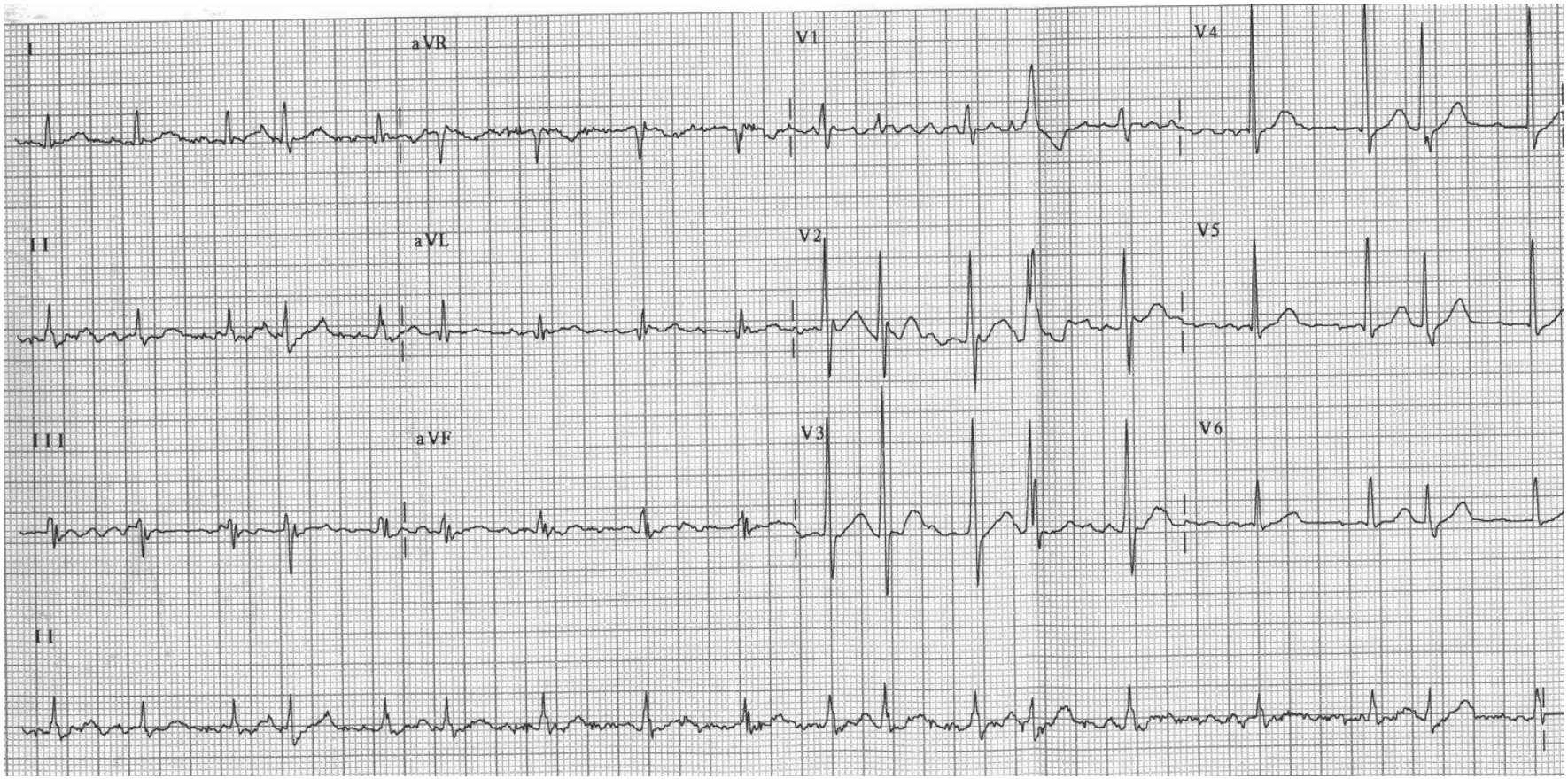
גבר בן 45

- פלפיטציות לראשונה בחייו בעודו צופה במשחק כדור רגל
- הרגשה של ה"לב יוצא מבית החזה"
- פנה לחדר מיון:
- בוצע הא.ק.ג הבא


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II

גבר בן 45

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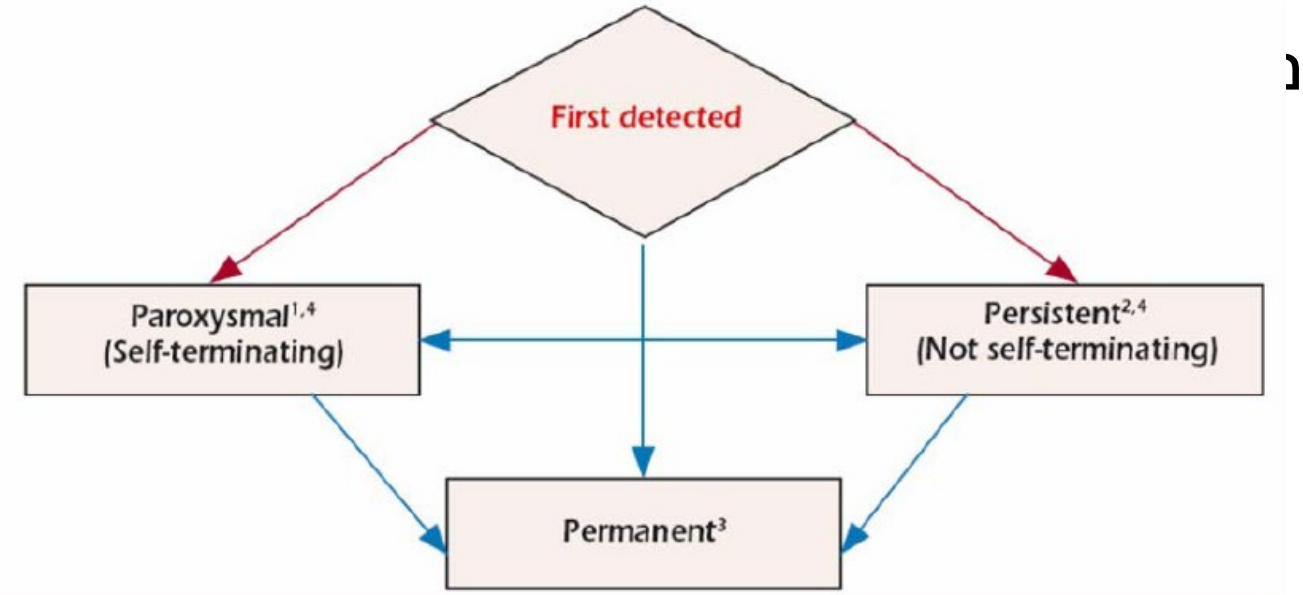
- ל.ד 120/80 סטורציה תקינה, בדיקה גופנית תקינה
- איך קוראים



[1]Episodes that generally last less than or equal to 7 days (most less than 24 h).
[2]Usually more than 7 days.
[3]Cardioversion failed or not attempted.
[4]Both paroxysmal and persistent atrial fibrillation may be recurrent.

גבר בן 45

- פלפיטציות לראשונה בחייו בעודו צופה במשחק כדור רגל
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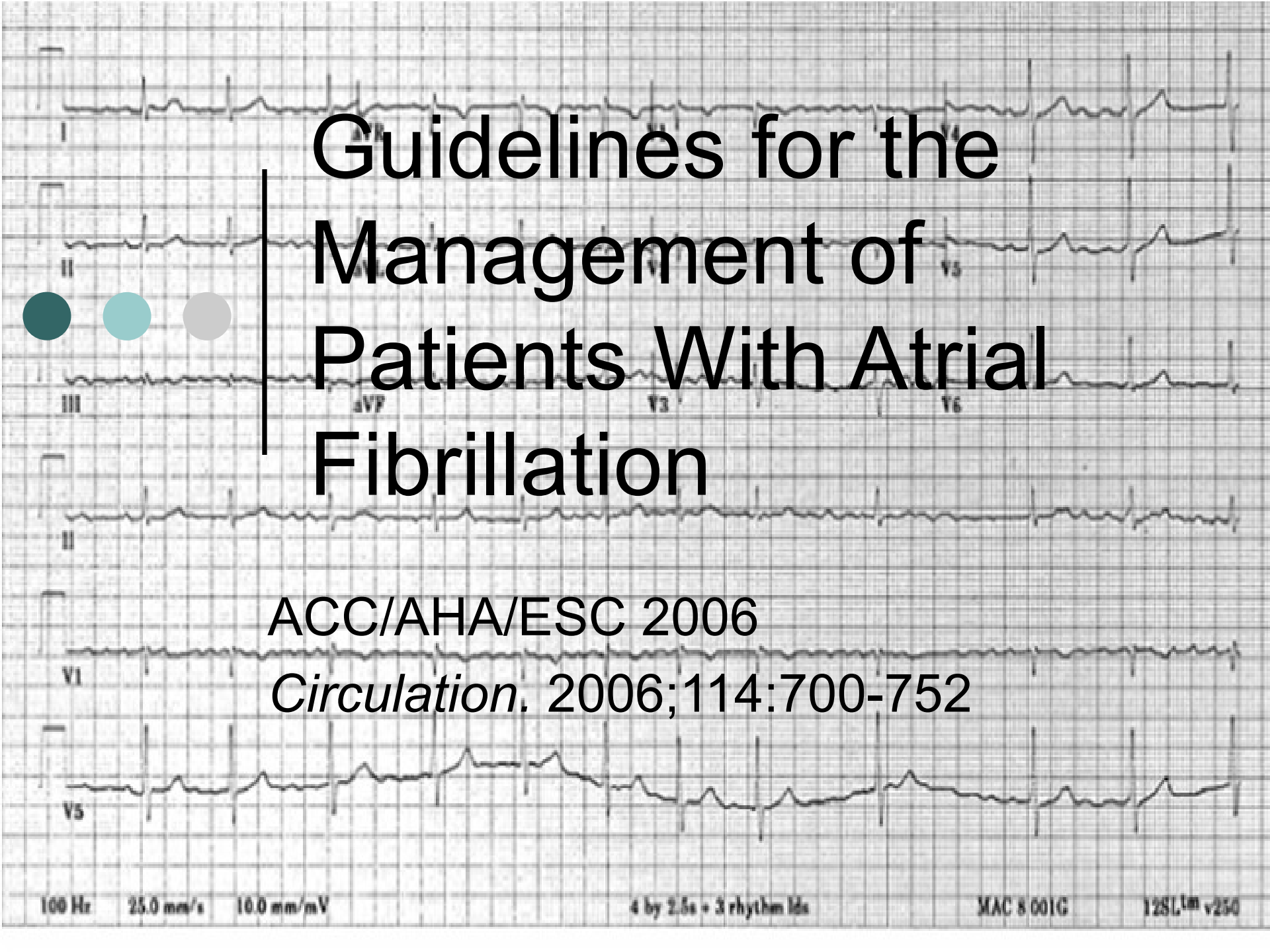
- עוד הגדרה חשובה
  - Valvular
  - Non Valvular
- ללא כל מחלות רקע
  - Lone AF =
- קיבל IV LOPRESOR דופק 85 א סימפטומטי
- מה עושים

