חולה צעיר עם פרפור פרוזדורים התקפי

קורס למתמחים, קיסריה נובמבר 2010

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THE BARZILAI MEDICAL CENTER ASHKELON

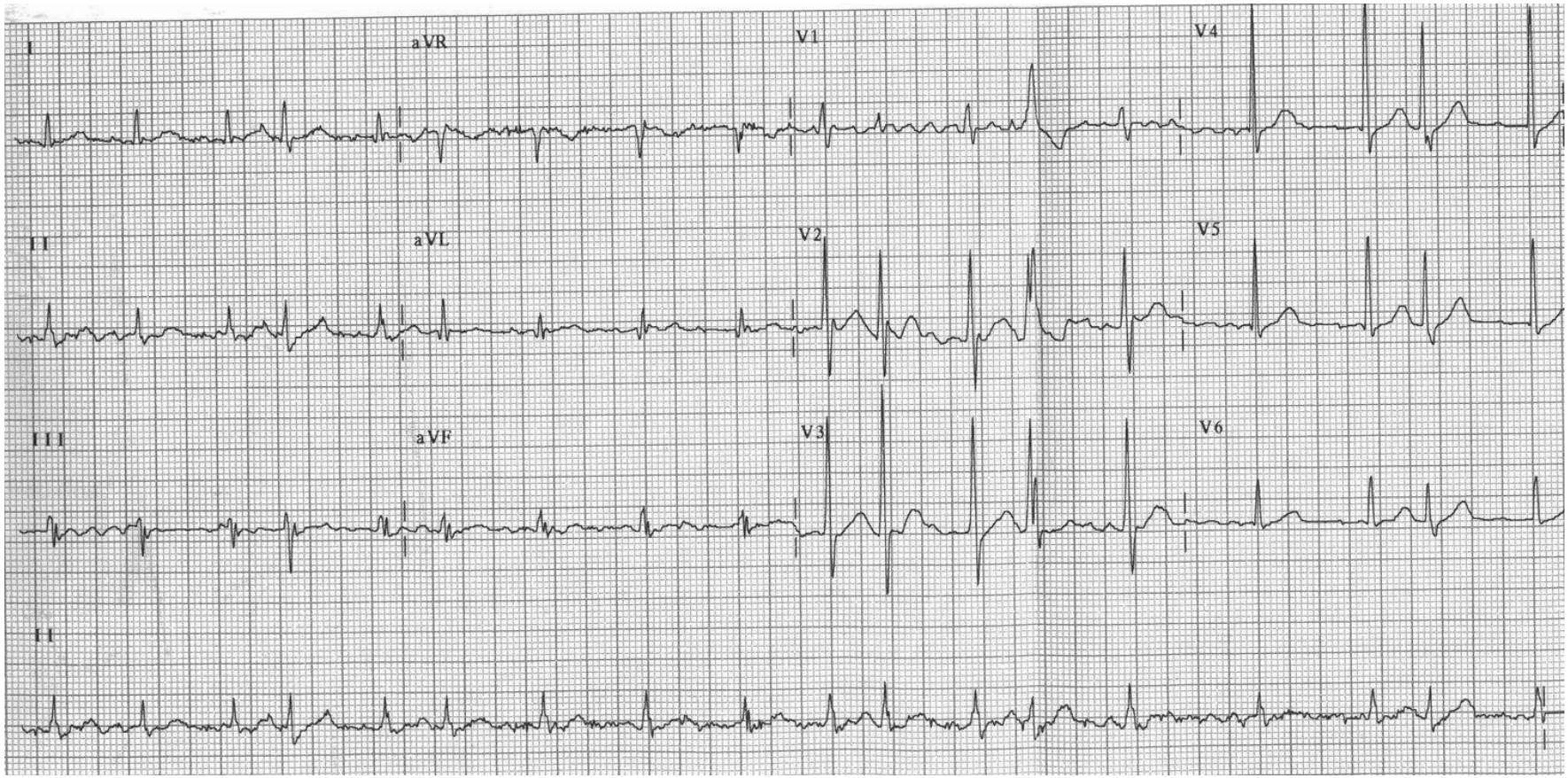
affiliated to the Faculty of Health Sciences
Ben-Gurion University of The Negev

מסונף לפקולטה למדעי הבריאות
אוניברסיטת בן-גוריון בנגב

מדינת ישראל
משרד הבריאות

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
-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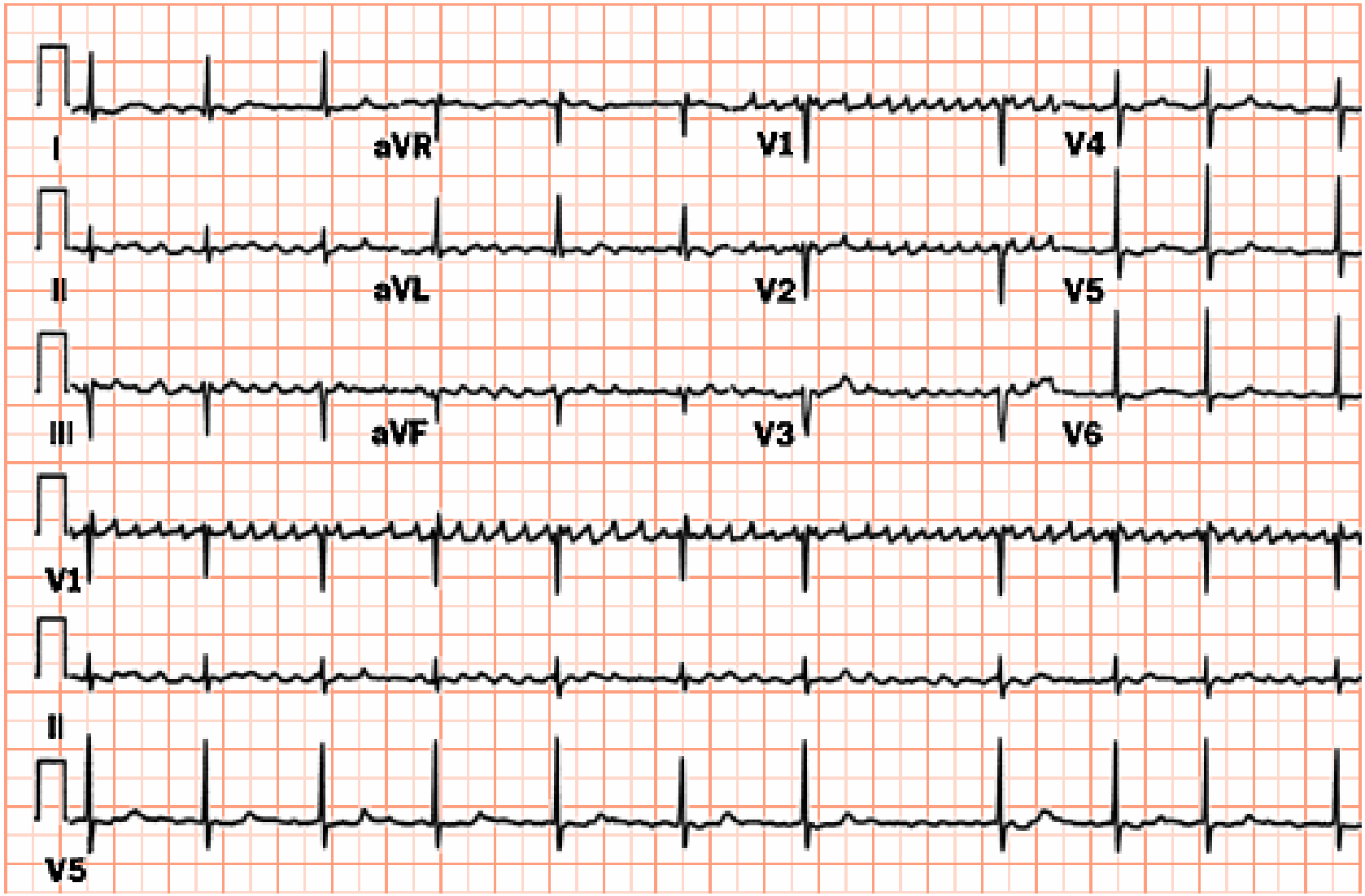
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Accuracy of Diagnosing Atrial Flutter and Atrial Fibrillation From a Surface Electrocardiogram by Hospital Physicians: Analysis of Data From Internal Medicine Departments

Arthur Shiyovich, MD, Arik Wolak, MD, Lital Yacobovich, MD, Aviva Grosbard, SCC and Amos Katz, MD

Abstract: *Introduction:* Atrial fibrillation (AF) and atrial flutter (AFL) are clinically and electrocardiographically similar. However, considering significant therapeutic differences, differentiation of these 2 arrhythmias is essential. Our aims were to evaluate the misdiagnosis rate among electrocardiograms (ECGs) interpreted as AF or AFL by internists and to describe the factors that could be responsible for the misinterpretation. *Methods:* We evaluated patients discharged with a diagnosis of AF or AFL from internal medicine wards of a tertiary referral center. The reanalysis of the ECGs was performed by 2 senior cardiologists (1 electrophysiologist), blinded to the primary analysis and patient's clinical data. *Results:* The ECGs of 44 of 268 (16%) patients were misinterpreted and consisted of: 25 (57%) AFL, 5 (11%) SVT, 7 (16%) sinus rhythm with premature atrial beats and 7 (16%) AF. The baseline diagnosis was correct in 212 of 246 (86%) for AF and 12 of 22 (55%) for AFL, $P < 0.001$. A significantly higher rate of AFL was misdiagnosed compared with AF [25 of 37 (68%) versus 7 of 219 (3%), respectively; $P < 0.001$], higher in atypical than typical AFL [16 of 20 (80%) versus 9 of 17 (53%), respectively; $P = 0.07$]. Reduced quality ECGs was found more often among the incorrectly than the correctly diagnosed ECGs ($P < 0.001$]. *Conclusions:* ECGs, interpreted as AF or AFL by internists, are often misdiagnosed. AFL was misdiagnosed more often than AF, with atypical more often than typical AFL. Consulting with a cardiologist and applying diagnostic criteria may reduce misdiagnosis.

Key Indexing Terms: Atrial fibrillation; Atrial flutter; ECG; Misinterpretation. **[Am J Med Sci 2010;340(4):271–275.]**

When considering these significant therapeutic differences, correct diagnosis is essential.

A few studies have addressed the misinterpretations of the 12-lead electrocardiogram (ECG)[8–10] and the potential consequences of diagnostic errors related AF.[8,11,12] Knight et al[9] assessed the ability of physicians to differentiate AFL from AF by a questionnaire regarding three 12-lead ECGs (2 AF and 1 AFL) and concluded that these 2 arrhythmias are often misdiagnosed, more often by house officers and internists than cardiology fellows and cardiologists. Bogun et al[8] found that the ECGs of 35% of the patients interpreted as AF by the computerized algorithm were erroneous. In 24% of these cases, the physician ordering the ECG failed to correct the diagnosis. Mant et al[13] found that general practitioners correctly detected 80% AF ECGs and misinterpreted 8% of sinus rhythm cases as AF. Studies evaluating AFL and AF misdiagnosis rate in real-life clinical practice are scarce. The purpose of this study was to evaluate the misinterpretation rate of 12-lead ECGs demonstrating these 2 arrhythmias by internists in a tertiary referral center and to describe any potential factors that could be related to or responsible for the incorrect diagnosis.

METHODS

In this observational retrospective cohort study, we reviewed the medical records of all patients discharged with a

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- איך קוראים לזה?

