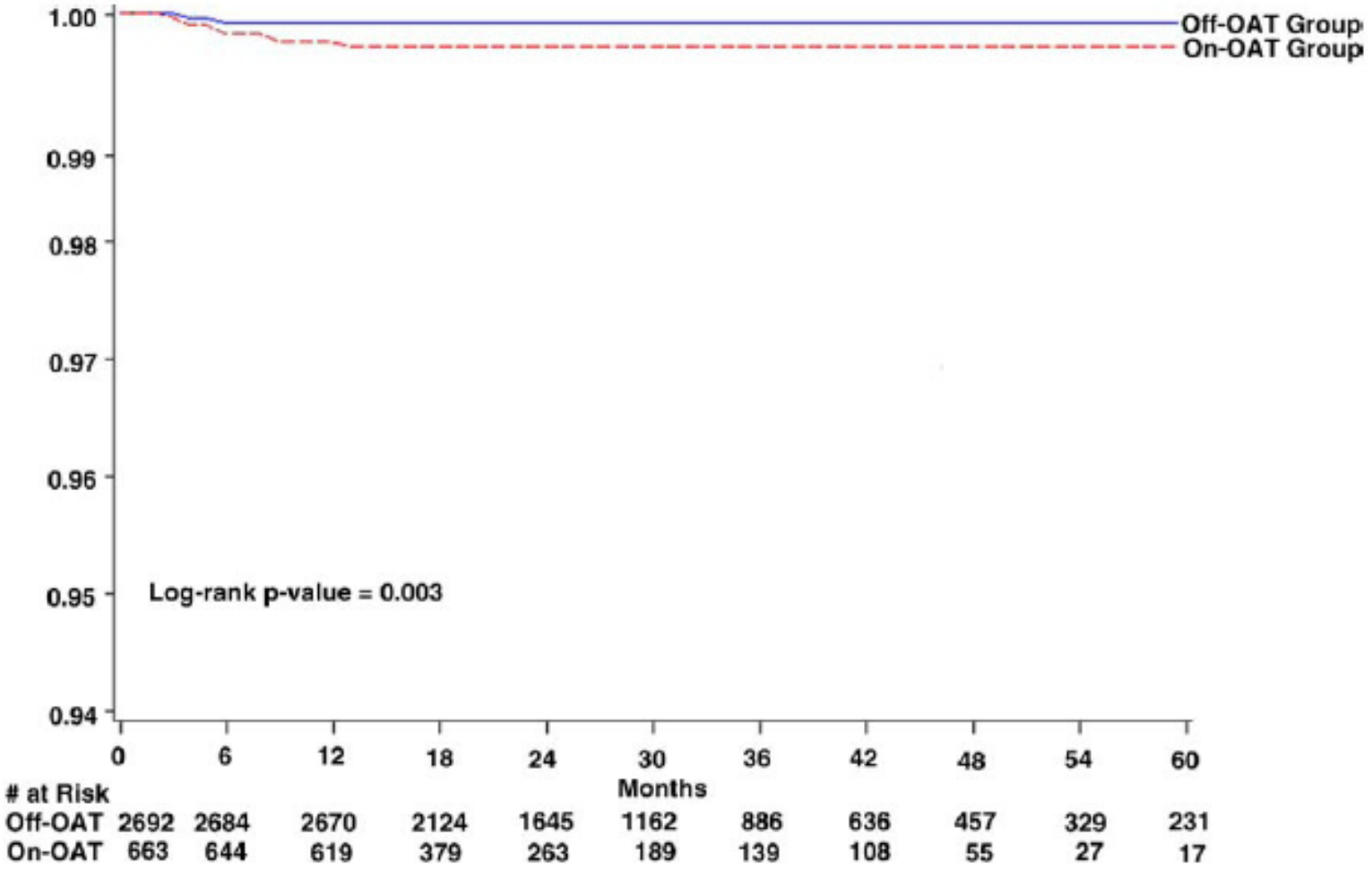
Age	AF, no ablation	AF, ablation	*P*	Univariate HR for ablation	Multivariate HR for ablation
<60, n = 5638	3.6%	1.3%	<.0001	0.38, *P* < .0001	0.38, *P* < .0001
60–69, n = 5804	5.6%	2.9%	<.0001	0.50, *P* < .0001	0.59, *P* = .005
70–79, n = 7082	8.7%	3.8%	<.0001	0.42, *P* < .0001	0.50, *P* < .0001
≥80, n = 2536	8.6%	5.8%	.07	0.55, *P* = .009	0.72, *P* = .17

AF = atrial fibrillation; HR = hazard ratio.