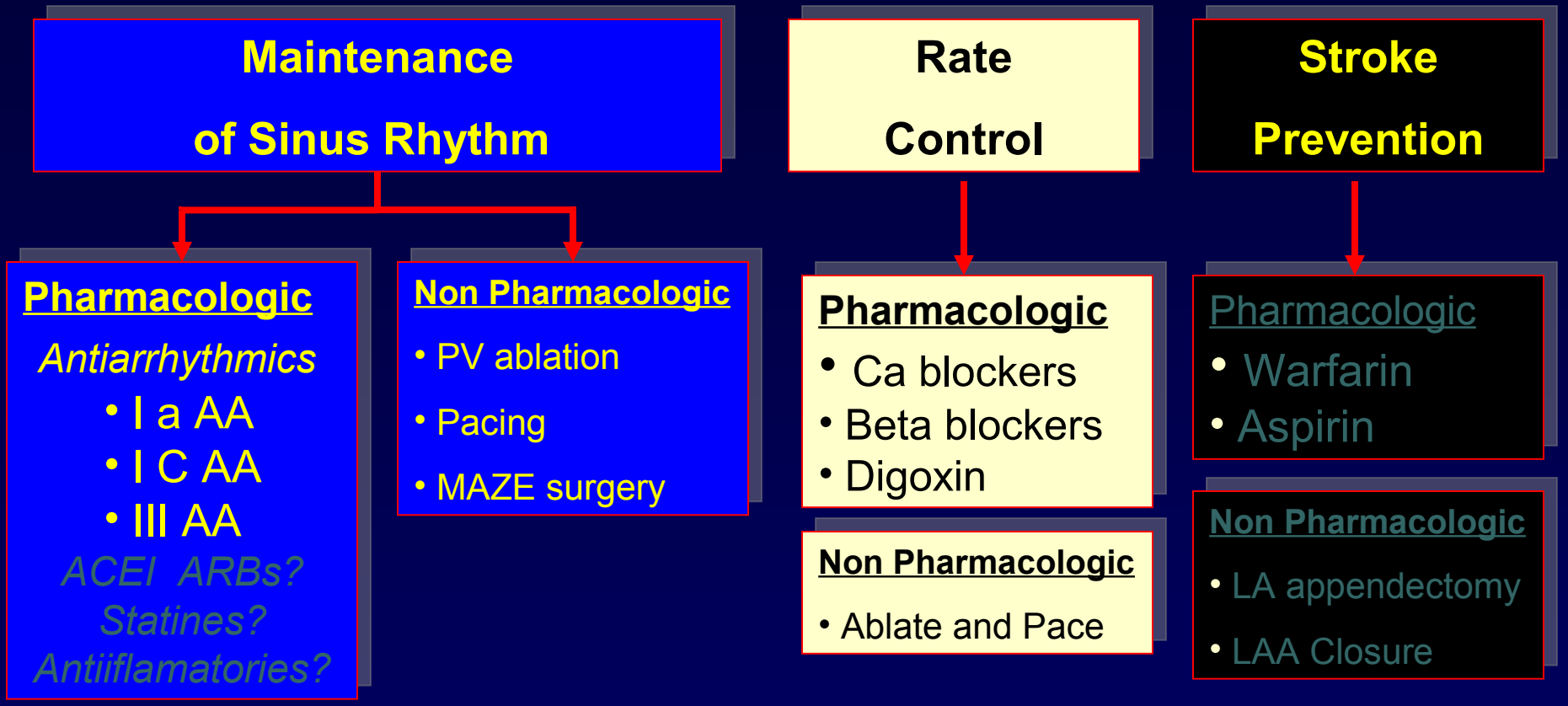


Guidelines for the Management of Patients With Atrial Fibrillation

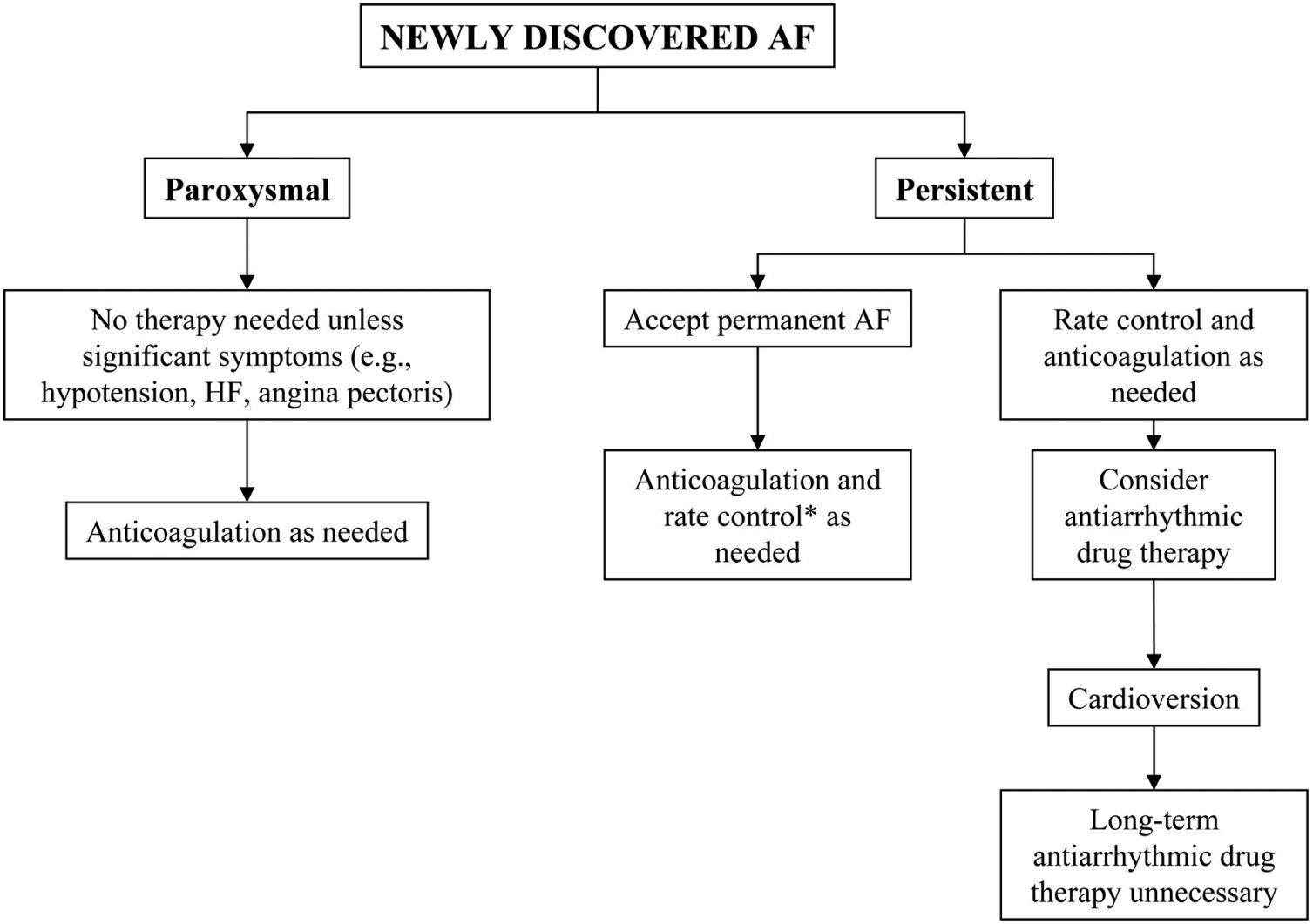
ACC/AHA/ESC 2006

Circulation. 2006;114:700-752

Atrial Fibrillation



Pharmacological management of patients with newly discovered atrial fibrillation



גבר בן 45

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רוצים להופכו

טיפול נוגד קרישה.

- זמן AF לא ידוע
- LMWH VS VKA

מניעת תסחיפים Prevention of Thromboembolism

Non Valvular AF – אירוע חדש

> 48 שעות

< 48 שעות או לא ידוע

הכנה להיפוך
החל הפרין
LMWH

TEE

or

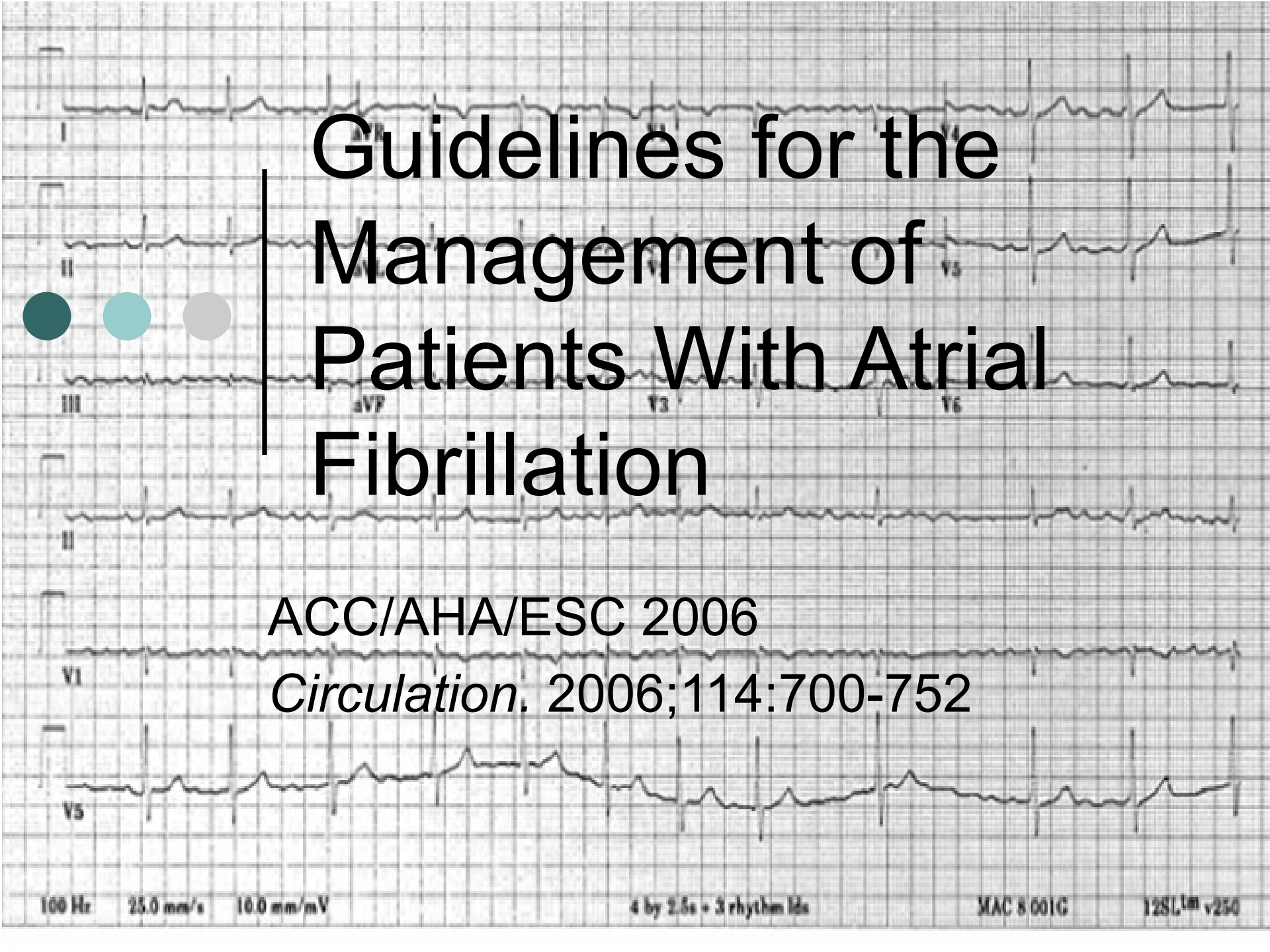
Warfarin or LMWH
3-4 שבועות
והיפוך

CV
ה
י
פ
ו
ר

מניעה לטווח ארוך
Paroxysmal, Persistent, Permanent

- **Warfarin (Coumadin, Sintrom) INR 2-3**
- **Aspirin 81- 325**

Warfarin 3-4 w or LMWH



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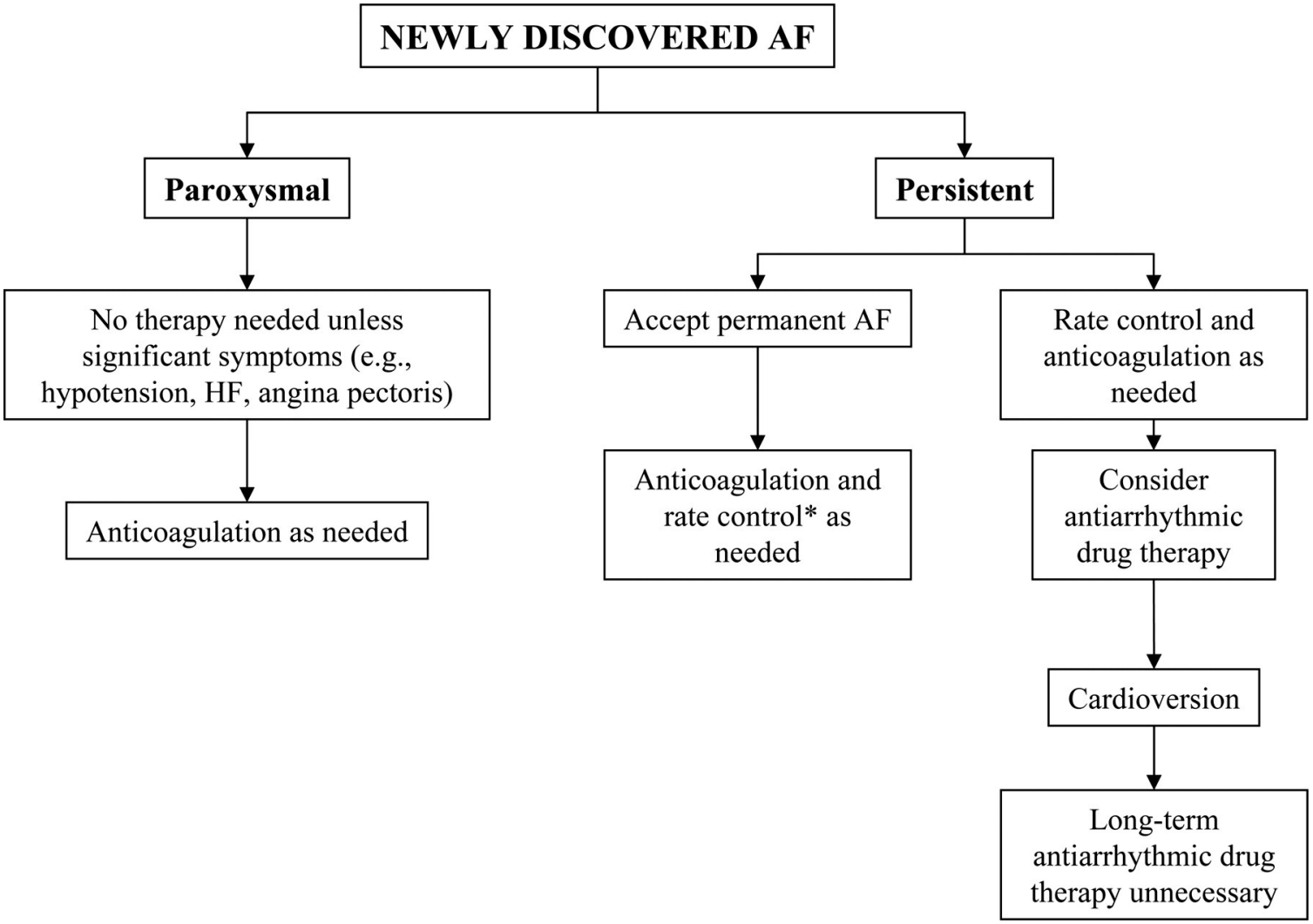
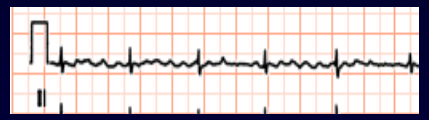


?

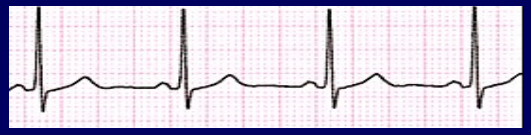


Rhythm Control

Rate Control

vs

Rate vs Rhythm



Trials Comparing Rate Control and Rhythm Control Strategies in Patients With AF

Trial	Reference	Patients (n)	AF Duration	Follow-Up (y)	Age (mean y ±SD)	Patients in SR*
AFFIRM (2002)	128	4060	†/NR	3.5	70±9	35% vs. 63% (at 5 y)
RACE (2002)	124	522	1 to 399 d	2.3	68±9	10% vs. 39% (at 2.3 y)
PIAF (2000)	130	252	7 to 360 d	1	61±10	10% vs. 56% (at 1 y)
STAF (2003)	126	200	6±3 mo	1.6	66±8	11% vs. 26% (at 2 y)
HOT CAFÉ (2004)	127	205	7 to 730 d	1.7	61±11	NR vs. 64%

Circulation August 15, 2006

גבר בן 45

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איך הופכים?