European Heart Journal
doi:10.1093/eurheartj/ehq278

ESC GUIDELINES

Guidelines for the management of atrial fibrillation

The Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC)

Developed with the special contribution of the European Heart Rhythm Association (EHRA)†

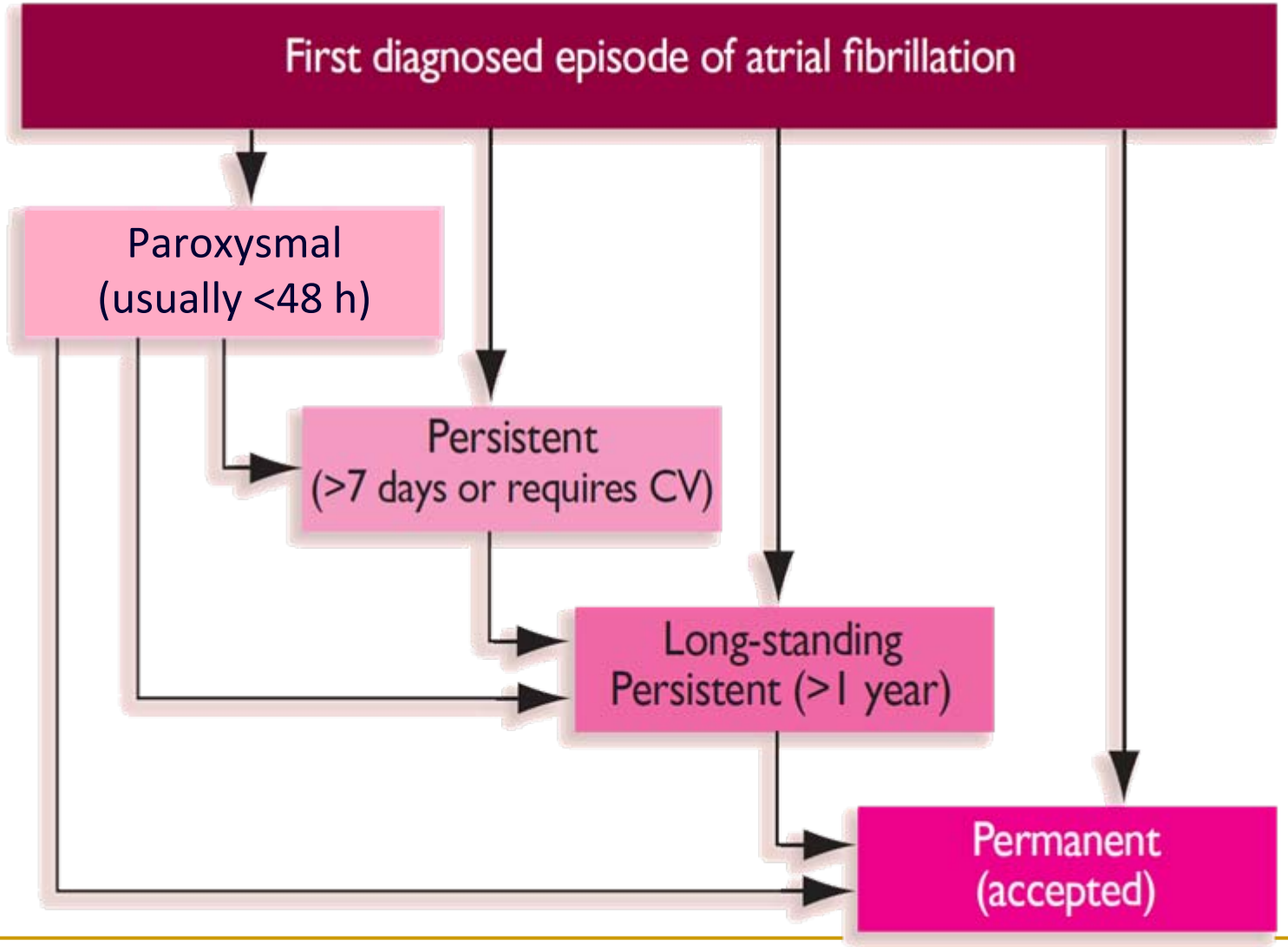
Endorsed by the European Association for Cardio-Thoracic Surgery (EACTS)

Published September 2010

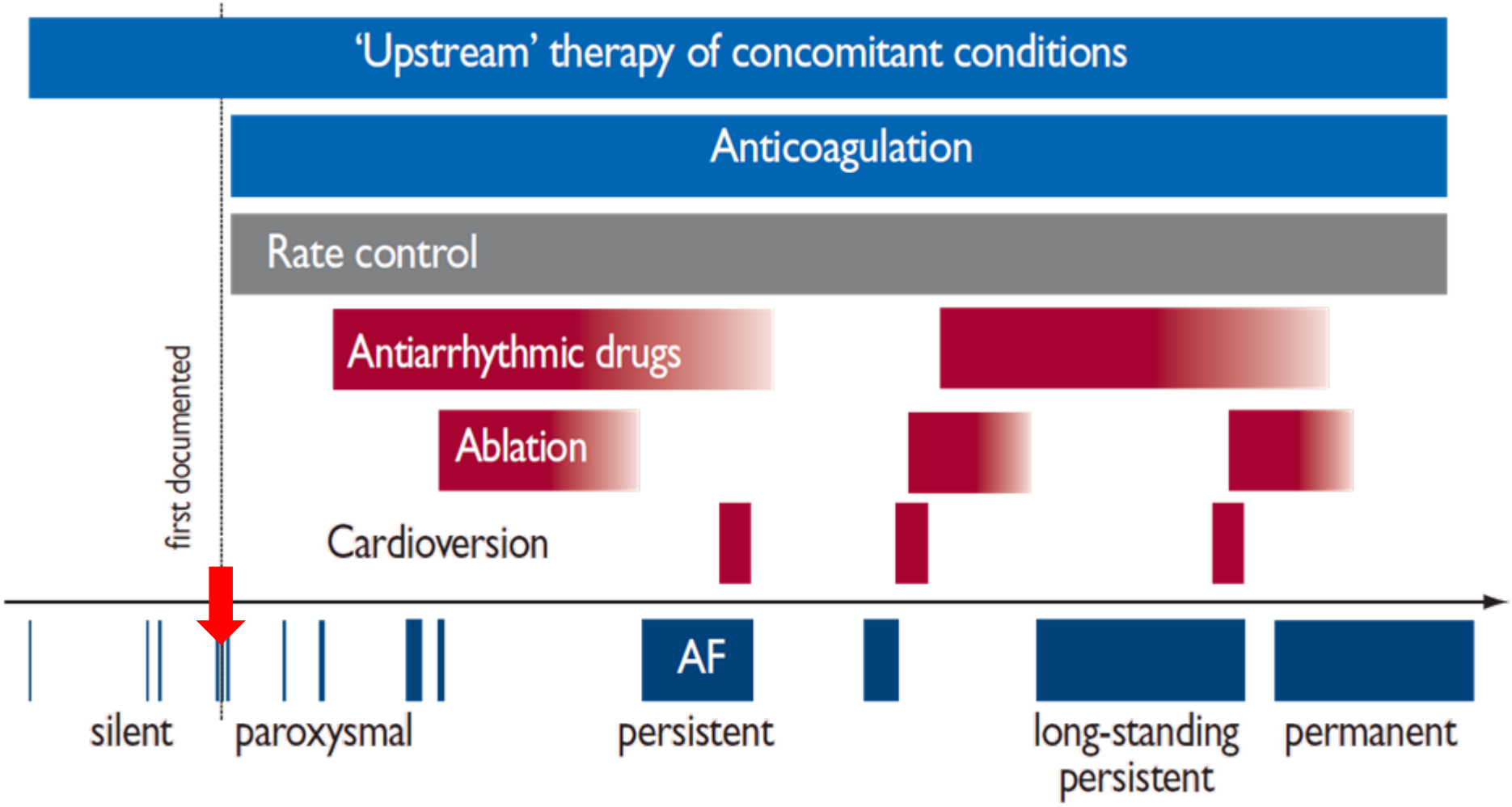
European Heart Journal

http://eurheartj.oxfordjournals.org/

Classification of Atrial Fibrillation



Time Course and Management of AF



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- עוד הגדרה חשובה
  - Valvular
  - Non Valvular
- ללא כל מחלות רקע
  - Lone AF =

Important Elements of the History

Is there any precipitating factor such as exercise, emotion, or alcohol intake?
Are symptoms during the episodes moderate or severe—the severity may be expressed using the **EHRA score**, which is similar to the CCS-SAF score.
Are the episodes frequent or infrequent, and are they long or short lasting?
Is there a history of co-morbid disease such as hypertension, coronary heart disease, heart failure, peripheral vascular disease, cerebrovascular disease, stroke, diabetes, or chronic pulmonary disease?
Is there an alcohol abuse habit?
Is there a family history of AF?

Symptom Scores

Classification of AF-related symptoms (EHRA score)	
EHRA class	**Explanation**
EHRA I	'No symptoms'
EHRA II	'Mild symptoms'; normal daily activity not affected
EHRA III	'Severe symptoms'; normal daily activity affected
EHRA IV	'Disabling symptoms'; normal daily activity discontinued

Diagnosis / Follow-up
Class I Recommendations

Recommendations	Class[a]	Level[b]
The diagnosis of AF requires documentation by ECG.	I	B
In patients with suspected AF, an attempt to record an ECG should be made when symptoms suggestive of AF occur.	I	B
A simple symptom score (EHRA score) is recommended to quantify AF-related symptoms.	I	B
All patients with AF should undergo a thorough physical examination, and a cardiac- and arrhythmia-related history should be taken.	I	C
In patients with severe symptoms, documented or suspected heart disease, or risk factors, an echocardiogram is recommended.	I	B
In patients treated with antiarrhythmic drugs, a 12-lead ECG should be recorded at regular intervals during follow-up.	I	C

Critical Questions on Follow-up

- **Has the risk profile changed (e.g. new diabetes or hypertension), especially with regard to the indication for anticoagulation?**
- **Has the need for anticoagulation passed, e.g. postcardioversion in a patient with low thrombo-embolic risk?**
- **Have the patient's symptoms improved on therapy; if not, should other therapy be considered?**
- **Are there signs of proarrhythmia or risk of proarrhythmia; if so, should the dose of an antiarrhythmic drug be reduced or a change made to another therapy?**
- **Has paroxysmal AF progressed to a persistent /permanent form, in spite of antiarrhythmic drugs; in such a case, should another therapy be considered?**

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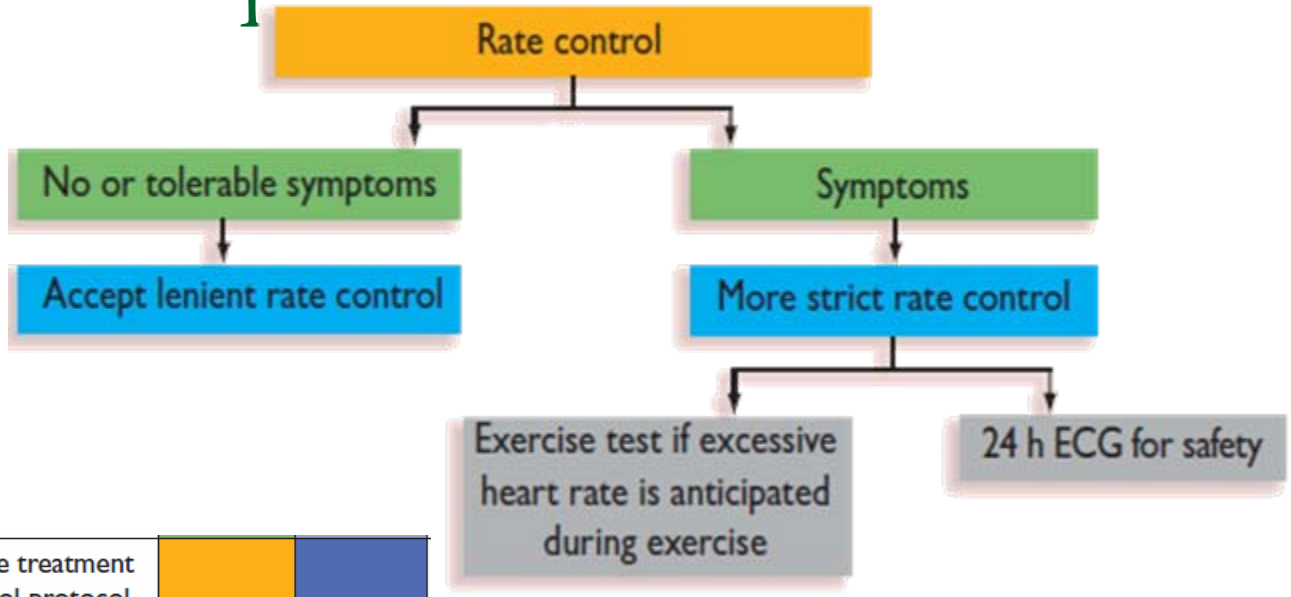
Optimal Rate Control



It is reasonable to initiate treatment with a lenient rate control protocol aimed at a resting heart rate <110 bpm.	IIa	B
It is reasonable to adopt a stricter rate control strategy when symptoms persist or tachycardiomyopathy occurs, despite lenient rate control: resting heart rate <80 bpm and heart rate during moderate exercise <110 bpm. After achieving the strict heart rate target, a 24 h Holter monitor is recommended to assess safety.	IIa	B

In patients who experience symptoms related to AF during activity, the adequacy of rate control should be assessed during exercise, and therapy should be adjusted to achieve a physiological chronotropic response and to avoid bradycardia.	I	C