Table 4 CHADS-2 score based long-term stroke rates among AF patients who underwent ablation compared to those AF patients who did not undergo ablation

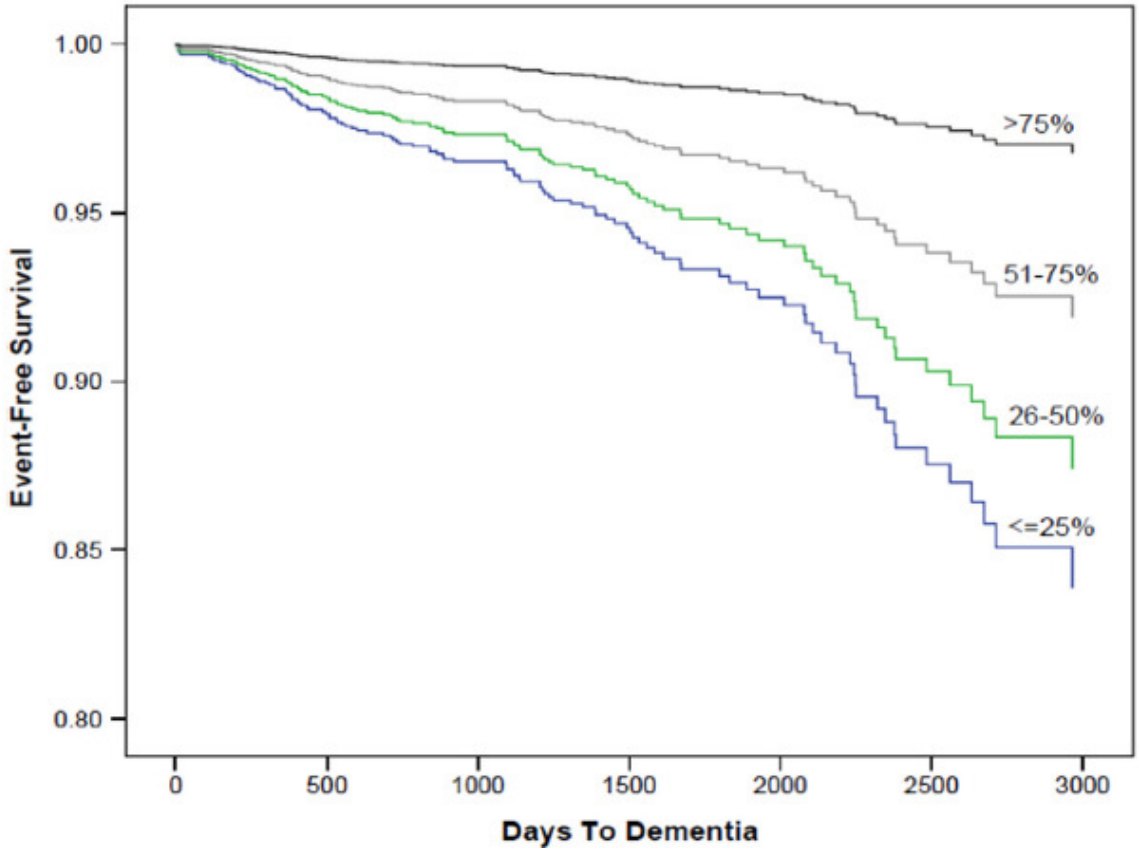
CHADS2	No AF	AF, no ablation	AF, ablation	*P* score
0	2.6% (178 of 6902)	3.7% (220 of 6017)	1.6% (26 of 1628)	<.0001
1	3.0% (144 of 4772)	5.4% (243 of 4477)	1.9% (20 of 1050)	<.0001
2	4.3% (129 of 3015)	7.1% (217 of 3072)	2.2% (15 of 696)	<.0001
3	7.4% (108 of 1452)	9.0% (174 of 1939)	6.1% (31of 512)	.06
4	10.7% (52 of 484)	17.6% (152 of 864)	9.1% (20 of 220)	<.0001
≥5	13.9% (31 of 223)	18.6% (89 of 479)	13.2% (14 of 106)	.18

Bunch, T et al , *Heart Rhythm*, 9:1272-7, Sept 2013



Natale A et al, *JACC* Feb 23, 2010

Dementia and Warfarin



Jacobs et al, *HRS* 2014;11:2206-2213

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Structural Heart Disease

- Coronary artery disease
- Diastolic heart failure
- Systolic heart failure
- Mitral valve disease
- Aortic valve disease
- Hypertrophic cardiomyopathy

- QOL is improved over medical therapy in all of these conditions.