החלטת לבצע היפוך תרופתי מידי, באיזו תרופה תבחר

א- Amıodarone

ב- ideFlecain

ג- Propafenone

ד- Procainamide

ה- Quinidine

ו- Sotalol

Recommendations for Pharmacological Cardioversion of Atrial Fibrillation of Up to 7-d Duration

Drug*	Route of Administration	Class of Recommendation	Level of Evidence
Agents with proven efficacy			
Dofetilide	Oral	I	A
Flecainide	Oral or intravenous	I	A
Ibutilide	Intravenous	I	A
Propafenone	Oral or intravenous	I	A
Amiodarone	Oral or intravenous	IIa	A
Less effective or incompletely studied agents			
Disopyramide	Intravenous	IIb	B
Procainamide	Intravenous	IIb	B
Quinidine	Oral	IIb	B
Should not be administered			
Digoxin	Oral or intravenous	III	A
Sotalol	Oral or intravenous	III	A

Recommendations for Pharmacological Cardioversion of Atrial Fibrillation Present for More Than 7 d

Drug*	Route of Administration	Recommendation Class	Level of Evidence
Agents with proven efficacy			
Dofetilide	Oral	I	A
Amiodarone	Oral or intravenous	IIa	A
Ibutilide	Intravenous	IIa	A
Less effective or incompletely studied agents			
Disopyramide	Intravenous	IIb	B
Flecainide	Oral	IIb	B
Procainamide	Intravenous	IIb	C
Propafenone	Oral or intravenous	IIb	B
Quinidine	Oral	IIb	B
Should not be administered			
Digoxin	Oral or intravenous	III	B
Sotalol	Oral or intravenous	III	B

Agents for acute cardioversion of AF

	Dosing	Peak concentration
Propafenone	;Oral: 450–600mg x1	Oral: 2–3h
Flecainide	Oral: 200–300mg x1; IV 2mg/kg over 10 min	Oral: 2–3h IV 30 min
Amiodarone	IV: 5mg/kg bolus over 10–15 min + 1.8g/24h	12h<
Ibutilide	IV: 1mg over 30 min; may repeat once after 10min	Rapidly distributed; effect within 1h

- Spontaneous reversion to sinus rhythm is common in recent-onset paroxysmal AF
  - about 30% at 8h
  - 50% at 24h
  - 75% at 48h
- J Am Coll Cardiol 2001; 37: 542.
  - IV propafenone converted 30% 1h
  - 50% at 3h
  - 70% at 12h
  - Oral administration is less effective than IV dosing in the first 2h but similar to the IV formulation at later times
  - Oral propafenone = oral flecainide.

גבר בן 45

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  - Non Valvular
- ללא כל מחלות רקע
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- קיבל IV LOPRESOR דופק 85 א סימפטומטי

בסינוס שוחרר ללא טיפול תרופתי – נכון?

גבר בן 46

- אירועים כל 2 – 3 חודשים
- לא רוצה טיפול תרופתי קבוע
- מה לעשות

The NEW ENGLAND JOURNAL of MEDICINE

Outpatient treatment of recent-onset atrial fibrillation with the "pill-in-the-pocket" approach.

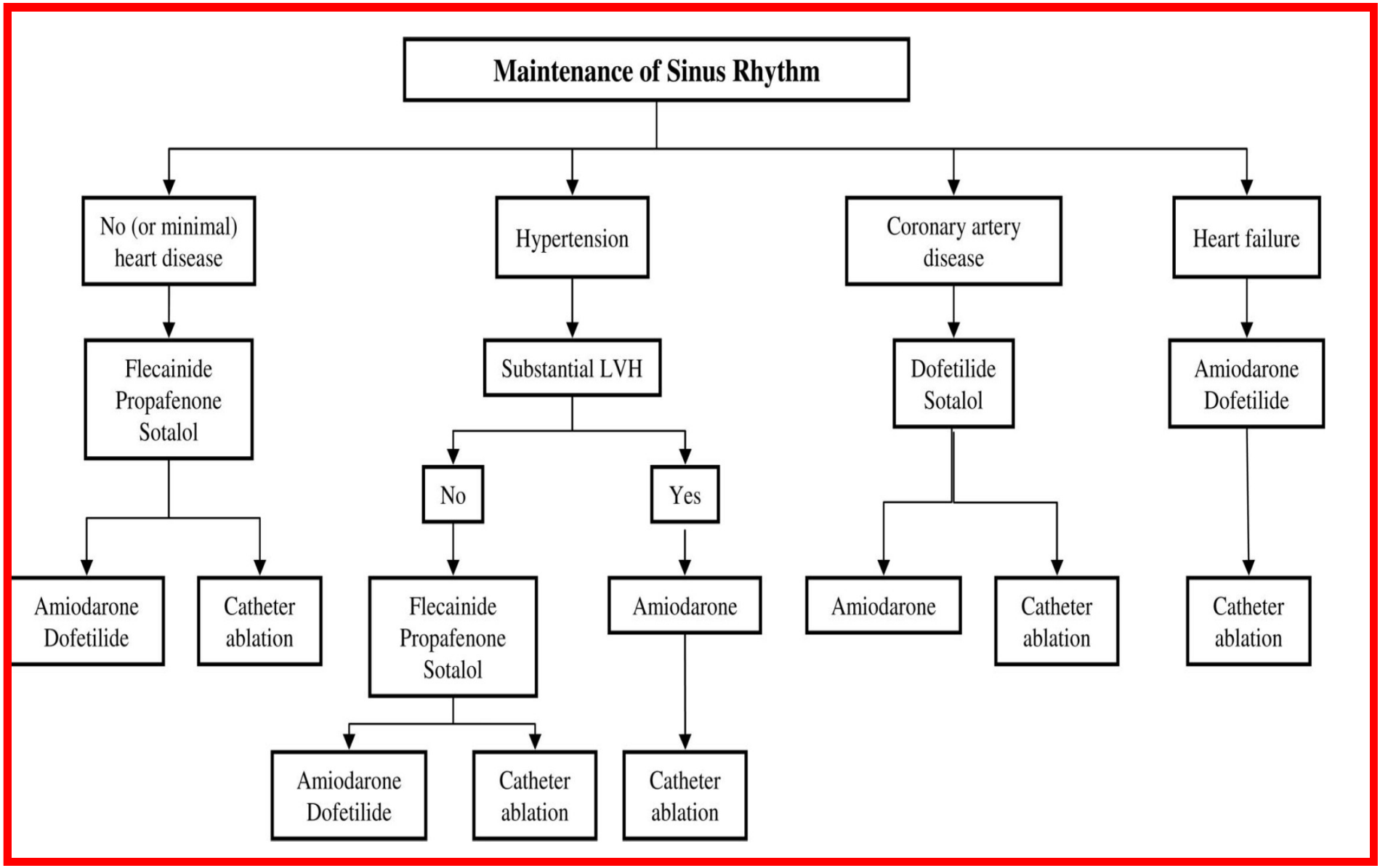
Alboni P 2004 Dec 2;351(23):2384-91.

syndrome, or structural heart disease, "pill-in-the-pocket" administration of propafenone and flecainide outside the hospital becomes an option once treatment has proved safe in hospital, given the relative safety (lack of organ toxicity and low estimated incidence of proarrhythmia).[253–255] Before these agents are initiated, however, a beta blocker or nondihydropyridine calcium channel antagonist is generally recommended to prevent rapid AV conduction in the event of atrial flutter.[256,257] Unless AV node conduction is impaired, a

גבר בן 47

- אירועים כל חודש
- מוכן לנסות טיפול תרופתי מה לתת?

Antiarrhythmic drug therapy to maintain sinus rhythm in patients with recurrent paroxysmal or persistent AF

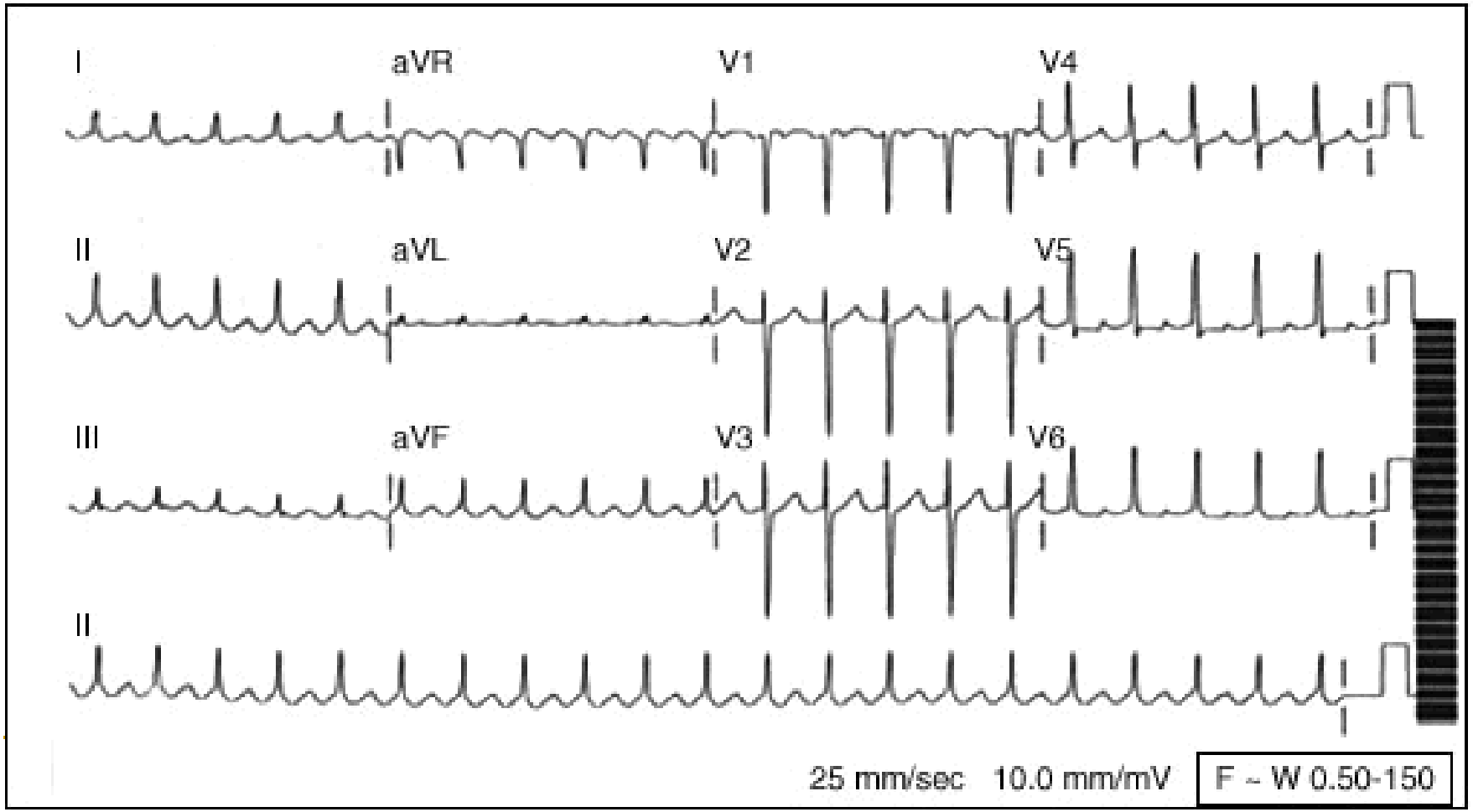


גבר בן 47

- Flecanide 100 mg x 2
- ?AV NODE RATE SLOWING

תחת טיפול ב Tambocor 100 mg X 2 החולה חוזר עם אירועים חוזרים של הקצב הבא:

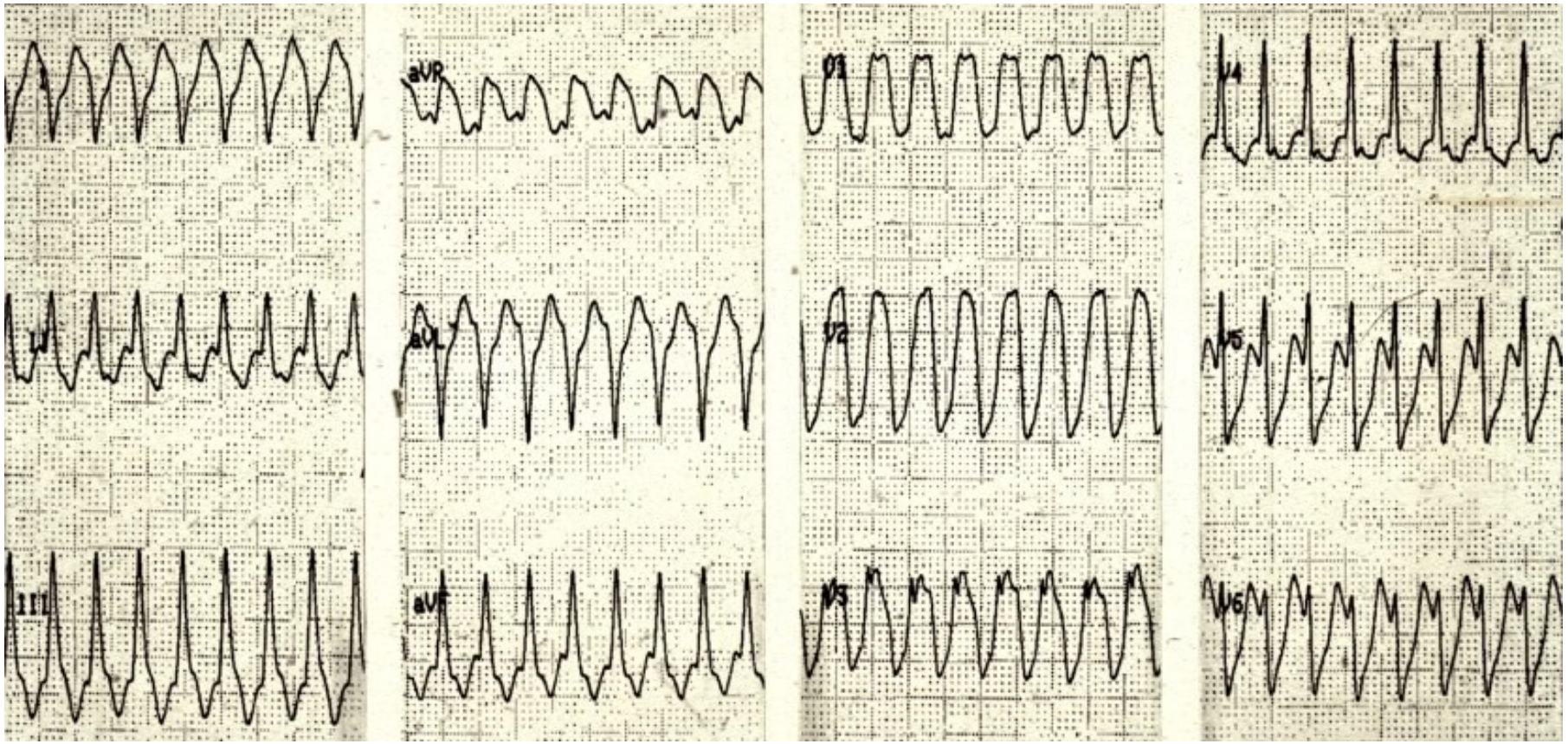
מה אופציות הטיפול?