RACE III – NEJM 2010

Optimal Rate Control

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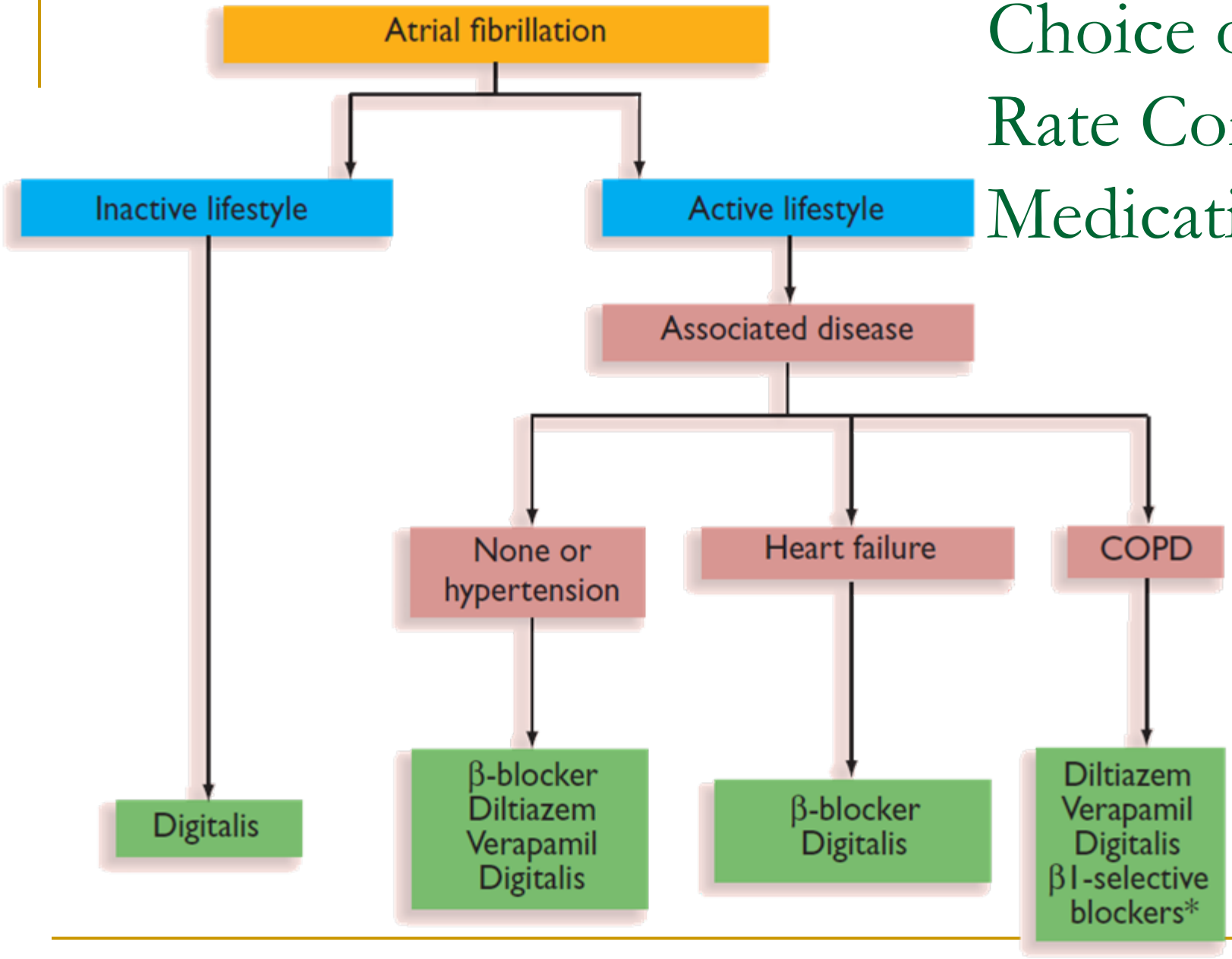
Choice of Rate Control Medication



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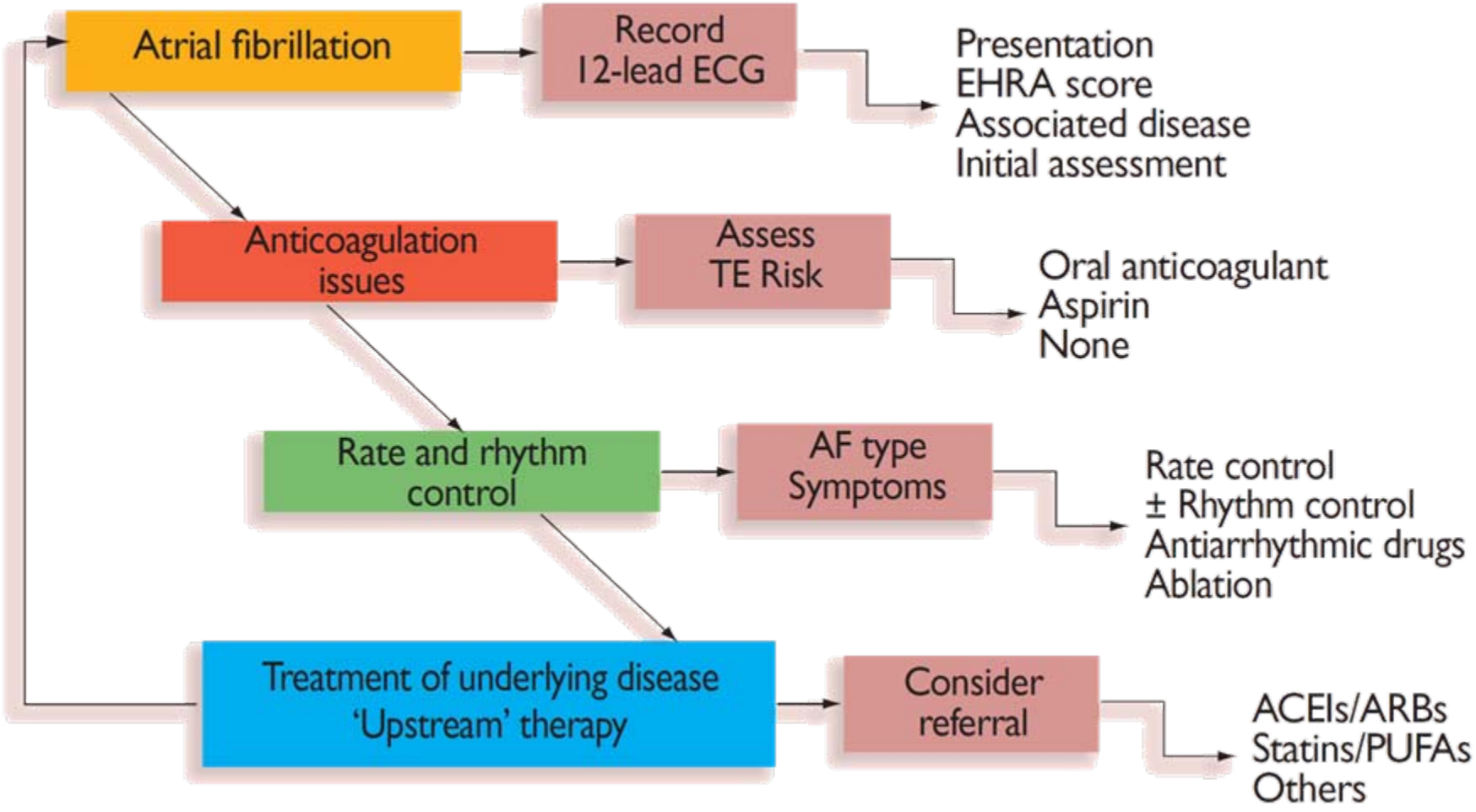
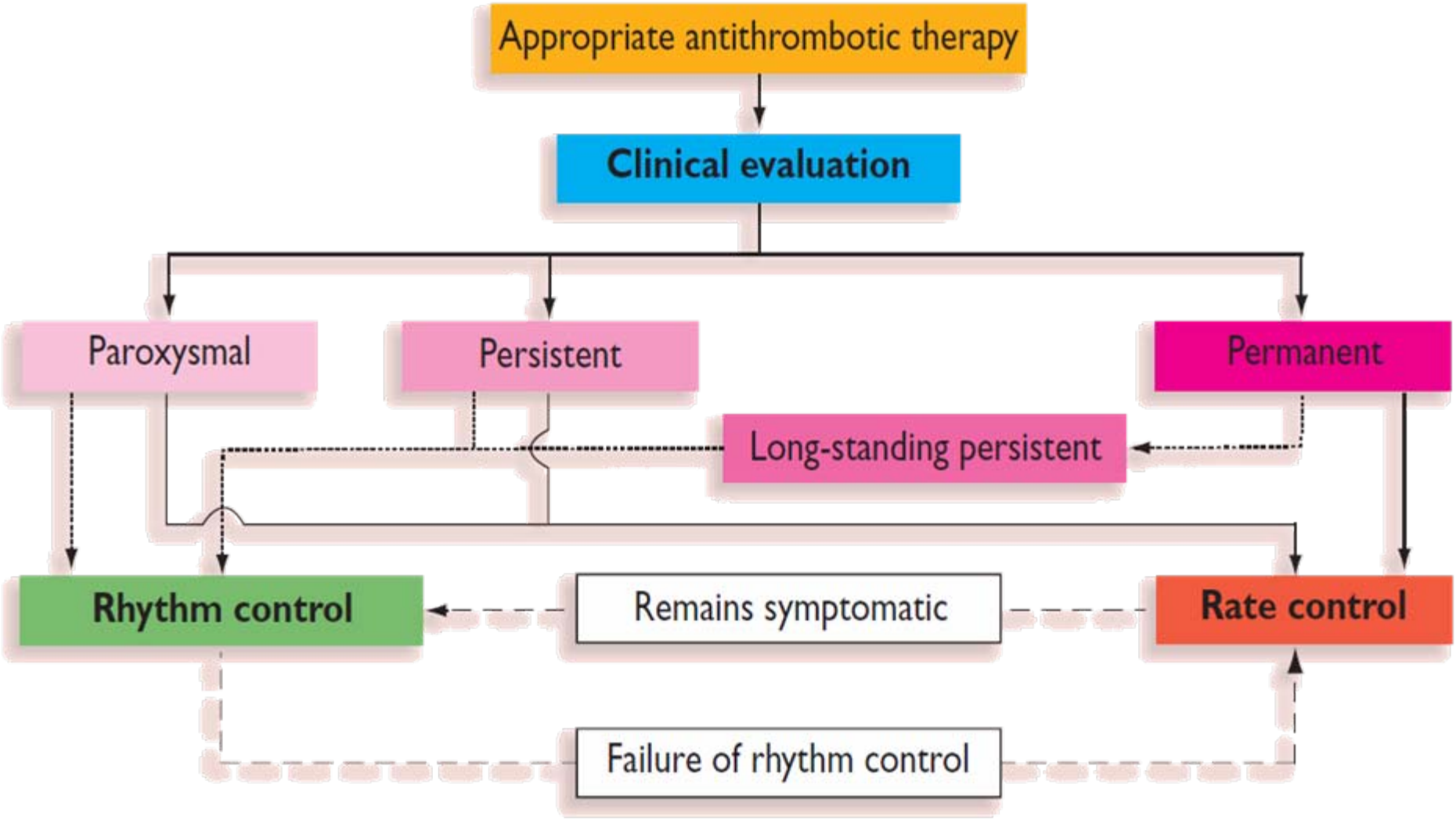
- מה עושים

Principles of Management



Rate and Rhythm Control



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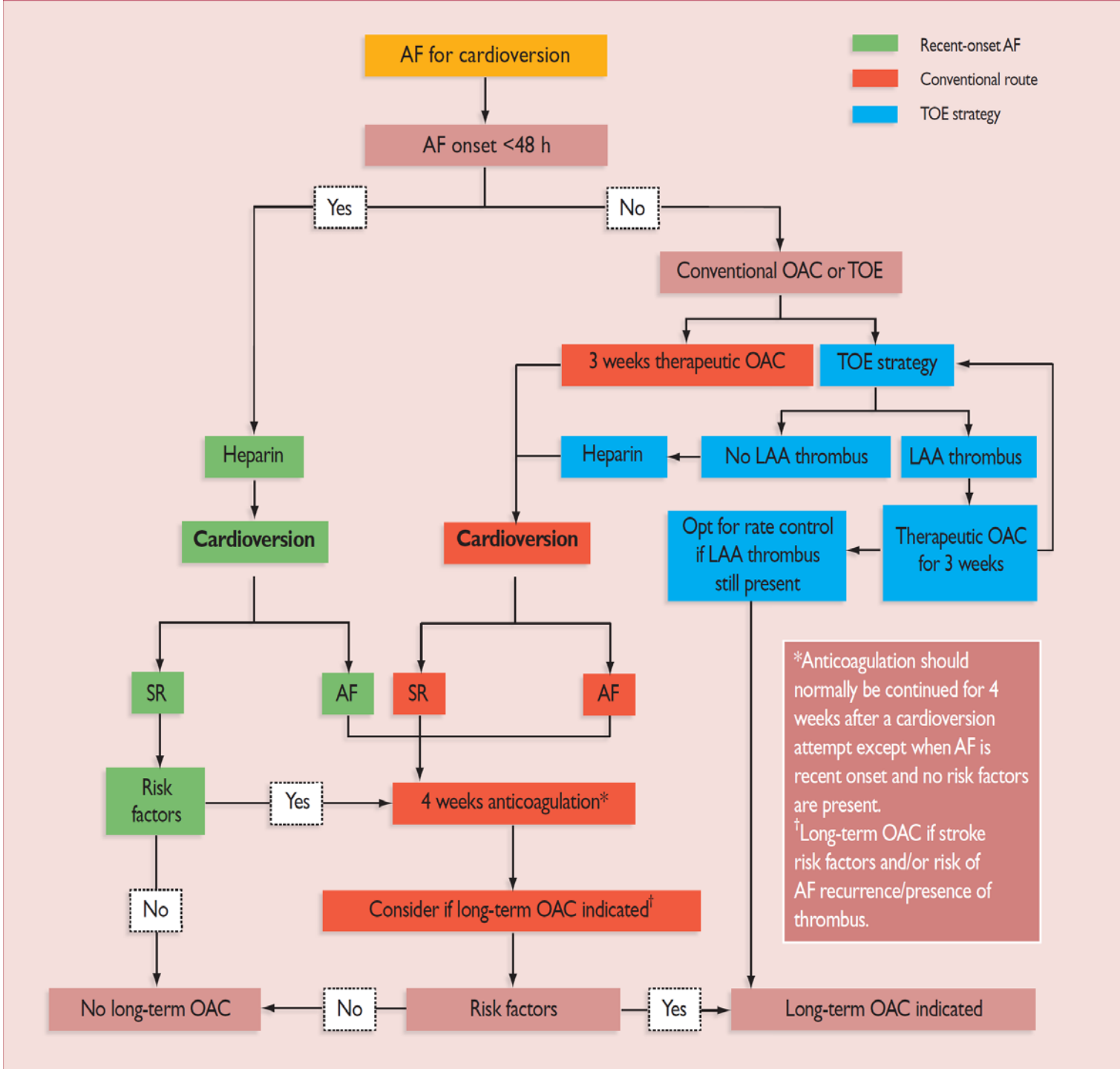
- רוצים להופכו
- טיפול נוגד קרישה.
  - זמן AF לא ידוע
  - LMWH VS VKA