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Renal Fxn and Ablation

- 224 patients underwent ablation with RFA
- Age 55, all paroxysmals, mostly men.
- 16% had a GFR <60 mL/min/1.73m2 ie renal insufficiency
- Serial holters were used to reassess atrial fibrillation
- 24.3% of the patients with CKD had recurrence compared with 6.7% of the patients with normal kidney function

Tokuda M , *Heart* , 97:137-142 (2011)

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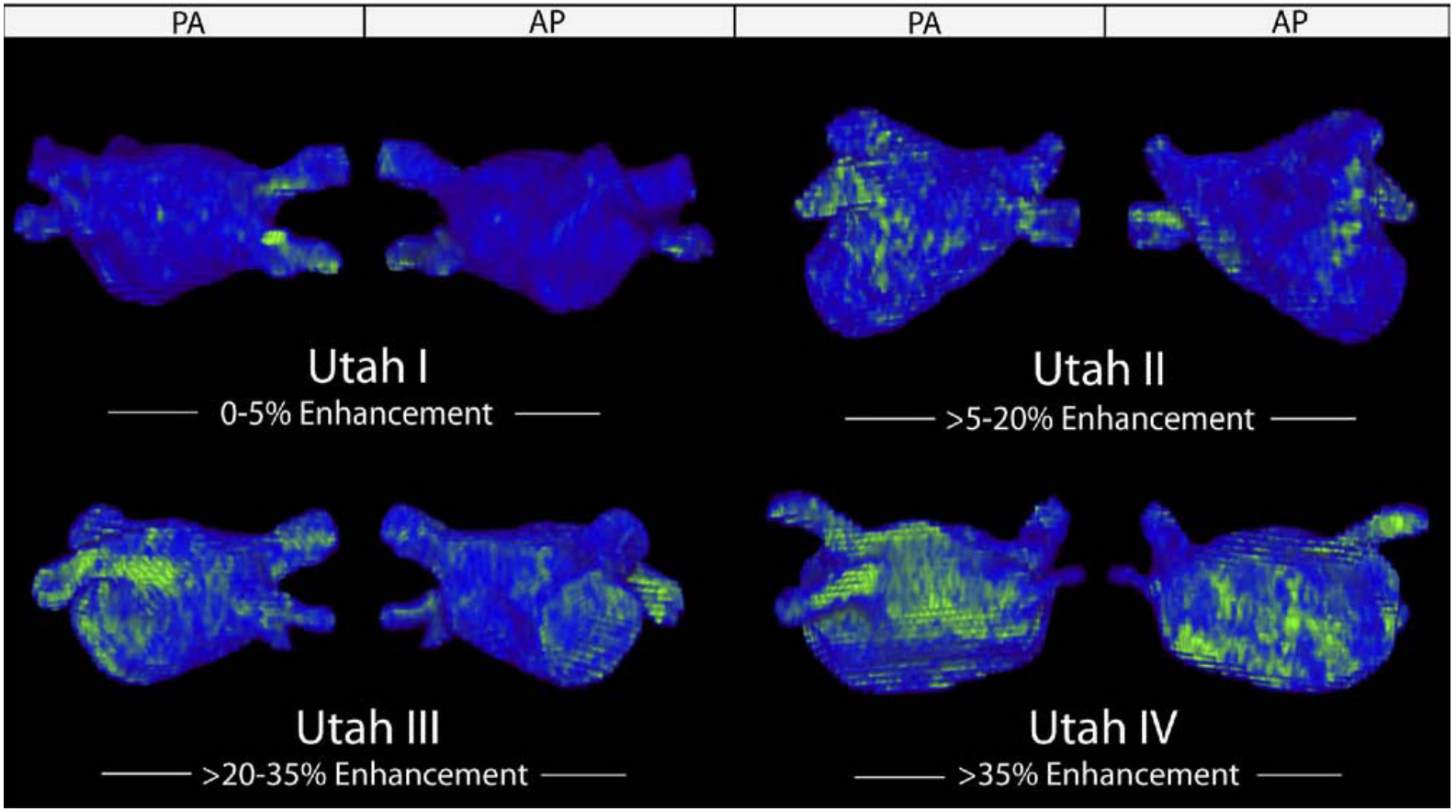