החולה טופל ב TAMBOCOR זו הפרעת הקצב אשר נצפתה

מה הפרעת הקצב?

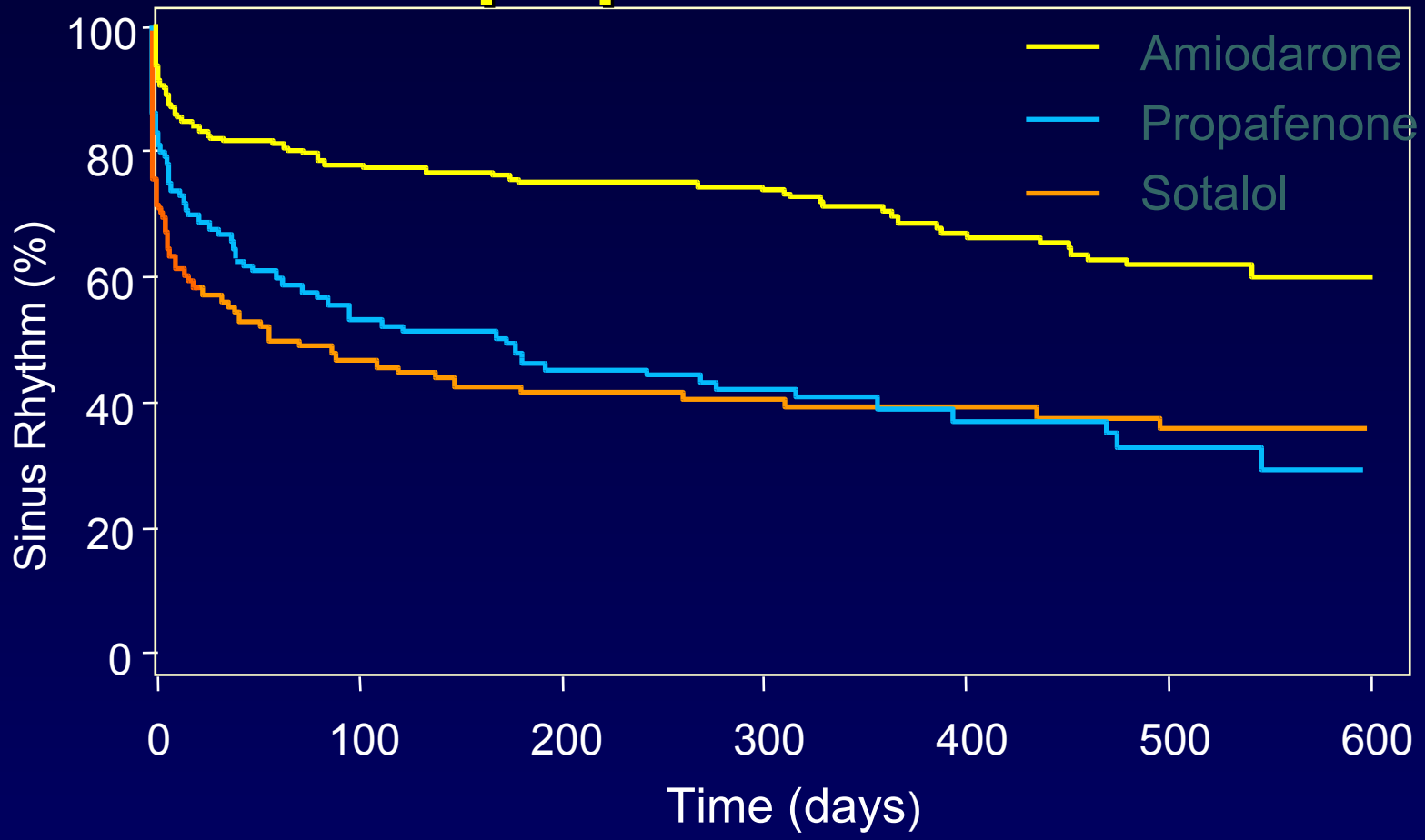
- Ventricular tachycardia (VT)
- Atrial flutter with 1:1 conduction
- Atrio-ventricular junctional tachycardia (AVJT) with aberrancy
- Tdp



גבר בן 48

- מה הסיכוי שישמור קצב סינוס עם הטיפול שמקבל % לשנה
- ?AMIODARONE

Preventing recurrences of atrial fibrillation: amiodarone vs sotalol or propafenone



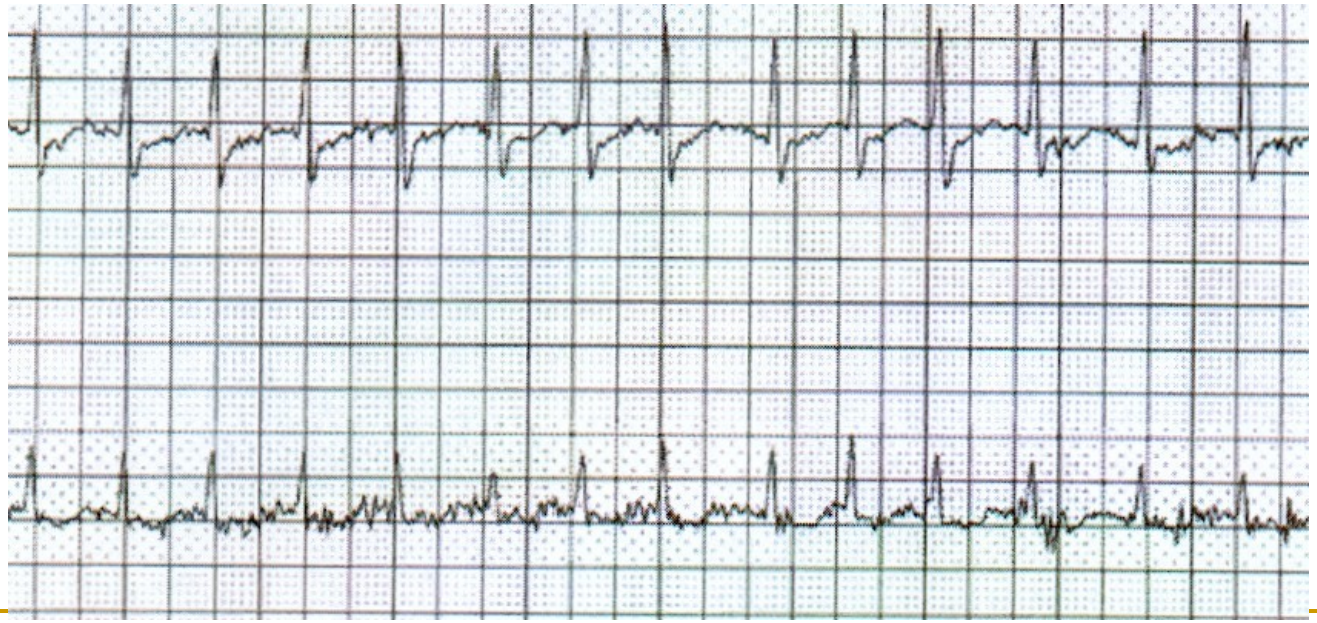
Roy et al. NEJM 2000;342:913-920.