היפוך קצב – נוגדי קרישה



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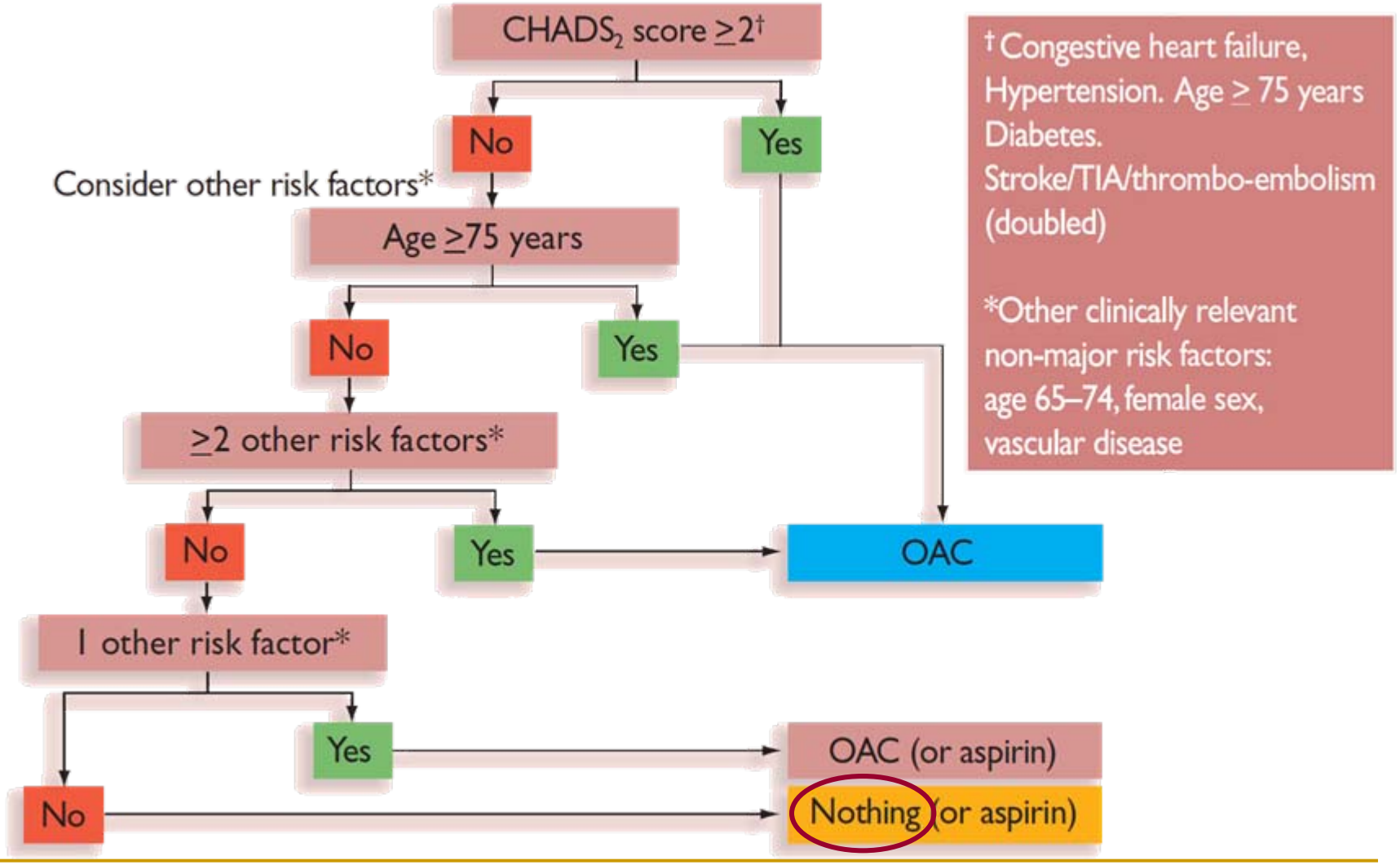
הפכנו לסינוס – נוגדי קרישה לאחר חודש?

CHADS2

Risk factor	Score
Congestive heart failure/LV dysfunction	1
Hypertension	1
Age ≥75	1
Diabetes mellitus	1
Stroke/TIA/thrombo-embolism	2

CHA_2DS_2-VASc Thromboembolic Risk Score



Bleeding Risk – HAS-BLED Score

Letter	Clinical characteristic[a]	Points awarded
H	Hypertension	1
A	Abnormal renal and liver function (1 point each)	1 or 2
S	Stroke	1
B	Bleeding	1
L	Labile INRs	1
E	Elderly (e.g. age >65 years)	1
D	Drugs or alcohol (1 point each)	1 or 2
		Maximum 9 points

Documented AF + ≥1 risk factor for Stroke

Unsuitable for VKA

ACTIVE W
C&A versus VKA

ACTIVE A
C&A versus ASA

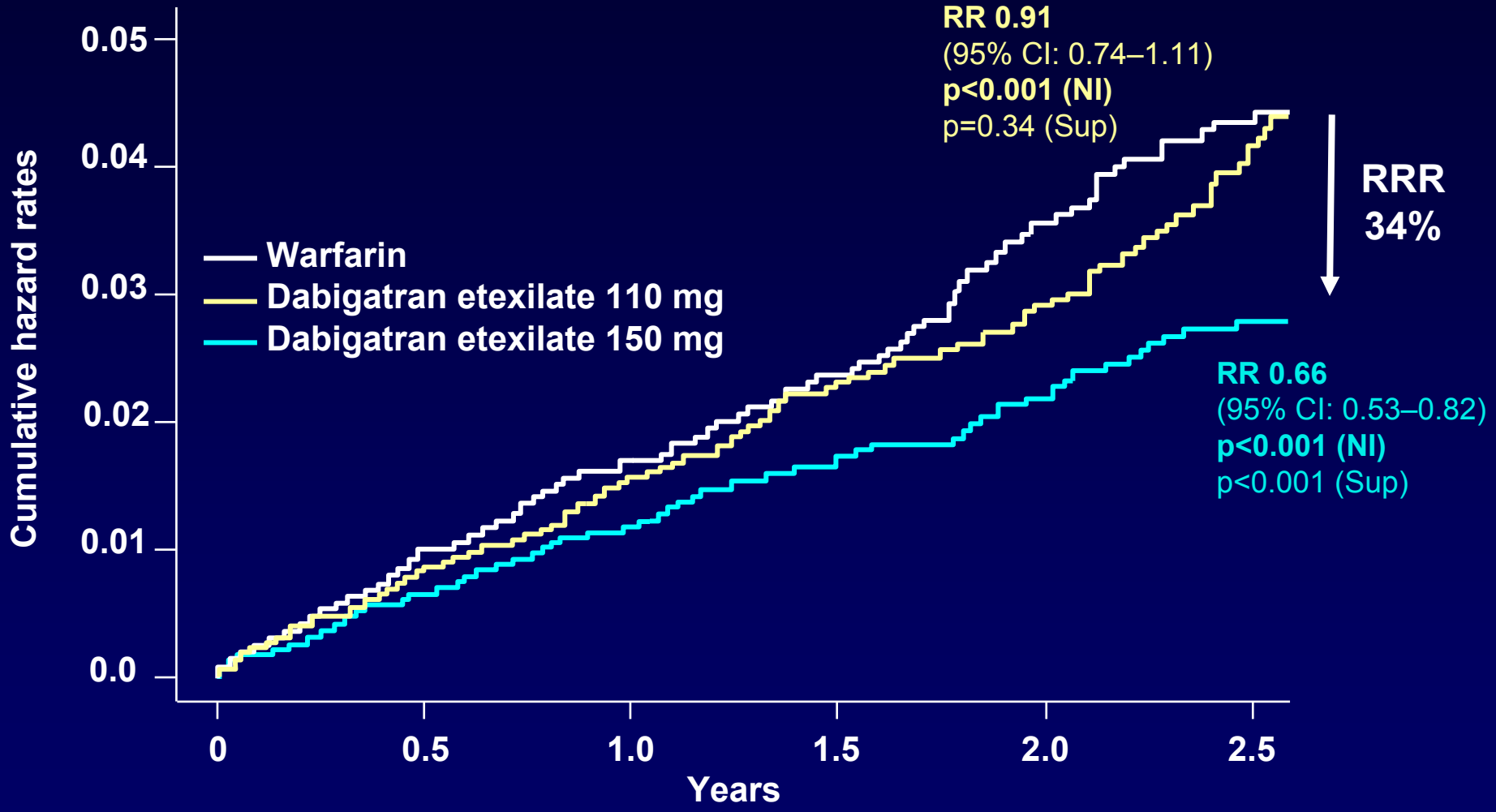
No Exclusion Criteria for ACTIVE I

ACTIVE I
Irbesartan versus Placebo

Partial Factorial Design

Time to first stroke / SSE

RELY®
Study of stroke prevention in atrial fibrillation

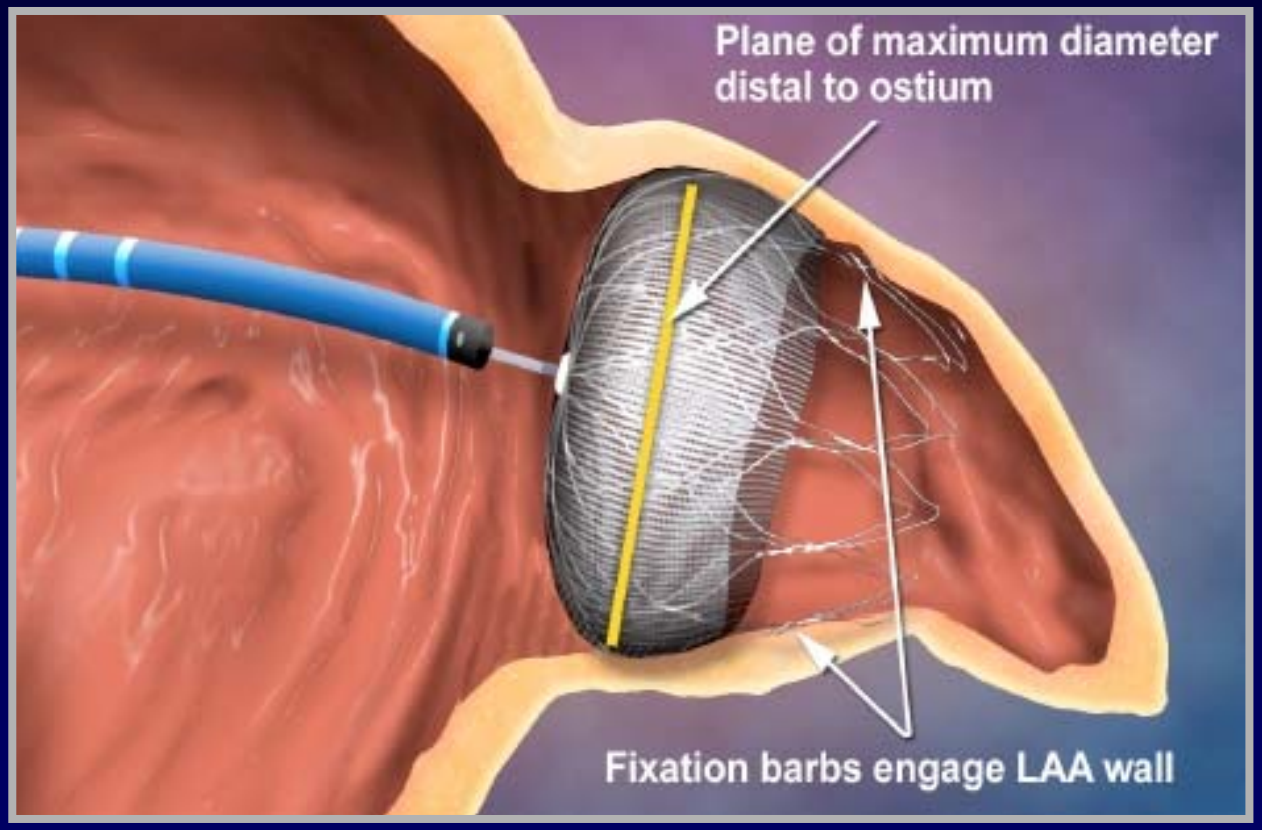


RR, relative risk; CI, confidence interval; NI, non-inferior; Sup, superior

Connolly SJ., et al. *NEJM* published online on Aug 30th 2009.
DOI 10.1056/NEJMoa0905561