Mankopf,C, *HRS* 2010

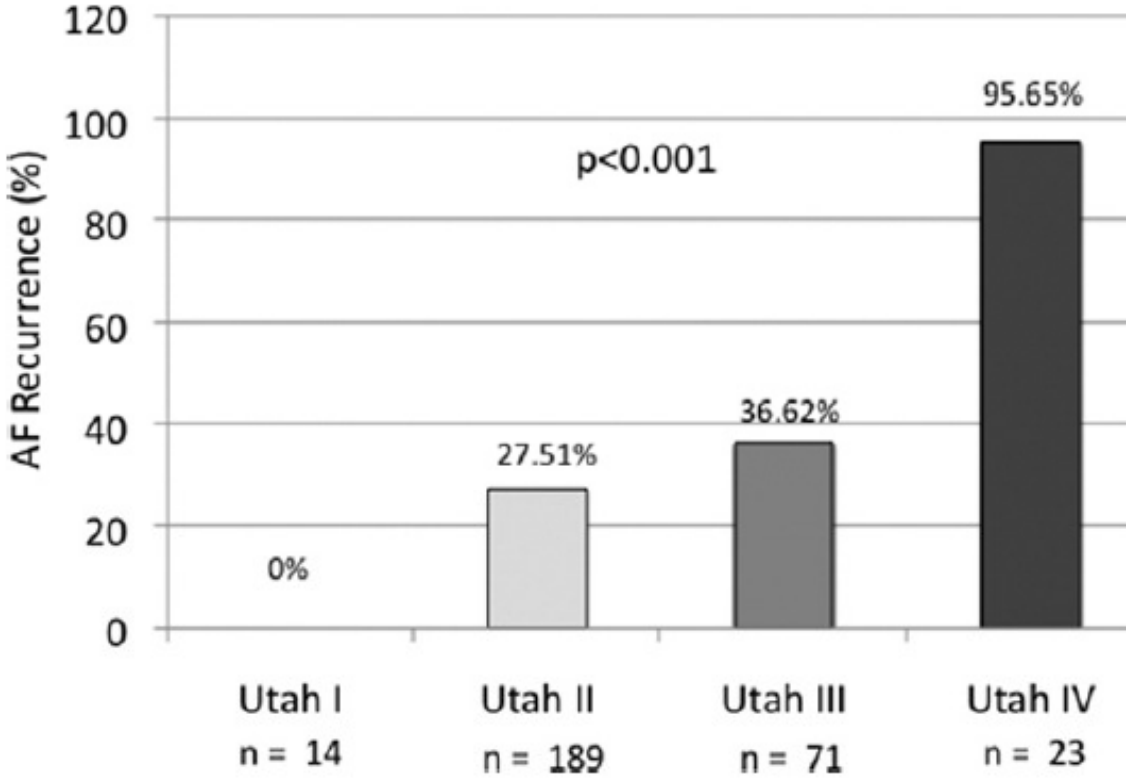

Figure 3 Recurrence in groups Utah I to IV.

- Extent of LA fibrosis predicts outcome post ablation

Mankopf,C, *HRS* 2010

Back to our patient….

- Atrial fibrillation is not like a defibrillator
- There is a QOL benefit, and it begins to accrue immediately.
- Cure vs relief of symptoms
- Repeated hospitalization
- Stroke risk
- Complications from medications