גבר בן 48

- כשל TABOCOR SOTALOL AMIODARONE
- חזר ב AF קצב חדרי = 120 סימפטומטי

גבר בן 48

- כשל TAMBOCOR SOTALOL AMIODARONE
- חזר ב AF קצב חדרי = , סימפטומטי



מה טיפול הבחירה להאטת קצב הלב במקרה זה – rate control

א- Amıodarone

ב- Esmolol

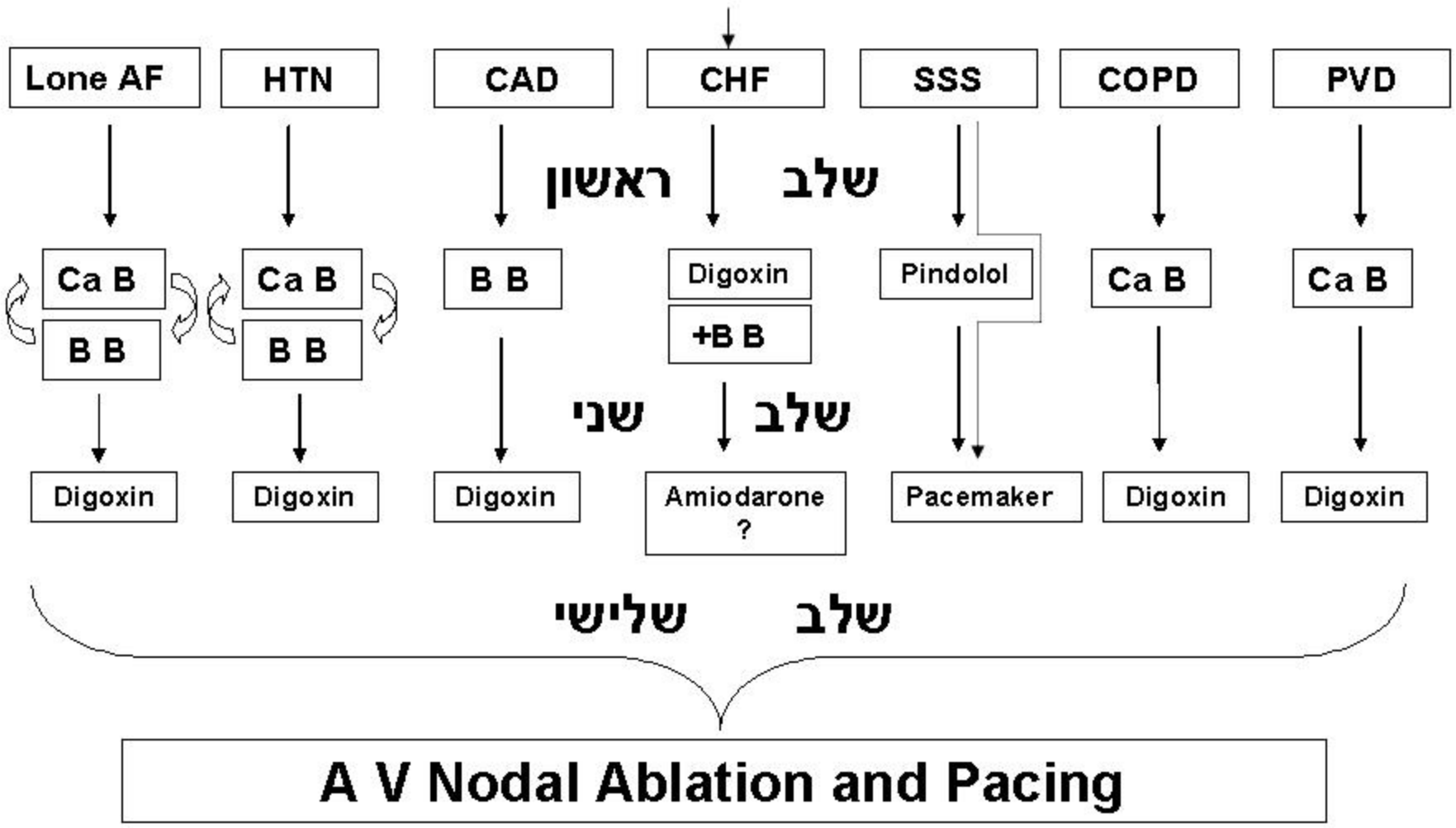
ג- Propranolol

ד- Verapamil

ה- Digoxin

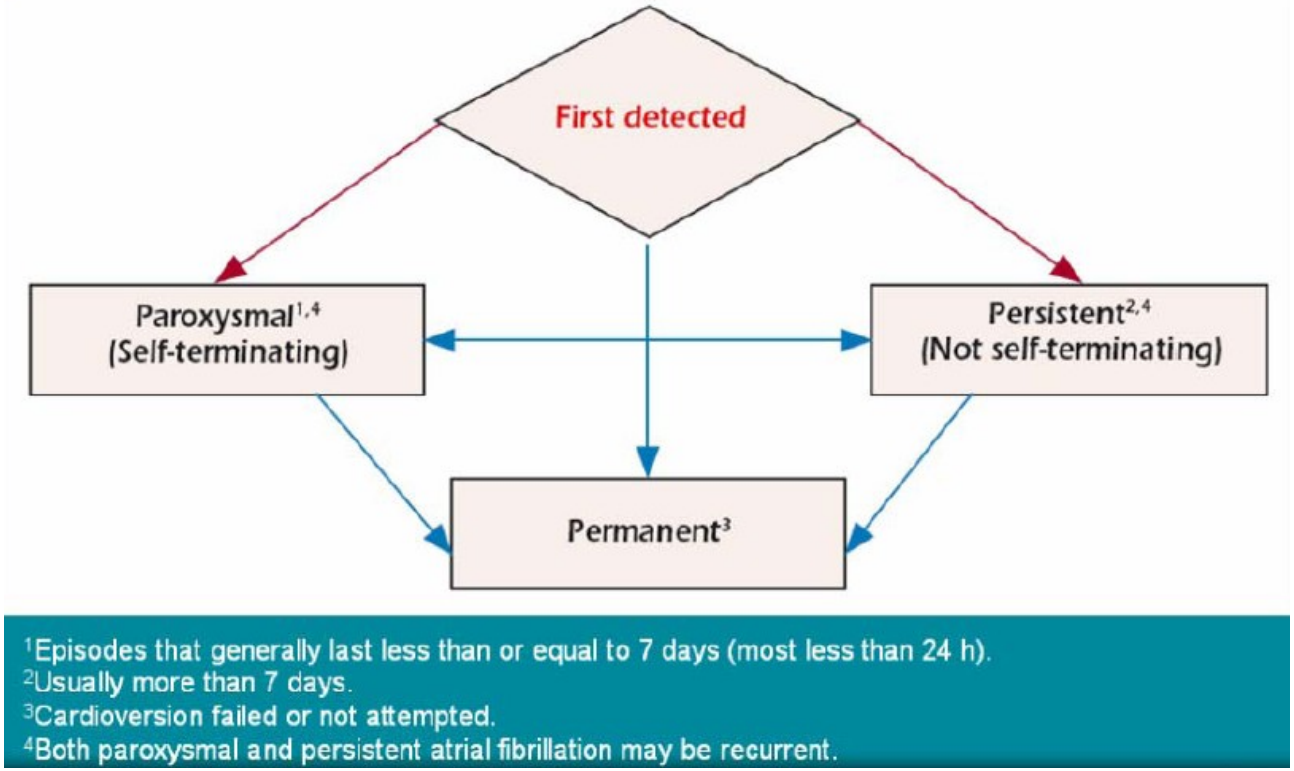
Intravenous and Orally Administered Pharmacological Agents for Heart Rate Control in Patients With Atrial Fibrillation

Drug	Class/LOE Recommendation	Loading Dose	Onset	Maintenance Dose	Major Side Effects
ACUTE SETTING					
Heart rate control in patients without accessory pathway					
Esmolol*†	Class I, LOE C	500 mcg/kg IV over 1 min	5 min	60 to 200 mcg/kg/min IV	↓ BP, HB, ↓ HR, asthma, HF
Metoprolol†	Class I, LOE C	2.5 to 5 mg IV bolus over 2 min; up to 3 doses	5 min	NA	↓ BP, HB, ↓ HR, asthma, HF
Propranolol†	Class I, LOE C	0.15 mg/kg IV	5 min	NA	↓ BP, HB, ↓ HR, asthma, HF
Diltiazem	Class I, LOE B	0.25 mg/kg IV over 2 min	2 to 7 min	5 to 15 mg/h IV	↓ BP, HB, HF
Verapamil	Class I, LOE B	0.075 to 0.15 mg/kg IV over 2 min	3 to 5 min	NA	↓ BP, HB, HF
Heart rate control in patients with accessory pathway§					
Amiodarone‡‖	Class IIa, LOE C	150 mg over 10 min	Days	0.5 to 1 mg/min IV	↓ BP, HB, pulmonary toxicity, skin discoloration, hypothyroidism, hyperthyroidism, corneal deposits, optic neuropathy, warfarin interaction, sinus bradycardia
Heart rate control in patients with heart failure and without accessory pathway					
Digoxin	Class I, LOE B	0.25 mg IV each 2 h, up to 1.5 mg	60 min or more§	0.125 to 0.375 mg daily IV or orally	Digitalis toxicity, HB, ↓ HR
Amiodarone‡	Class IIa, LOE C	150 mg over 10 min	Days	0.5 to 1 mg/min IV	↓ BP, HB, pulmonary toxicity, skin discoloration, hypothyroidism, hyperthyroidism, corneal deposits, optic neuropathy, warfarin interaction, sinus bradycardia


Lone AF
HTN
CAD
CHF
SSS
COPD
PVD
שלב ראשון
Ca B
B B
Ca B
B B
B B
Digoxin
+B B
Pindolol
Ca B
Ca B
שלב שני
Digoxin
Digoxin
Digoxin
Amiodarone
?
Pacemaker
Digoxin
Digoxin
שלב שלישי
A V Nodal Ablation and Pacing

גבר בן 45

- איך קוראים לזה?



גבר בן 45

- PERSISTENT AF
- פיתח י.ל.ד
- נוגדי קרישה?

האם זקוק לטיפול נוגד קרישה ואיזה

א. Aspirin 325 mg

ב. Aspirin 100 mg

ג. Aspirin 100 mg + Plavix 75 mg

ד. Coumadin to INR 2-3

Atrial Fibrillation Clopidogrel Trial with Irbesartan for Prevention of Vascular Events (ACTIVE-W) study

The ACTIVE Investigators. Clopidogrel plus aspirin versus oral anticoagulation for atrial fibrillation in the Atrial Fibrillation Clopidogrel Trial with Irbesartan for Prevention of Vascular Events (ACTIVE W): A randomised controlled trial. *Lancet* 2006; 367: .1903-1912

Vascular events and major bleeding: ACTIVE-W final results

End point	Clopidogrel (+ASA (%/y	Warfarin ((%/y	Relative risk	CI 95%	p
Vascular events	5.60	3.93	1.44	1.76–1.18	0.0003
Stroke	2.39	1.40	1.72	2.37–1.24	0.001
Major hemorrhage	2.42	2.21	1.10	1.45–0.83	0.53
*Net benefit	7.56	5.45	1.41	1.67–1.19	0.0001>

*Primary outcome and major bleed

The ACTIVE Investigators. *Lancet* 2006; 367: 1903-1912.

Antithrombotic Therapy for Patients With Atrial Fibrillation

Risk Category	Recommended Therapy
No risk factors	Aspirin, 81 to 325 mg daily
One moderate-risk factor	Aspirin, 81 to 325 mg daily, or warfarin (INR 2.0 to 3.0, target 2.5)
Any high-risk factor or more than 1 moderate-risk factor	Warfarin (INR 2.0 to 3.0, target 2.5)*

Less Validated or Weaker Risk Factors	Moderate-Risk Factors	High-Risk Factors
Female gender	Age greater than or equal to 75 y	Previous stroke, TIA or embolism
Age 65 to 74 y	Hypertension	Mitral stenosis
Coronary artery disease	Heart failure	Prosthetic heart valve*
Thyrotoxicosis	LV ejection fraction 35% or less	
	Diabetes mellitus	

CHADS2 FACT Index

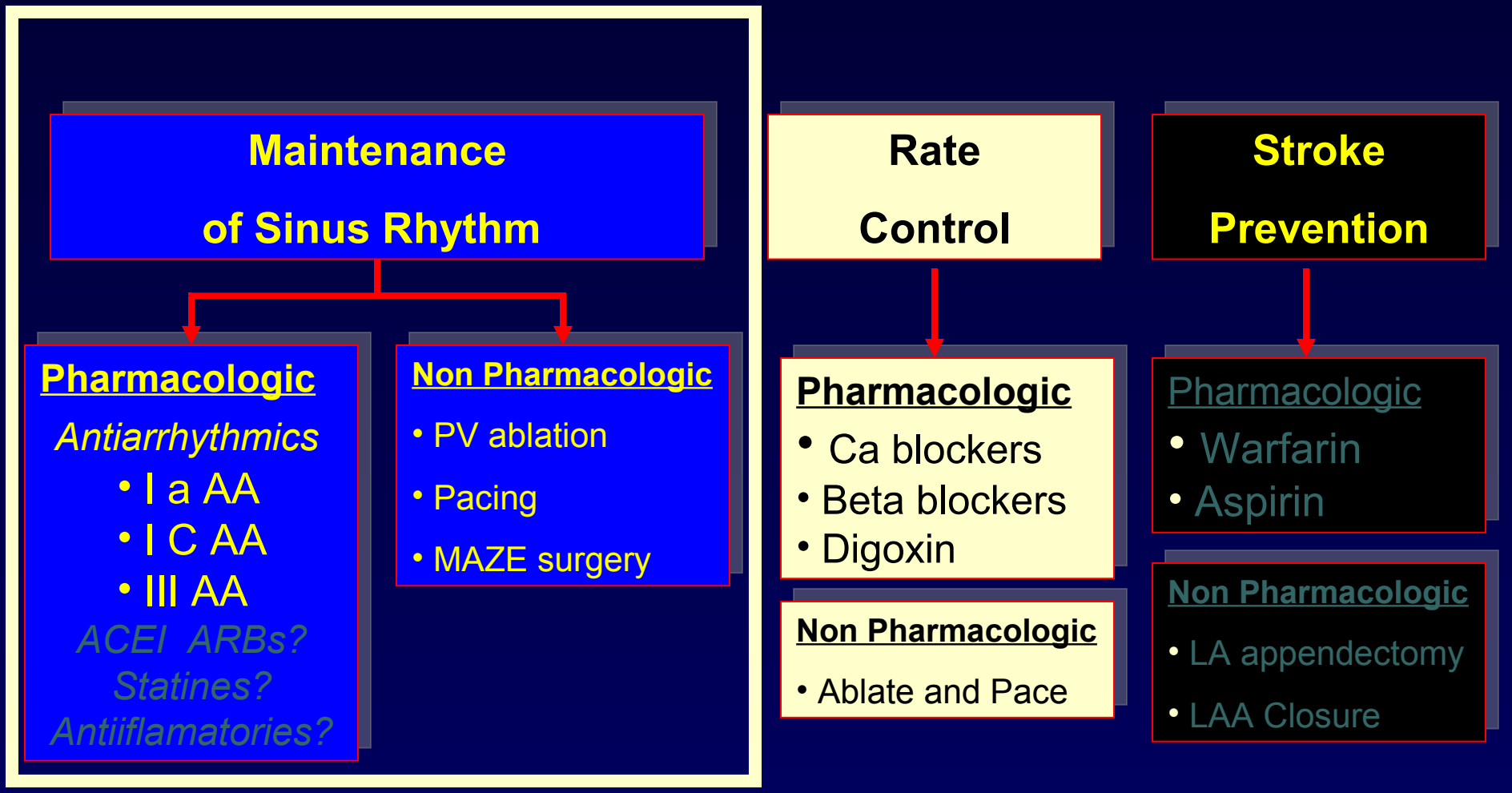
$CHADS_2$ Risk Criteria	Score
Prior stroke or TIA	2
Age >75 y	1
Hypertension	1
Diabetes mellitus	1
Heart failure	1

Patients (N=1733)	Adjusted Stroke Rate (%/y)* (95% CI)	$CHADS_2$ Score
120	1.9 (1.2 to 3.0)	0
463	2.8 (2.0 to 3.8)	1
523	4.0 (3.1 to 5.1)	2
337	5.9 (4.6 to 7.3)	3
220	8.5 (6.3 to 11.1)	4
65	12.5 (8.2 to 17.5)	5
5	18.2 (10.5 to 27.4)	6

[Female:, Age 65-75, CAD, Thyrotoxicosis [FACT

Risk Category	Recommended Therapy
No risk factors	Aspirin, 81 to 325 mg daily
One moderate-risk factor	Aspirin, 81 to 325 mg daily, or warfarin (INR 2.0 to 3.0, target 2.5)
Any high-risk factor or more than 1 moderate-risk factor	Warfarin (INR 2.0 to 3.0, target 2.5)*

Atrial Fibrillation



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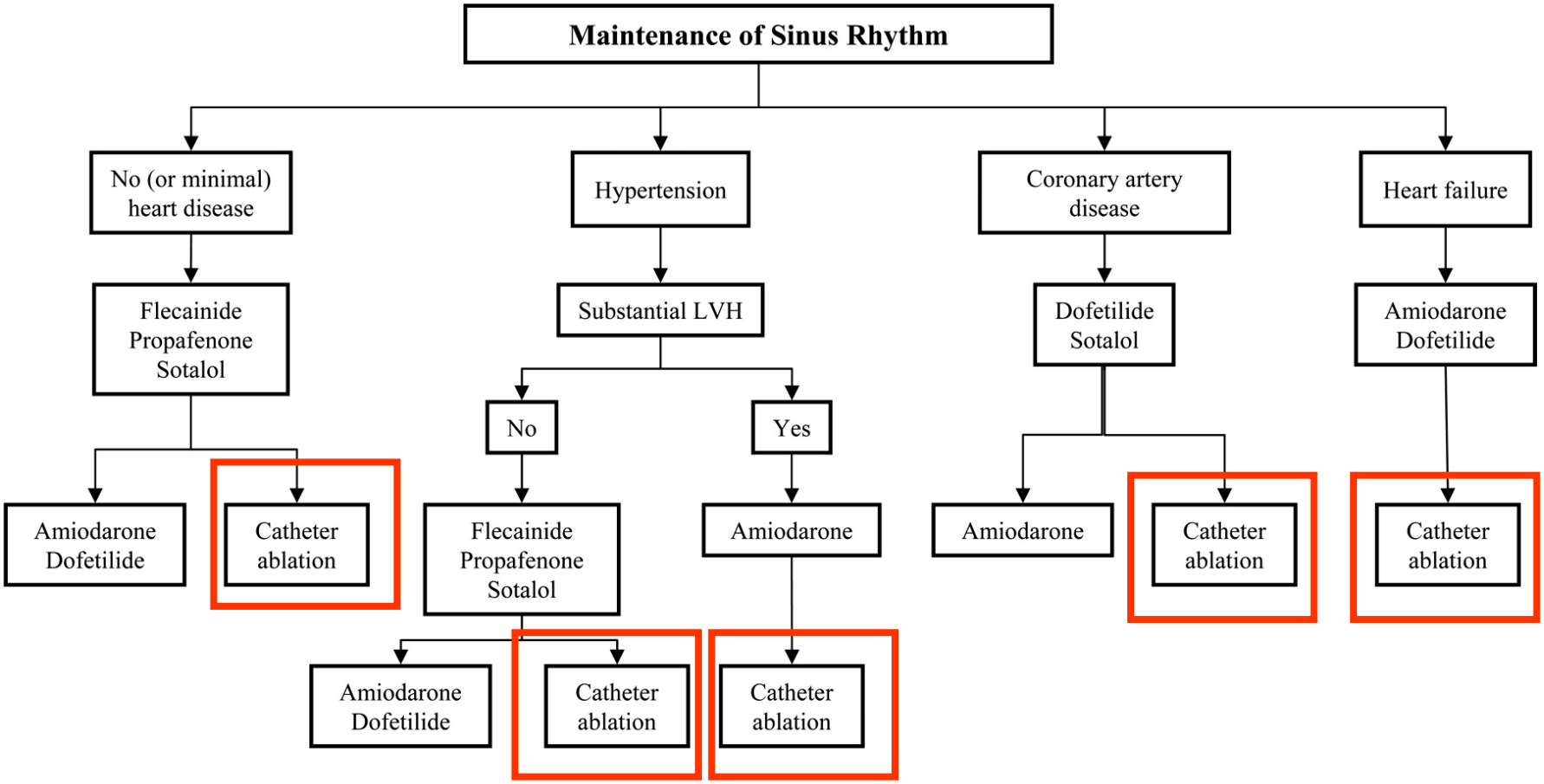


HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up

Heart Rhythm, Vol 4, No 6, June 2007

Indications for Catheter AF Ablation

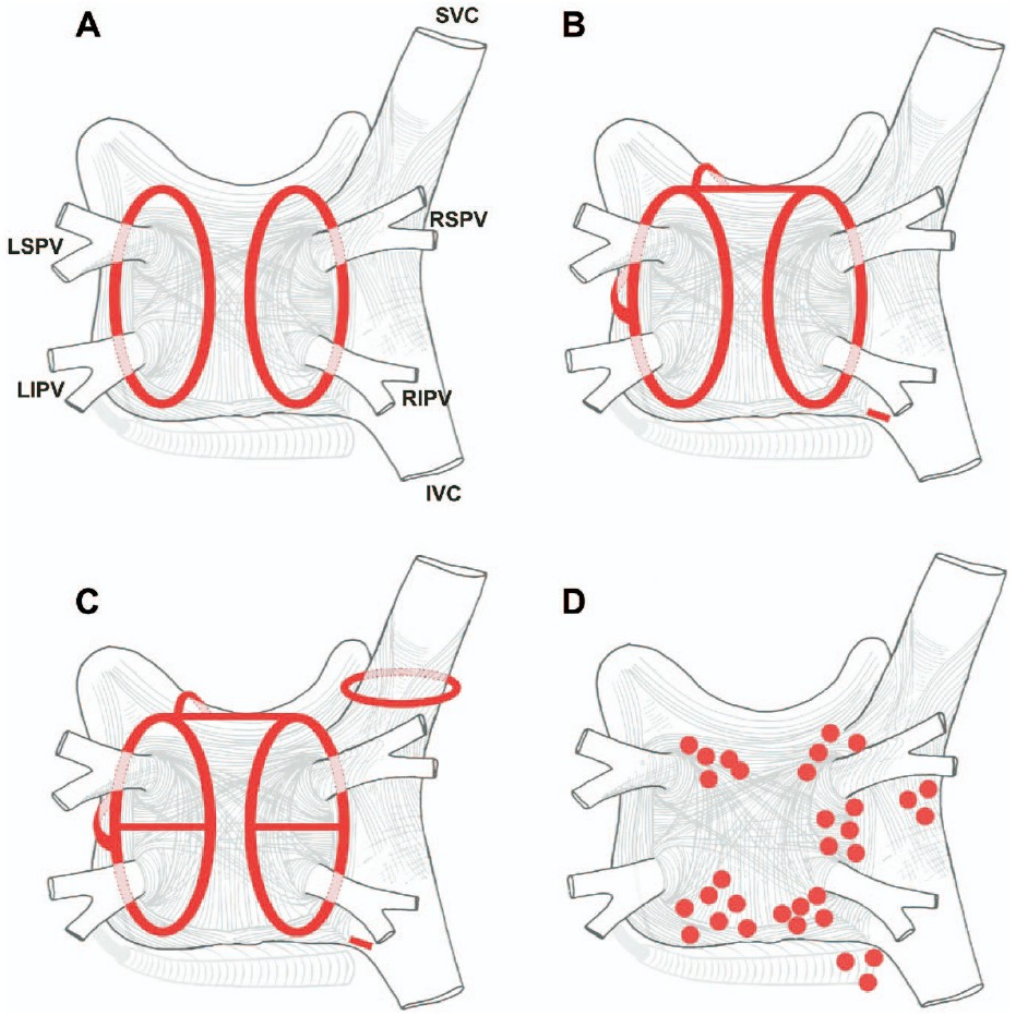
- Symptomatic AF refractory or intolerant to at least one Class 1 or 3 antiarrhythmic medication.
- In rare clinical situations, it may be appropriate to perform AF ablation as first line therapy.
- Selected symptomatic patients with heart failure and/or reduced ejection fraction.
- The presence of a LA thrombus is a contraindication to catheter ablation of AF.

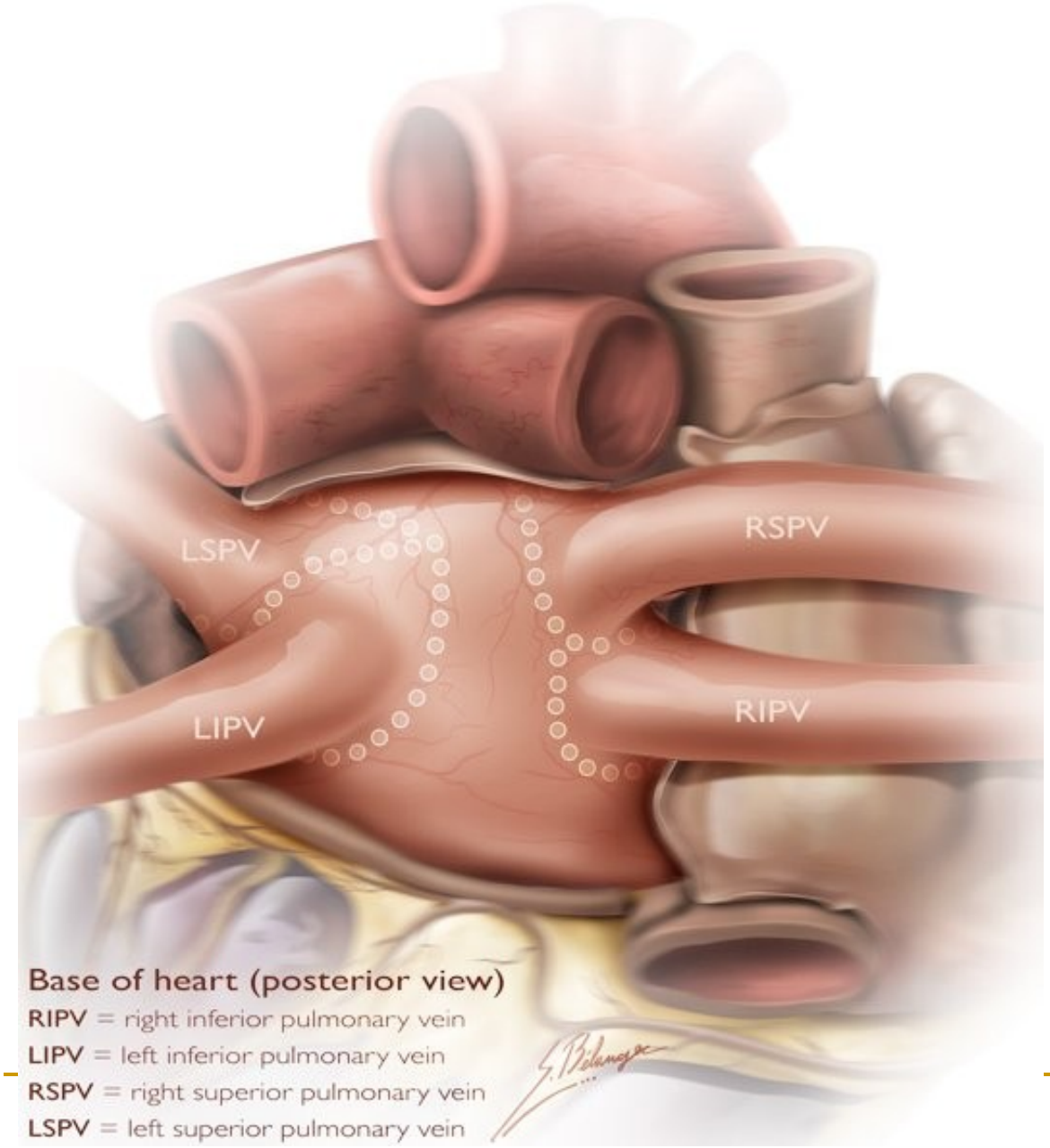
Indications for Surgical AF Ablation

- Symptomatic AF patients undergoing other cardiac surgery.
- Selected asymptomatic AF patients undergoing cardiac surgery in whom the ablation can be performed with minimal risk.
- Stand-alone AF surgery should be considered for symptomatic AF patients who prefer a surgical approach, have failed one or more attempts at catheter ablation, or are not candidates for catheter ablation.

Heart Rhythm, Vol 4, No 6, June 2007

HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up

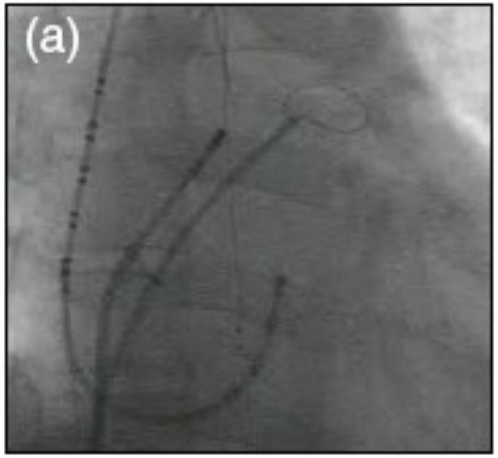


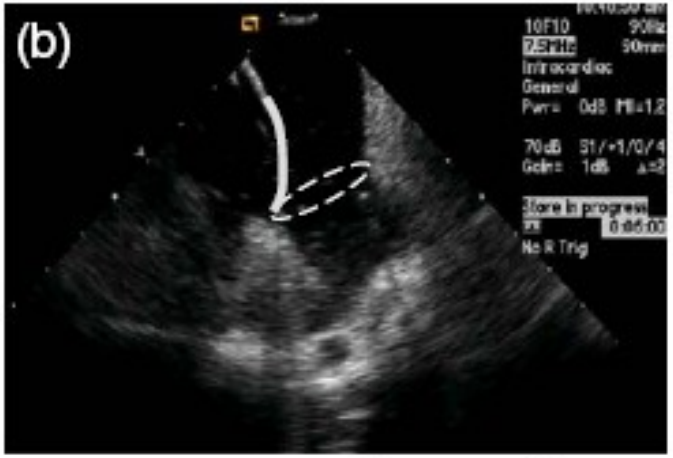


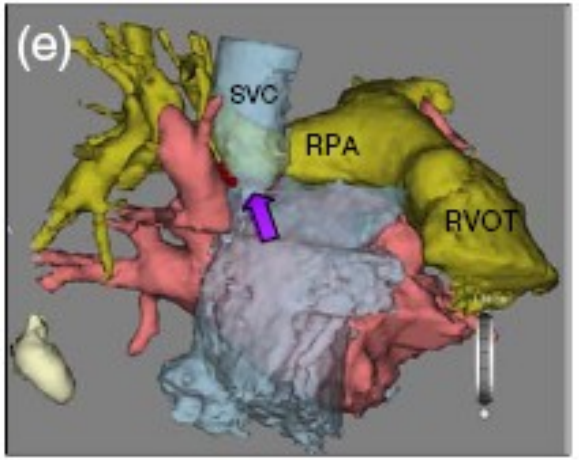
Base of heart (posterior view)

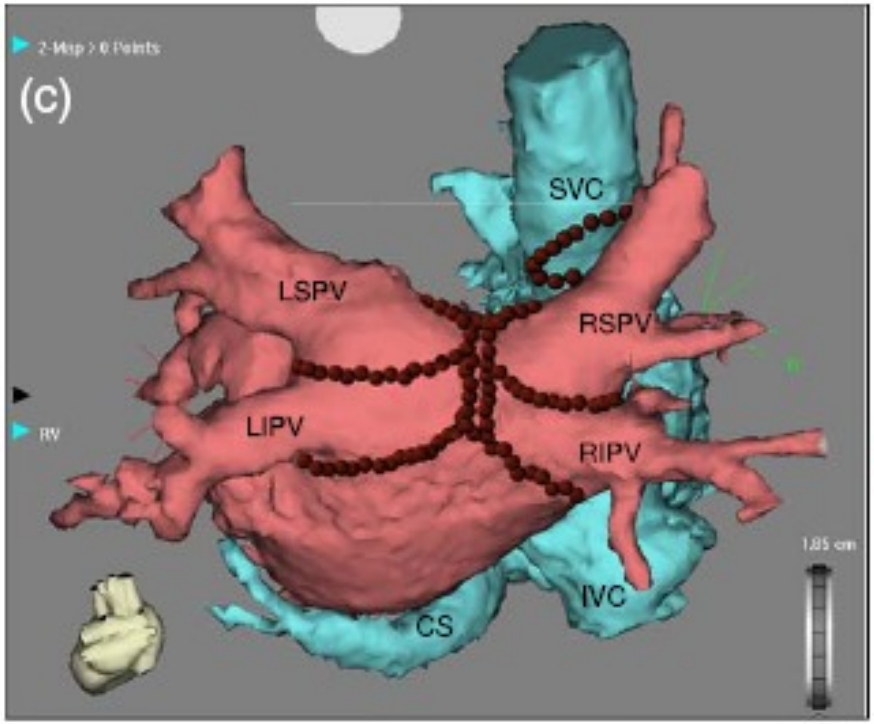
RIPV = right inferior pulmonary vein
LIPV = left inferior pulmonary vein
RSPV = right superior pulmonary vein
LSPV = left superior pulmonary vein