Dabigatran etexilate is in clinical development and not licensed for clinical use in stroke prevention for patients with atrial fibrillation

WATCHMAN LAA Closure Device



Thromboembolism prevention

Pharmacologic

- **Warfarin**
- **Aspirin**
- Thrombin, Xa inhibitors

Non - pharmacologic

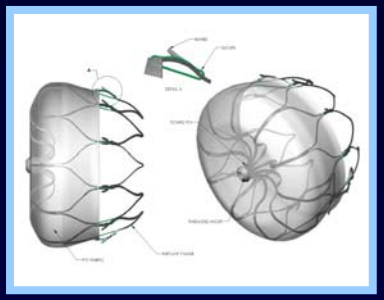
- **Removal / Isolation appendage**

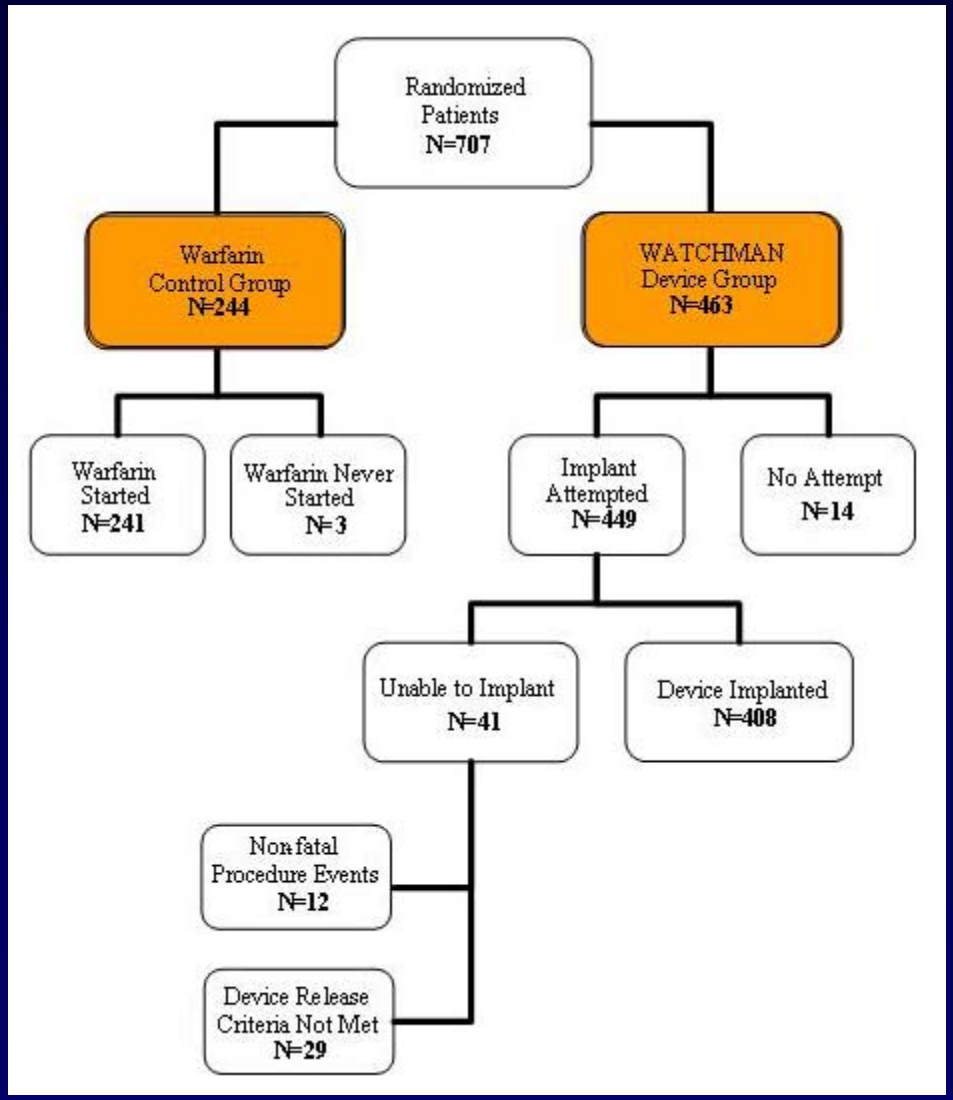
Protect AF Trial

: Lancet. 2009 Aug 15;374(9689):534-42.

Percutaneous closure of the left atrial appendage versus warfarin therapy for prevention of stroke in patients with atrial fibrillation: a randomised non-inferiority trial.

Holmes DR, Reddy VY, Turi ZG, Doshi SK, Sievert H, Buchbinder M, Mullin CM, Sick P; PROTECT AF Investigators.





MAYO CLINIC

Summary Anti Coagulation in Non Valvular AF

CHADS2 Score ≤ 1

ASA

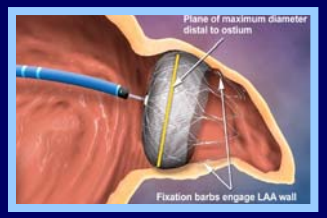
81-325 mg

CHADS2 Score > 1

Warfarin

Dabigatran

ASA + Clopidogrel



Failure /unable

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איך הופכים?

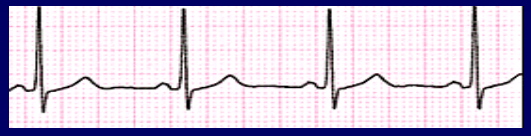
?

Rhythm Control

vs

Rate Control

Rate vs Rhythm



"If antiarrhythmic drugs had adequate clinical efficacy and safety, there probably would never have been any rate versus rhythm control trials"

Albert Waldo, MD
Cleveland Clinic

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**

החלטת לבצע היפוך תרופתי מידי, באיזו תרופה תבחר

א- Amıodarone

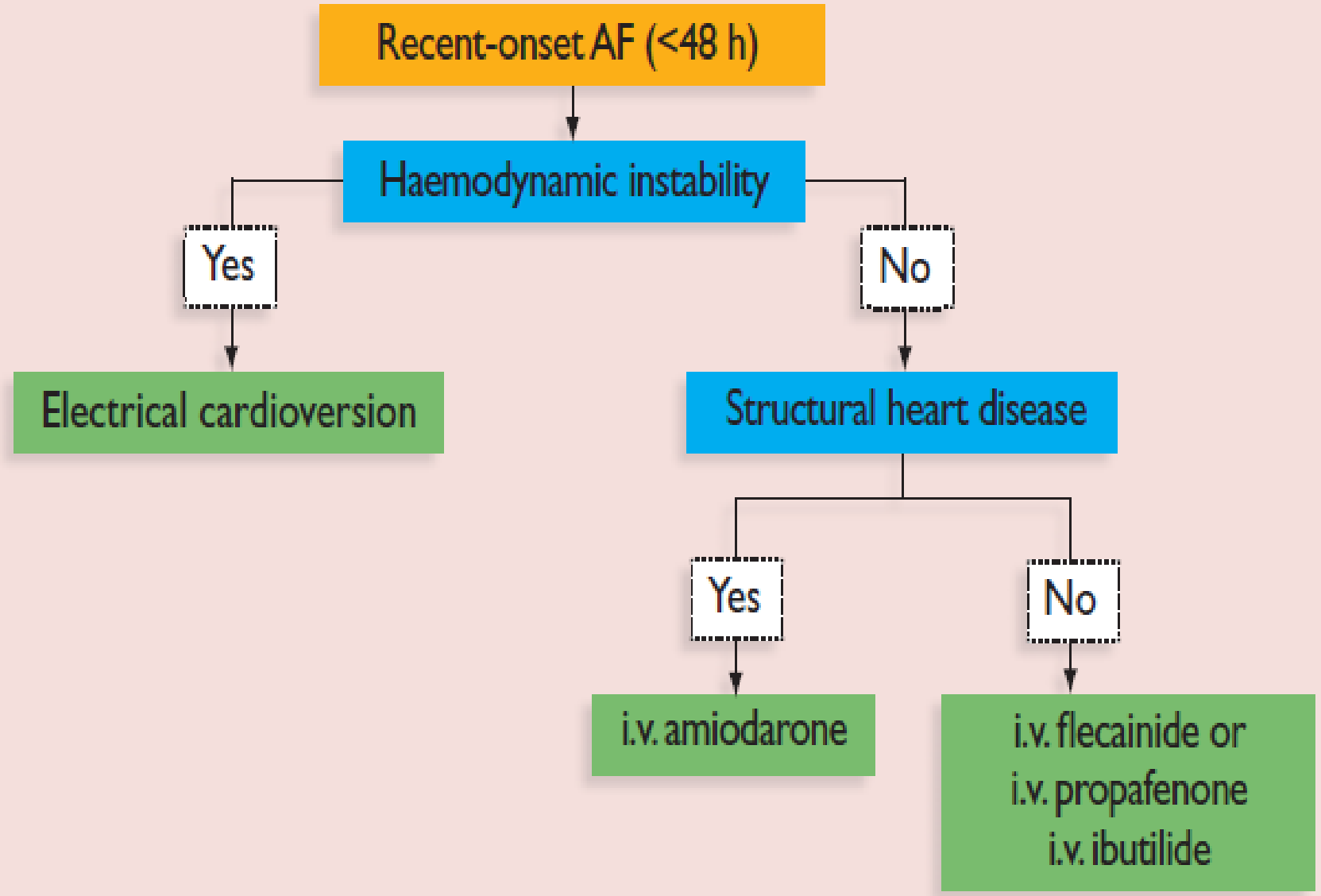
ב- Flecainide

ג- Propafenone

ד- Procainamide

ה- Quinidine

ו- Sotalol


Recent-onset AF (<48 h)
Haemodynamic instability
Yes
No
Electrical cardioversion
Structural heart disease
Yes
No
i.v. amiodarone
i.v. flecainide or
i.v. propafenone
i.v. ibutilide

- 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.

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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.