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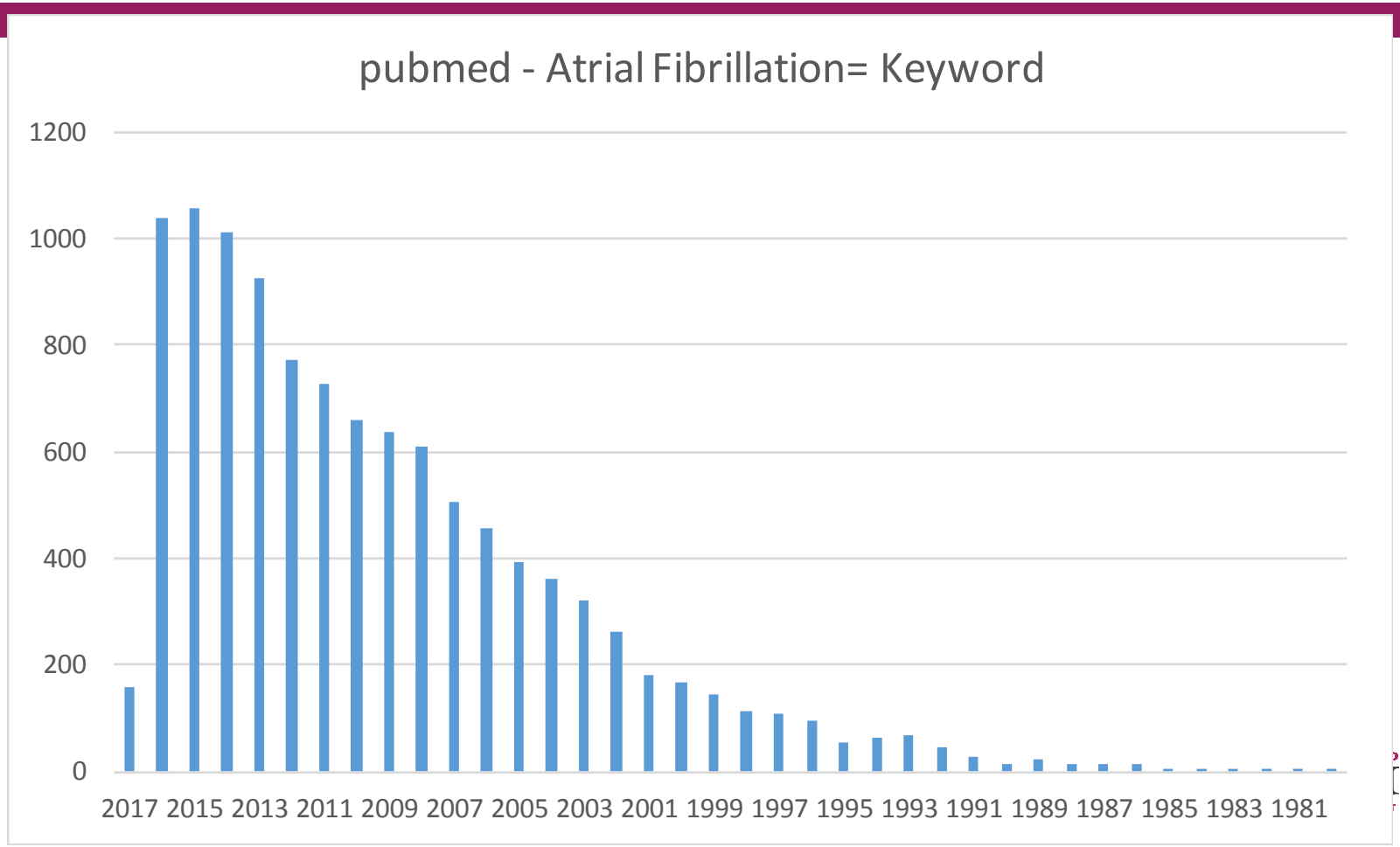
What is the subject of these papers?



Question 2

A. These papers are all about new drugs to convert atrial fibrillation to sinus rhythm.

B. These papers are all about rhythm control.

C. These papers are about ablation technology to try to cure atrial fibrillation.

D. All of the above

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Current Guidelines from 2014

- CLASS I 1. AF catheter ablation is useful for symptomatic paroxysmal AF refractory or intolerant to at least 1 class I or III antiarrhythmic medication when a rhythm-control strategy is desired (363,392–397). (Level of Evidence: A) 2. Before consideration of AF catheter ablation, assessment of the procedural risks and outcomes relevant to the individual patient is recommended. (Level of Evidence: C)
- CLASS IIa 1. AF catheter ablation is reasonable for some patients with symptomatic persistent AF refractory or intolerant to at least 1 class I or III antiarrhythmic medication (394,398–400). (Level of Evidence: A) 2. In patients with recurrent symptomatic paroxysmal AF, catheter ablation is a reasonable initial rhythm-control strategy before therapeutic trials of antiarrhythmic drug therapy, after weighing the risks and outcomes of drug and ablation therapy (401–403). (Level of Evidence: B

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Thank you for your attention

Questions?

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