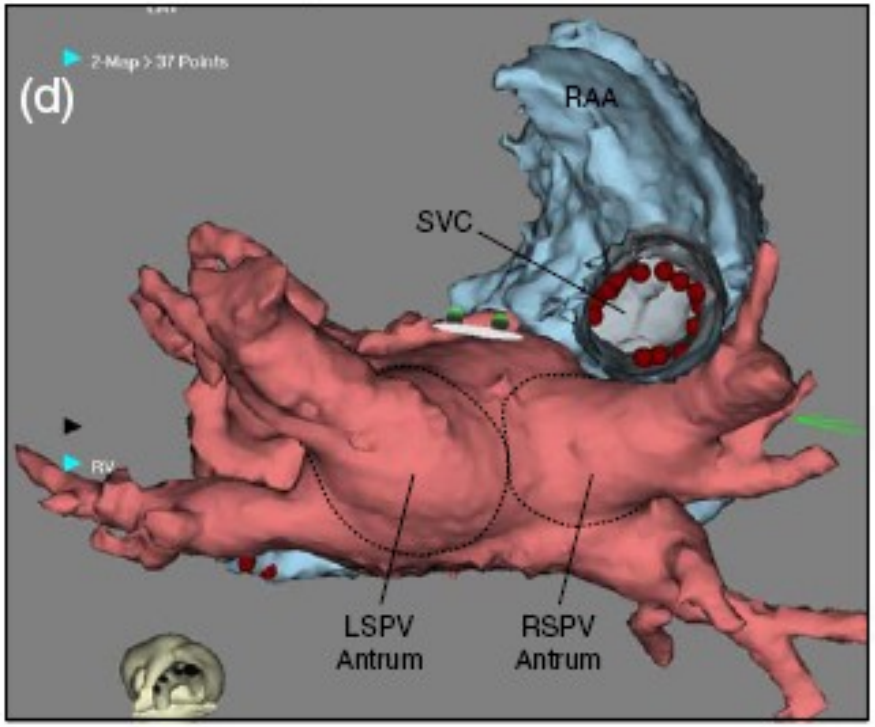
ICE / EGM - Guided PV Antra and SVC Isolation – Natale's Approach

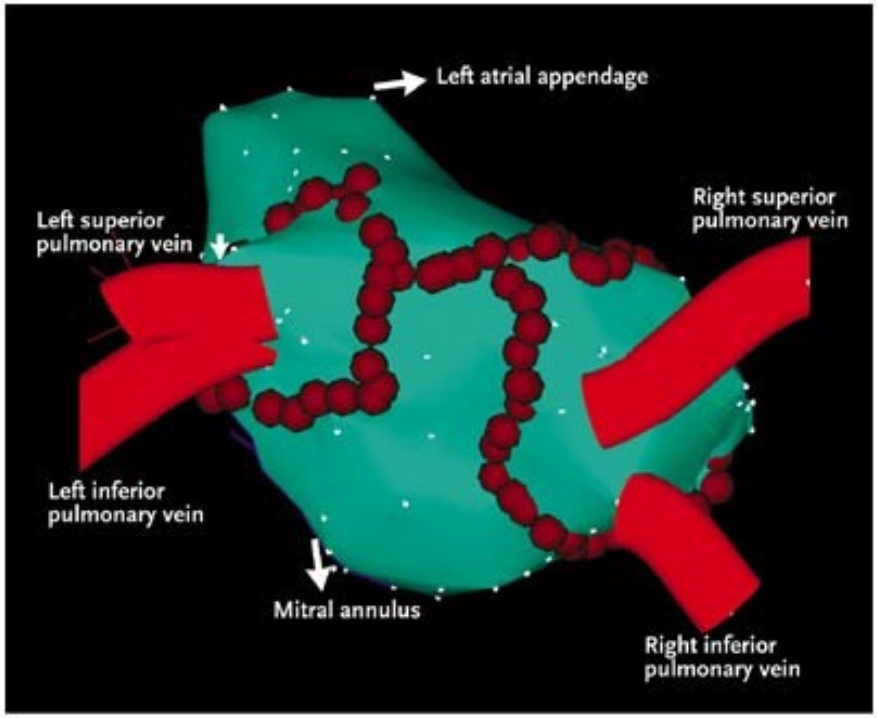












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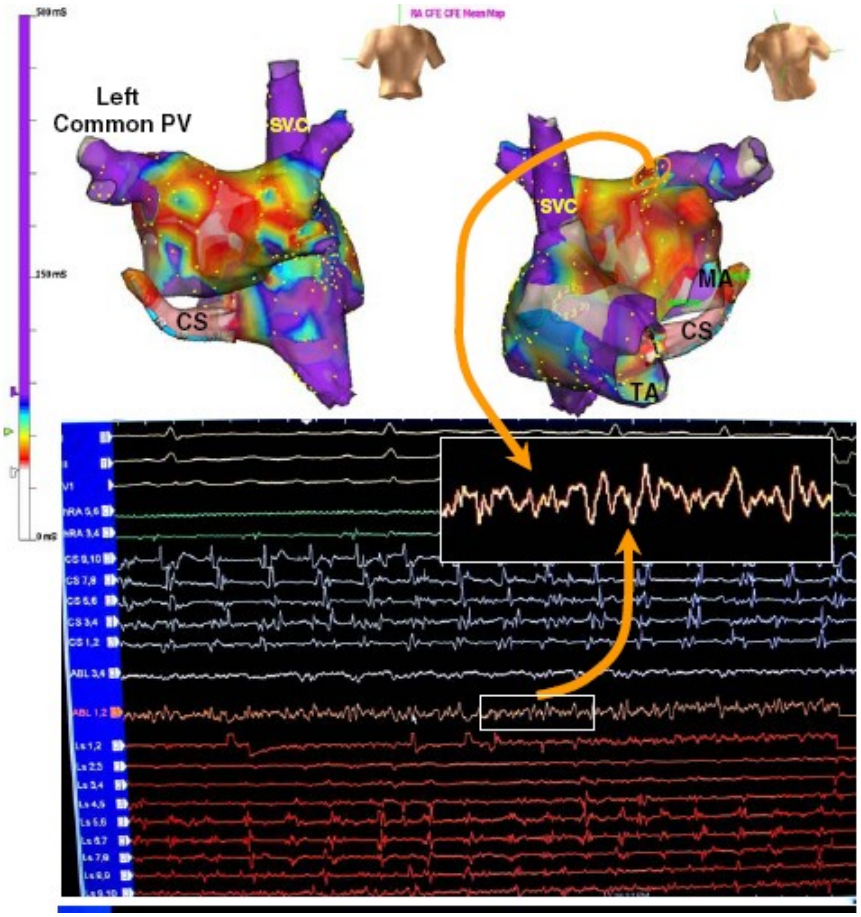


Ablation of permanent AF

Adjunctive strategies to pulmonary veins isolation: Targeting AF NEST in sinus rhythm and CFAE in AF

Mauricio Arruda · Andrea Natale

HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up

Heart Rhythm, Vol 4, No 6, June 2007

- Success Rate (53-91%+)
- Blanking period
- Minimal monitoring
- follow-up.
- Repeat procedures
- Major complications

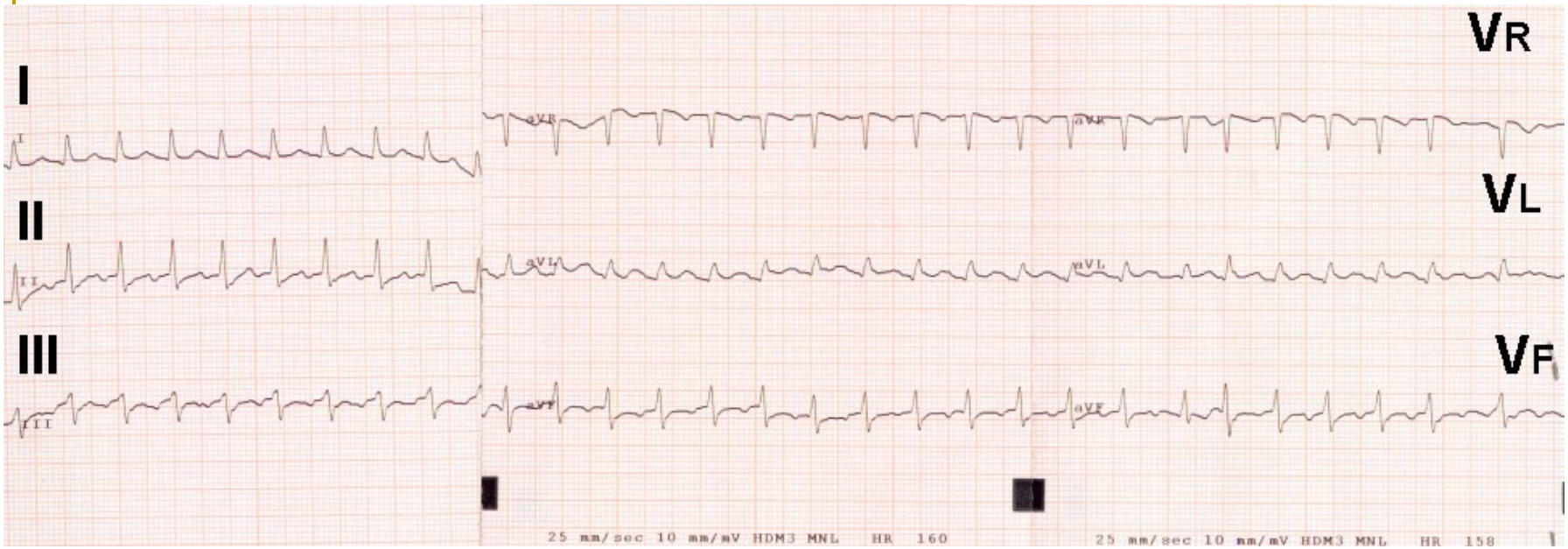
Anticoagulation and Strategies to Prevent Thromboembolism

POST ABLATION

(1) Warfarin is recommended for all patients for at least two months following an AF ablation procedure.
(2) Decisions regarding the use of warfarin more than two months following ablation should be based on the patient's risk factors for stroke and not on the presence or type of AF.
(3) Discontinuation of warfarin therapy post ablation is generally not recommended in patients who have a CHADS score greater than 2.

גבר בן 49

- לאחר אבלציה circumferential +++
- 3 חודשים AMIODARONE
- לאחר 3 חודשים – יתר תריסיות – טופל
- תירואיד תקין חזר עם ההפרעה הבאה



Left atrial flutter

Atrial Fibrillation Mechanism

גבר בן 50

- א.ס.ל
- EF = 25%
- קושי בשליטה על קצב
- מה לעשות?

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March 2, 2006

Circumferential Pulmonary-Vein Ablation for Chronic Atrial Fibrillation

Hakan Oral, M.D., Carlo Pappone, M.D., Aman Chugh, M.D., Eric Good, D.O., Frank Bogun, M.D., Frank Pelosi, Jr., M.D., Eric R. Bates, M.D., Michael H. Lehmann, M.D., Gabriele Vicedomini, M.D., Giuseppe Augello, M.D., Eustachio Agricola, M.D., Simone Sala, M.D., Vincenzo .Santinelli, M.D., and Fred Morady, M.D

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The NEW ENGLAND JOURNAL of MEDICINE