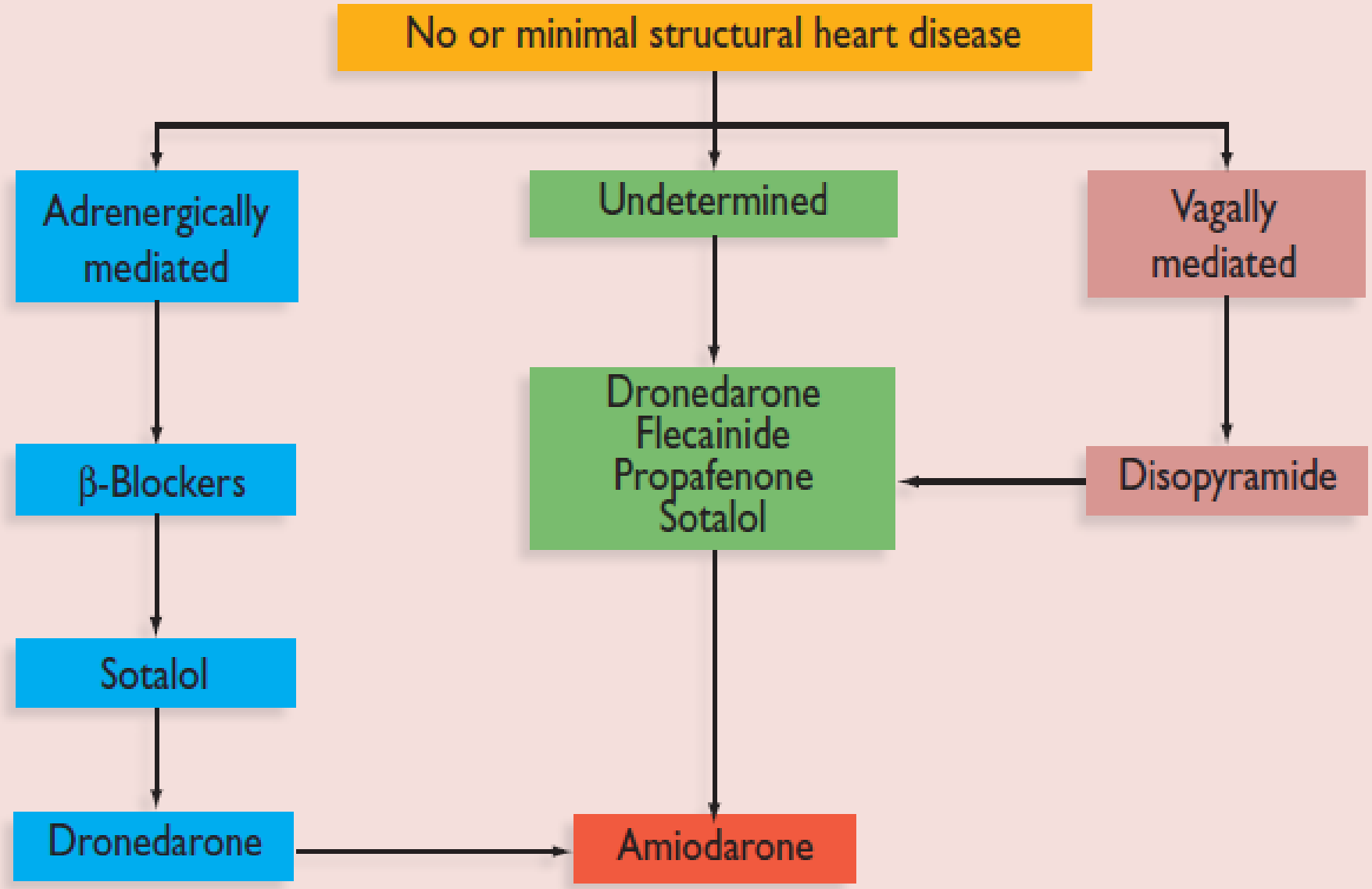
syndrome, or structural heart disease, "pill-in-the-pocket" administration of propafenone and flecainide outside the hospital becomes an option once treatment has proved safe in hospital, given the relative safety (lack of organ toxicity and low estimated incidence of proarrhythmia).[253–255] Before 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

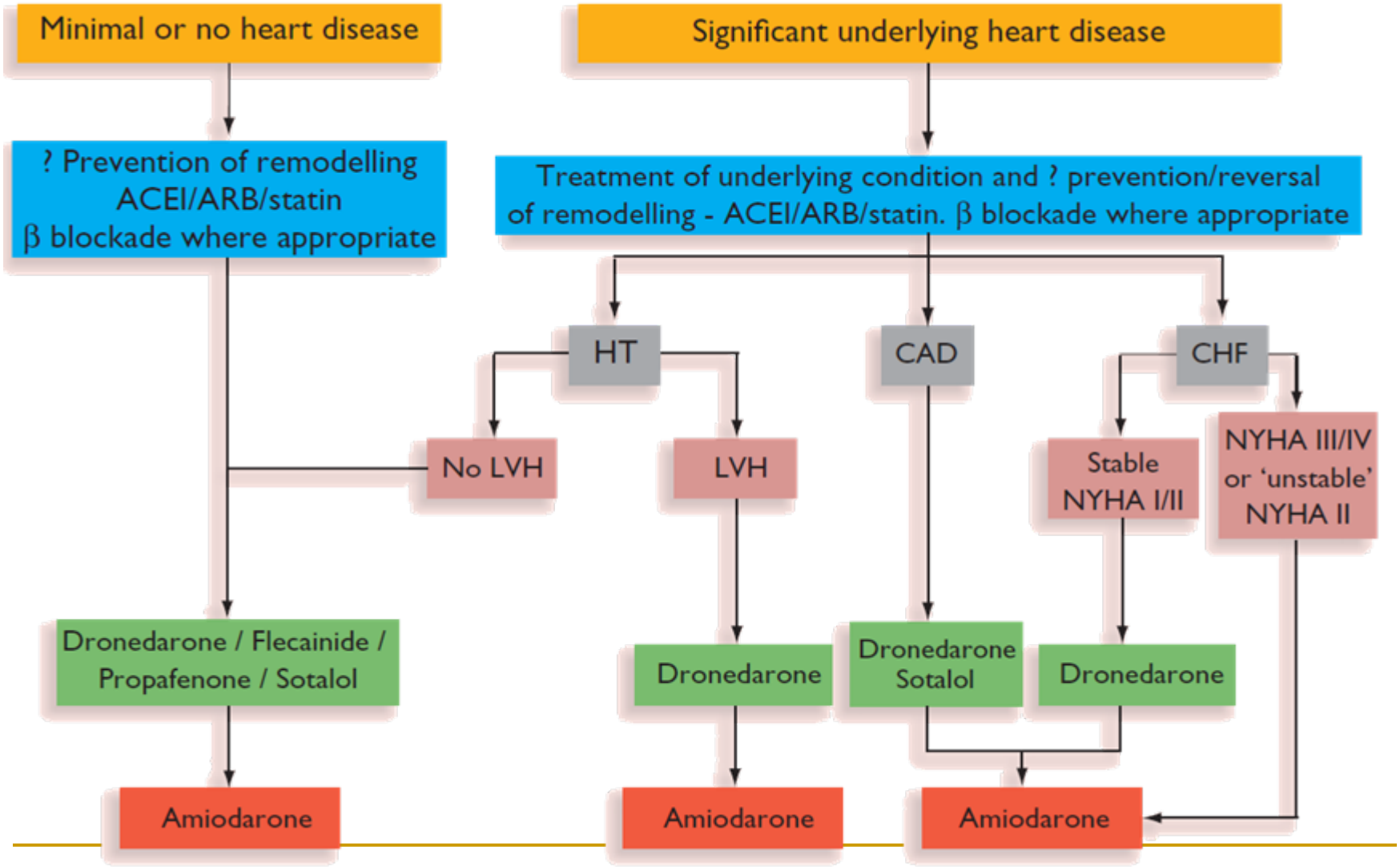
- אירועים כל חודש
- מוכן לנסות טיפול תרופתי מה לתת?

Principles of Antiarrhythmic Drug Therapy to Maintain Sinus Rhythm

1. Treatment is motivated by attempts to reduce AF-related symptoms
2. Efficacy of antiarrhythmic drugs to maintain sinus rhythm is modest
3. Clinically successful antiarrhythmic drug therapy may reduce rather than eliminate recurrence of AF
4. If one antiarrhythmic drug 'fails' a clinically acceptable response may be achieved with another agent
5. Drug-induced proarrhythmia or extra-cardiac side-effects are frequent
6. Safety rather than efficacy considerations should primarily guide the choice of antiarrhythmic agent


No or minimal structural heart disease
Adrenergically mediated
Undetermined
Vagally mediated
β-Blockers
Dronedarone
Flecainide
Propafenone
Sotalol
Disopyramide
Sotalol
Dronedarone
Amiodarone

Choice of AAD - Underlying Pathology

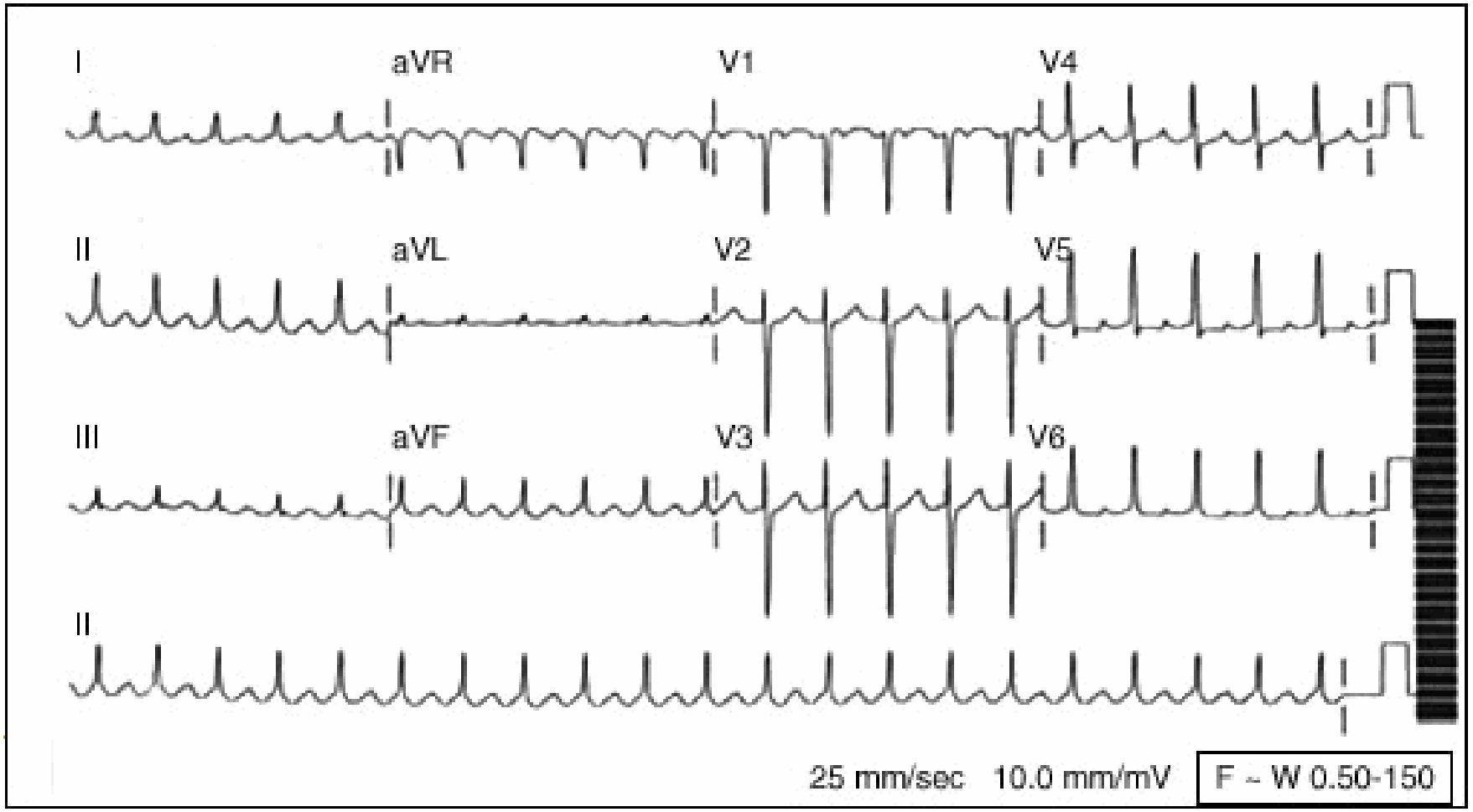


גבר בן 47

- 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:

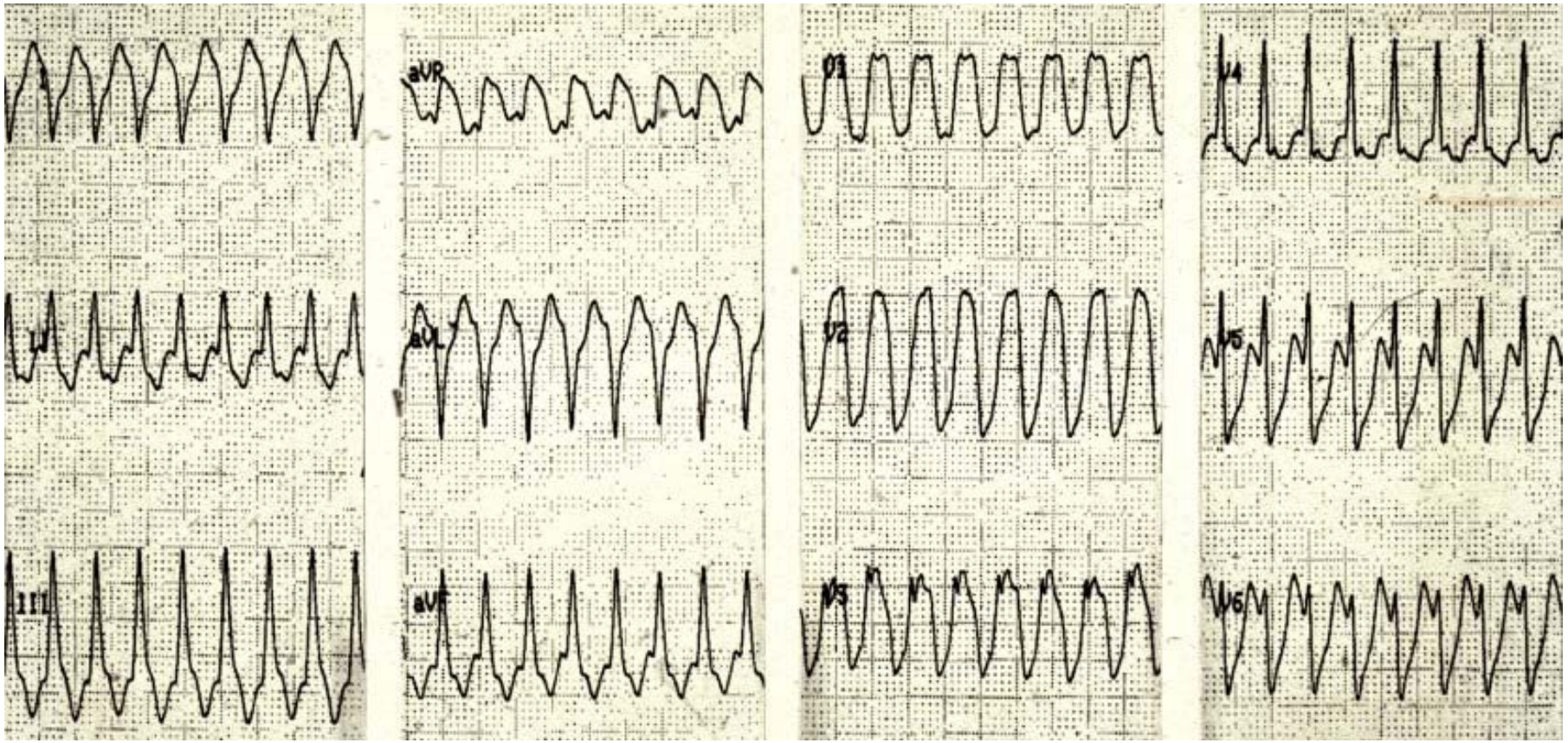
מה אופציות הטיפול?



החולה טופל ב TAMBOCOR זו הפרעת הקצב אשר נצפתה

מה הפרעת הקצב?

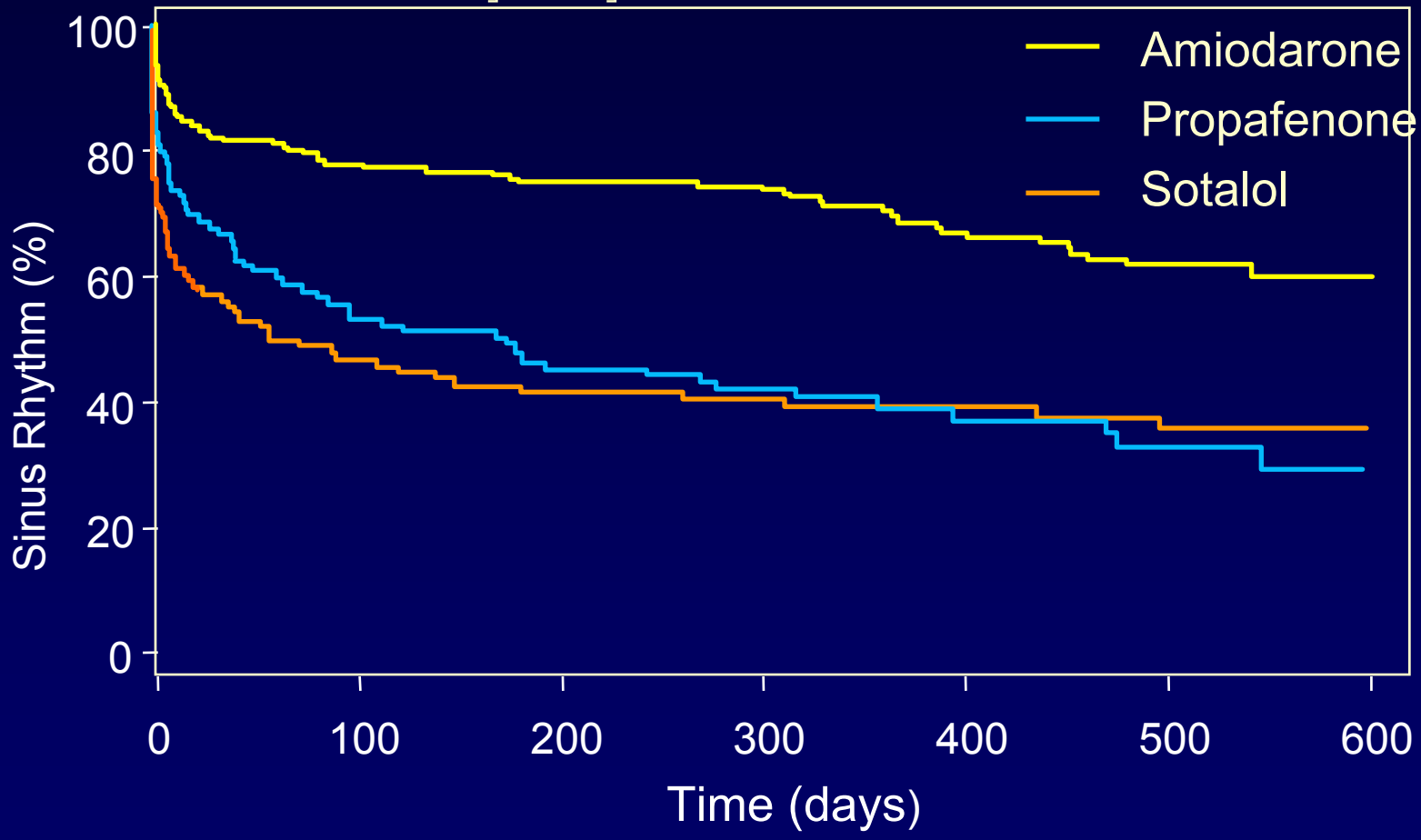
א- Ventricular tachycardia (VT)
ב- Atrial flutter with 1:1 conduction
ג- Atrio-ventricular junctional tachycardia (AVJT) with aberrancy
ד- Tdp



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

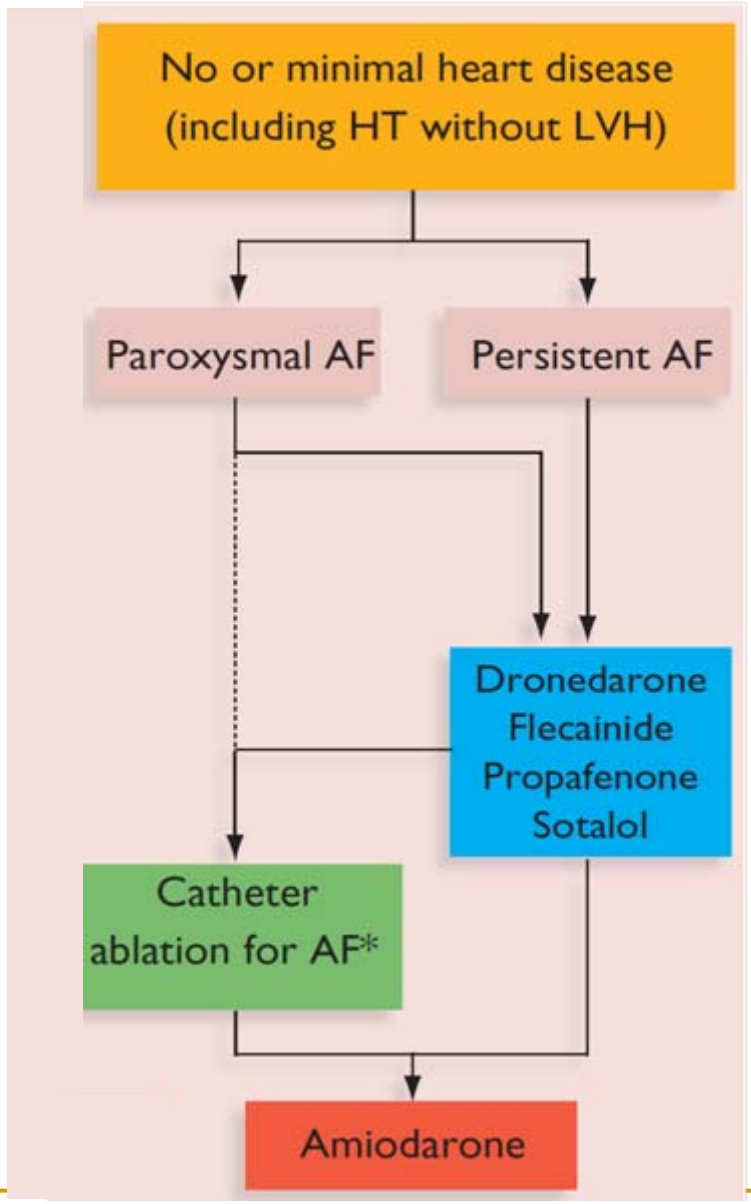
- כשל TABOCOR SOTALOL AMIODARONE
- חזר ב AF קצב חדרי = 120 סימפטומטי

גבר בן 48

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

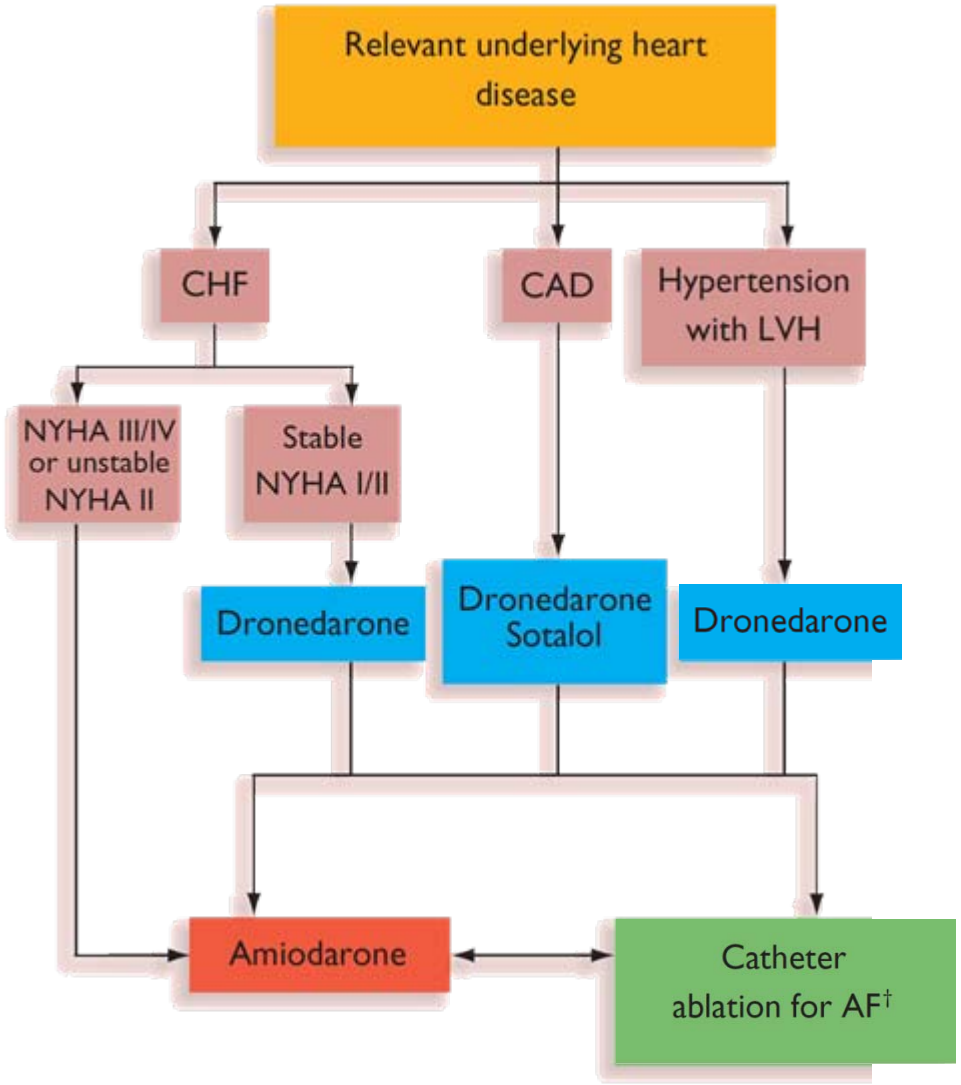
Indication for LA Catheter Ablation

Catheter ablation for paroxysmal AF should be considered in symptomatic patients who have previously failed a trial of antiarrhythmic medication.	IIa	A
Ablation of persistent symptomatic AF that is refractory to antiarrhythmic therapy should be considered a treatment option.	IIa	B
Catheter ablation of AF may be considered prior to antiarrhythmic drug therapy in symptomatic patients despite adequate rate control with paroxysmal symptomatic AF and no significant underlying heart disease.	IIb	B