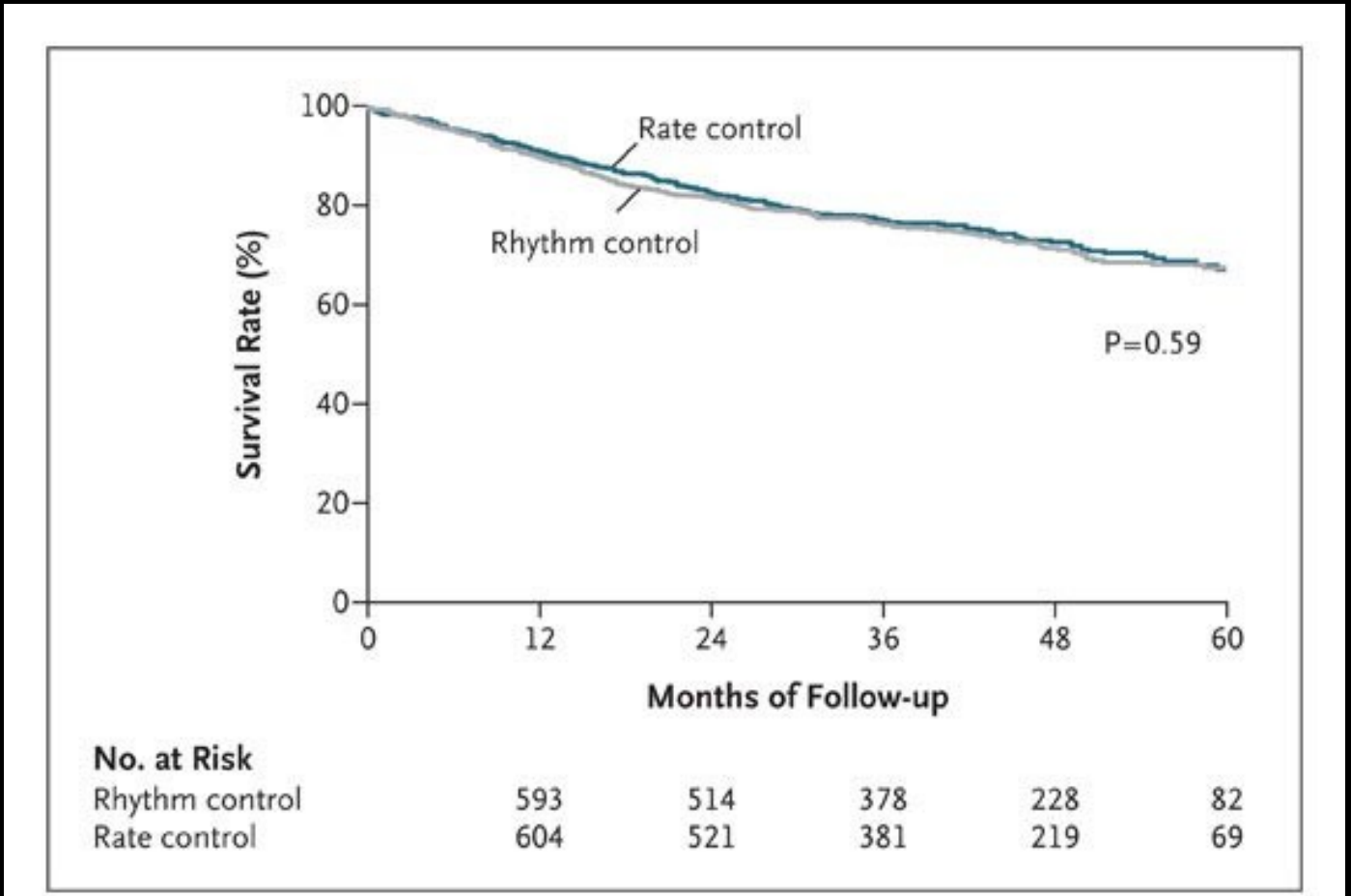
ESTABLISHED IN 1812 JUNE 19, 2008 VOL. 358 NO. 25

Rhythm Control versus Rate Control for Atrial Fibrillation and Heart Failure

CONCLUSIONS

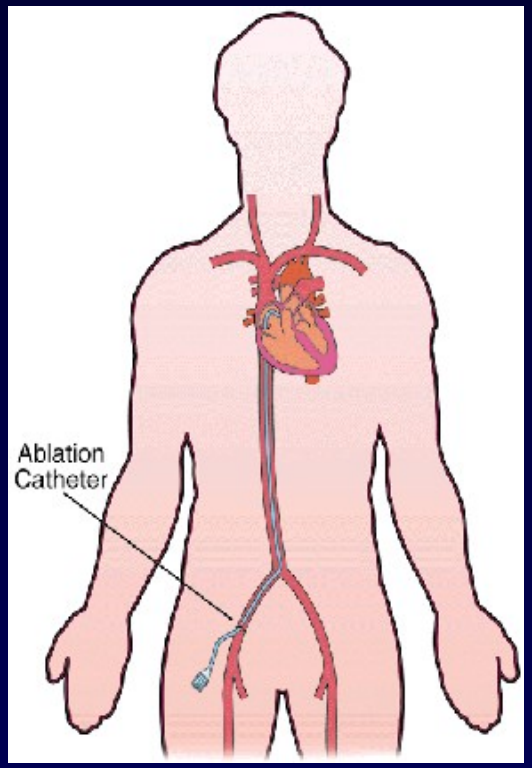
In patients with atrial fibrillation and congestive heart failure, a routine strategy of rhythm control does not reduce the rate of death from cardiovascular causes, as compared with a rate-control strategy. (ClinicalTrials.gov number, NCT00597077.)

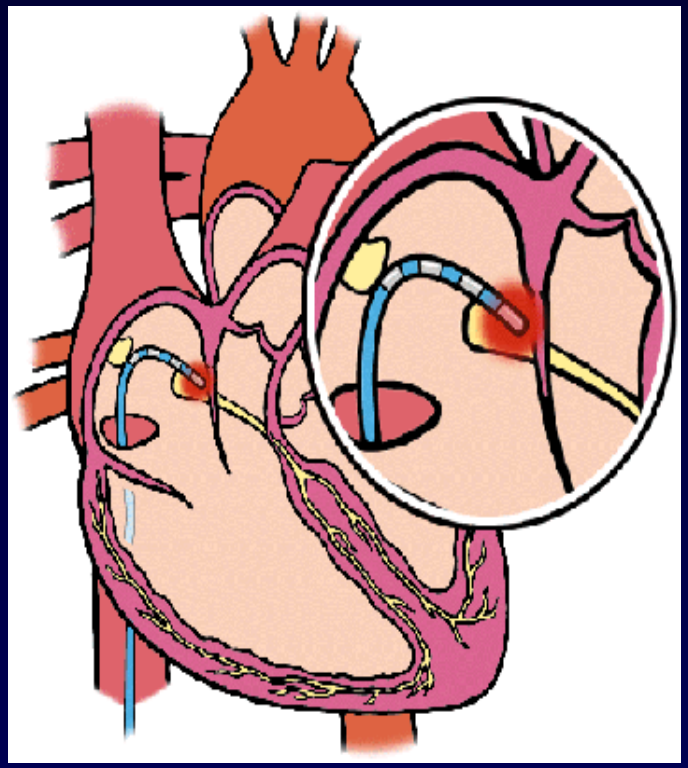
Kaplan-Meier Estimates of Death from Cardiovascular Causes (Primary Outcome)

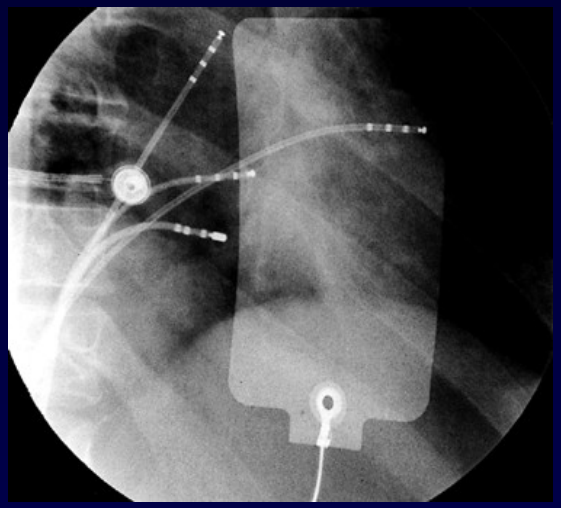


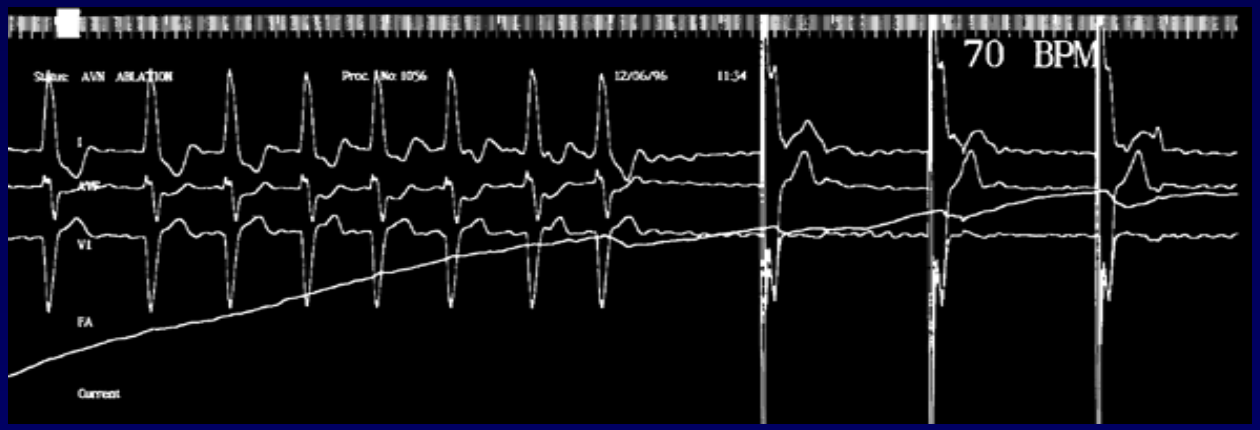
Roy D et al. N Engl J Med 2008;358:2667-2677

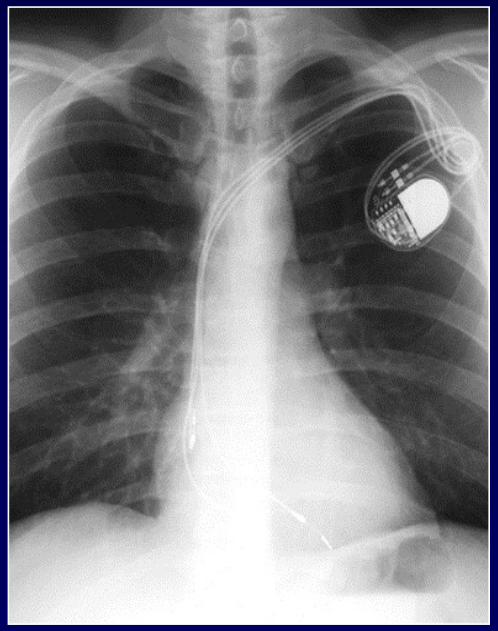
AV Nodal (AVJ) Ablation + CRT











The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Pulmonary-Vein Isolation for Atrial Fibrillation in Patients with Heart Failure

Mohammed N. Khan, M.D., Pierre Jaïs, M.D., Jennifer Cummings, M.D., Luigi Di Biase, M.D., Prashanthan Sanders, M.D., David O. Martin, M.D., Josef Kautzner, M.D., Steven Hao, M.D., Sakis Themistoclakis, M.D., Raffaele Fanelli, M.D., Domenico Potenza, M.D., Raimondo Massaro, M.D.

CONCLUSIONS

Pulmonary-vein isolation was superior to atrioventricular-node ablation with biventricular pacing in patients with heart failure who had drug-refractory atrial fibrillation. (ClinicalTrials.gov number, NCT00599976.)

N ENGL J MED 359;17 WWW.NEJM.ORG OCTOBER 23, 2008

Antonio Raviele, M.D., Michel Haïssaguerre, M.D., and Andrea Natale, M.D., for the PABA-CHF Investigators*

RESULTS

In all, 41 patients underwent pulmonary-vein isolation, and 40 underwent atrioventricular-node ablation with biventricular pacing; none were lost to follow-up at 6 months. The composite primary end point favored the group that underwent pul-

CONCLUSIONS

Pulmonary-vein isolation was superior to atrioventricular-node ablation with biventricular pacing in patients with heart failure who had drug-refractory atrial fibrillation. (ClinicalTrials.gov number, NCT00599976.)

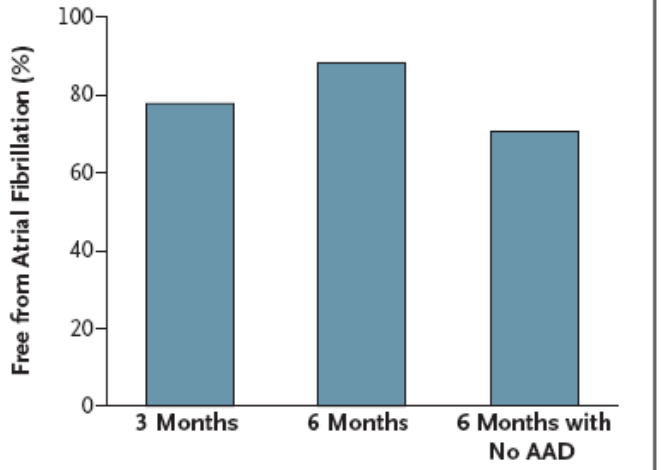
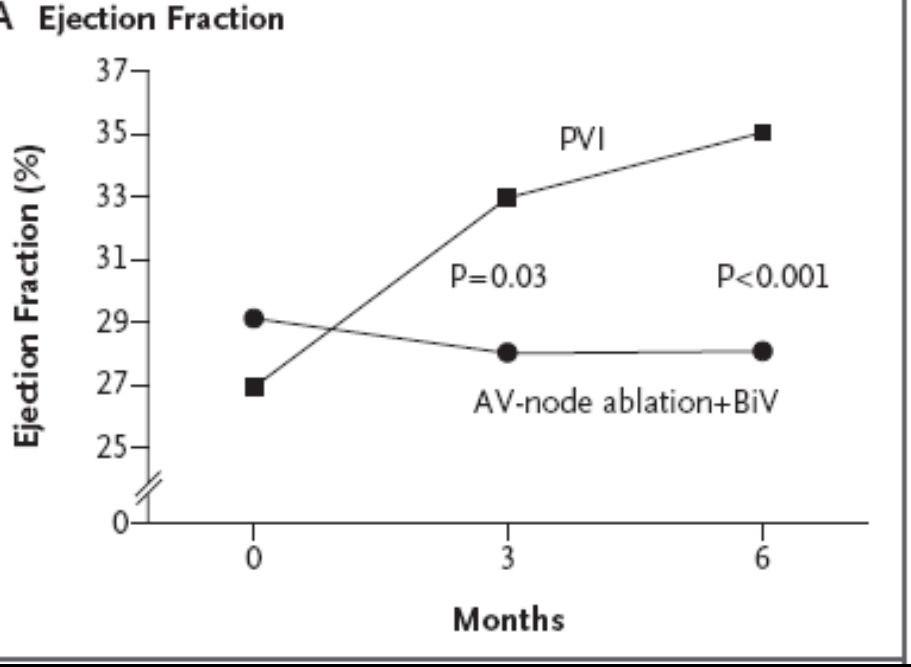


Figure 2. Freedom from Atrial Fibrillation in Patients Undergoing Pulmonary-Vein Isolation with or without Antiarrhythmic Drugs (AAD).



גבר בן 50

- עבר השתלת CRTP
- AVJ ABLATION
- חש טוב EF = 55%
- נוגדי קרישה?