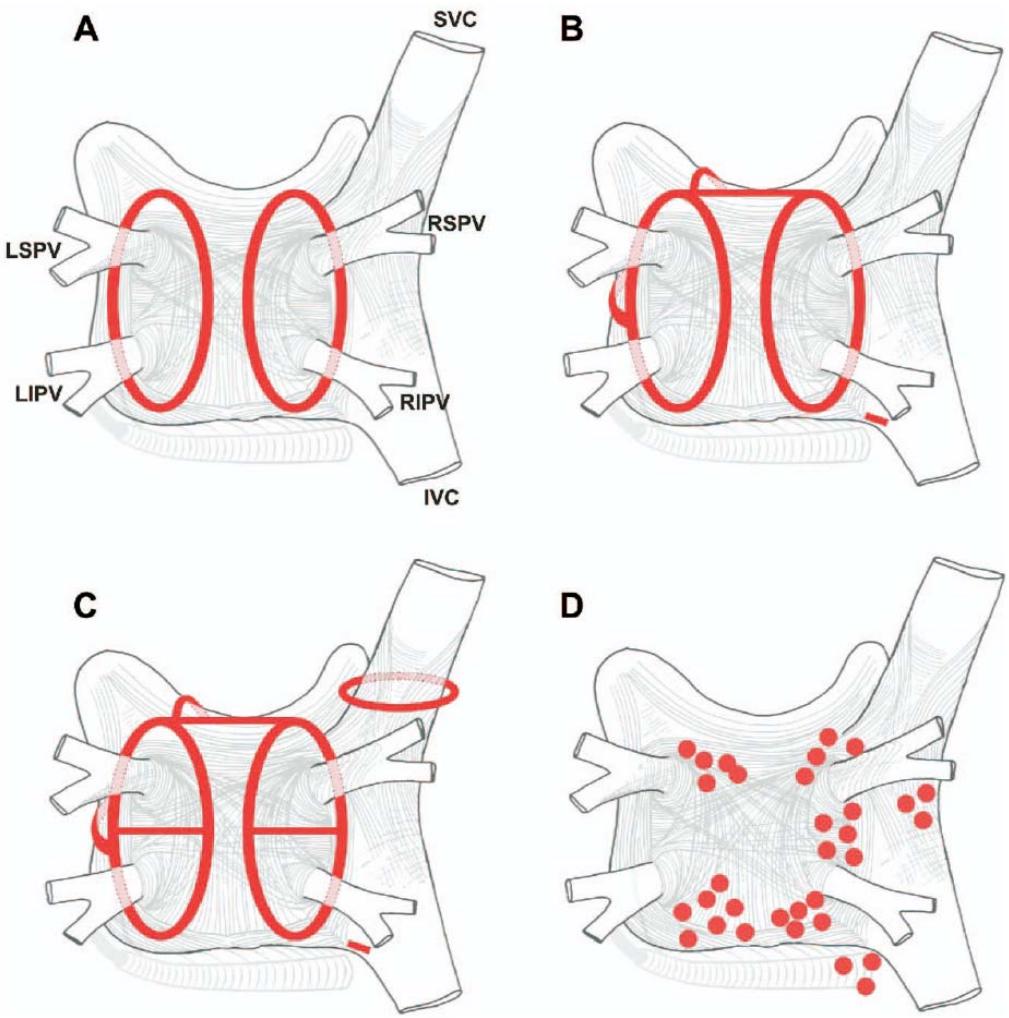
Catheter ablation of AF in patients with heart failure may be considered when antiarrhythmic medication, including amiodarone, fails to control symptoms.	IIb	B
Catheter ablation of AF may be considered in patients with symptomatic long-standing persistent AF refractory to antiarrhythmic drugs.	IIb	C

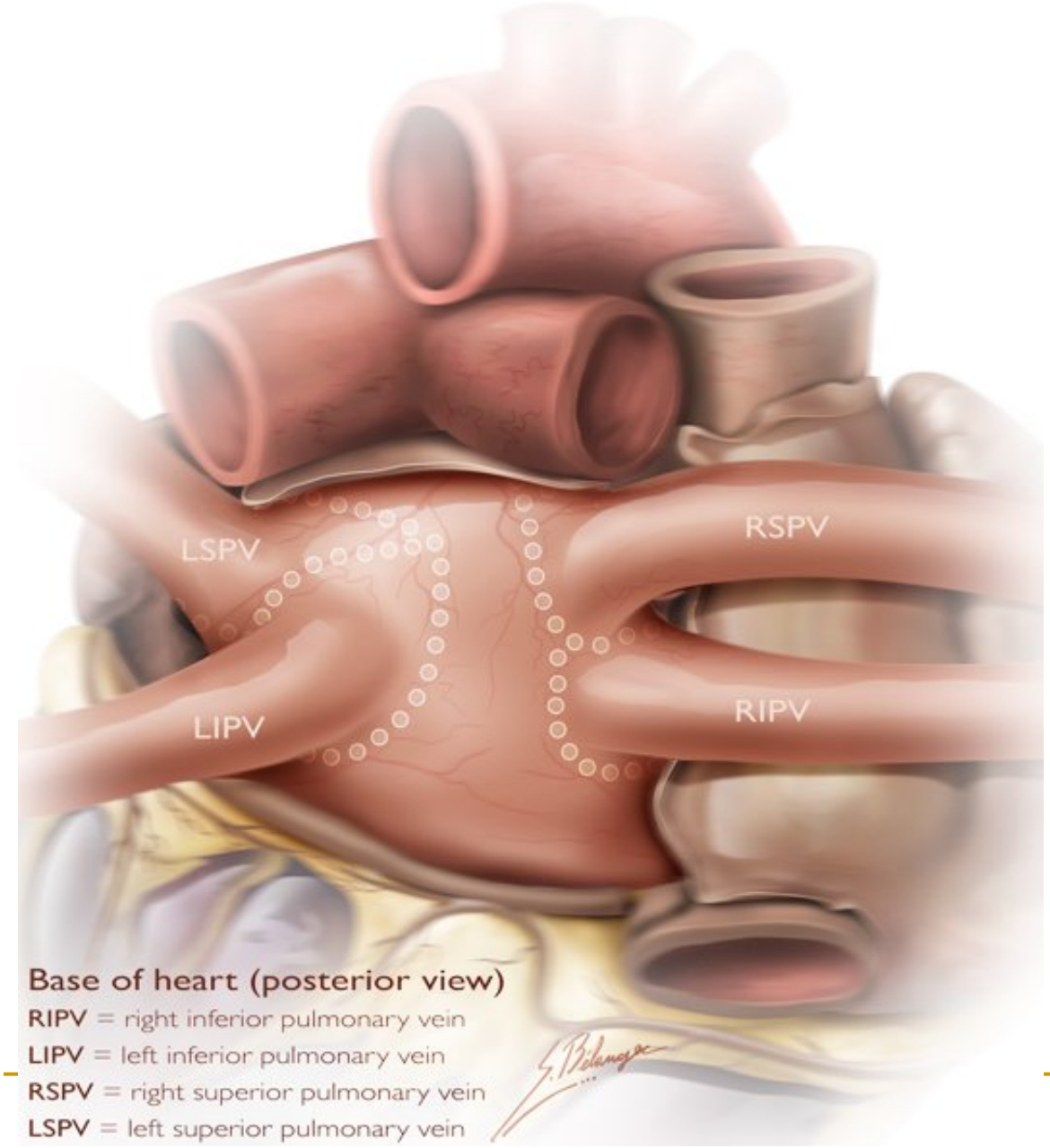
Ablation when SHD is Present



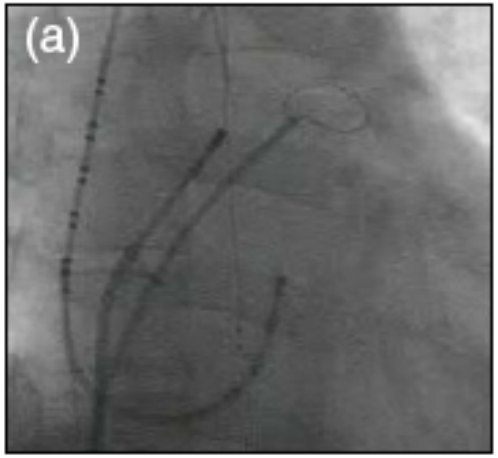
Heart Rhythm, Vol 4, No 6, June 2007

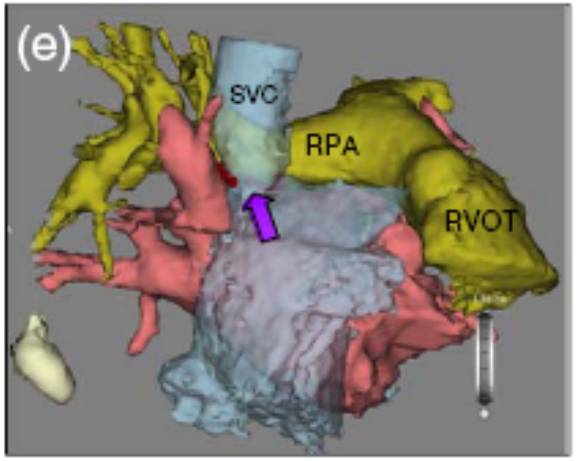
HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up

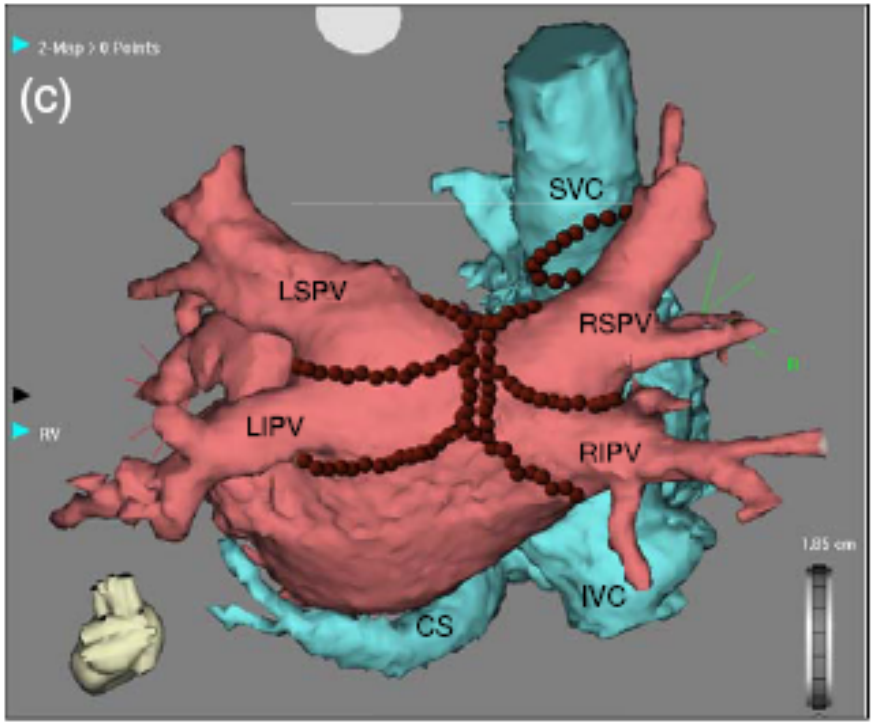


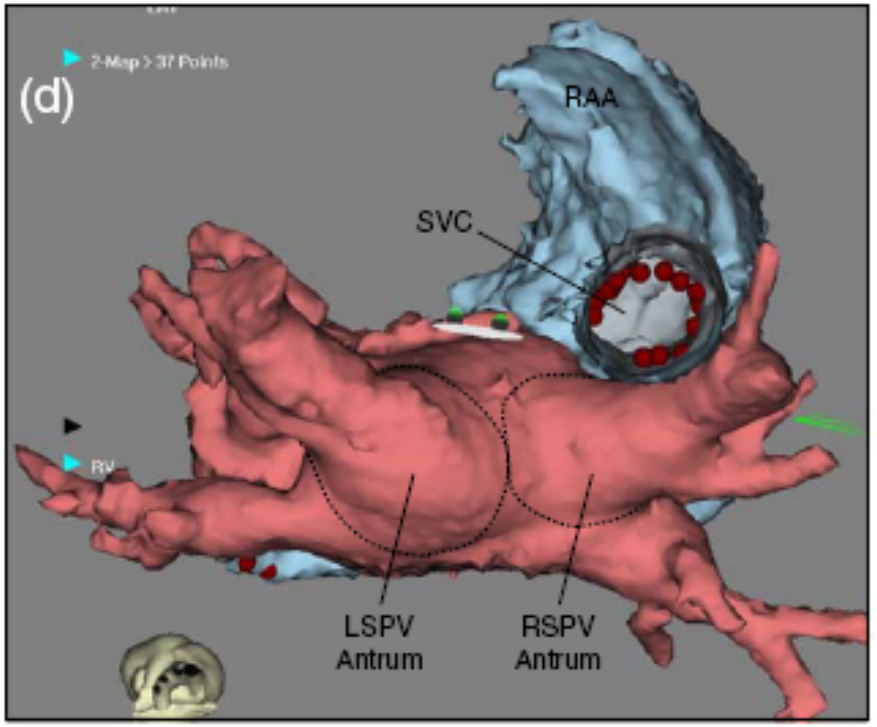

LSPV
RSPV
LIPV
RIPV
Base of heart (posterior view)
RIPV = right inferior pulmonary vein
LIPV = left inferior pulmonary vein
RSPV = right superior pulmonary vein
LSPV = left superior pulmonary vein

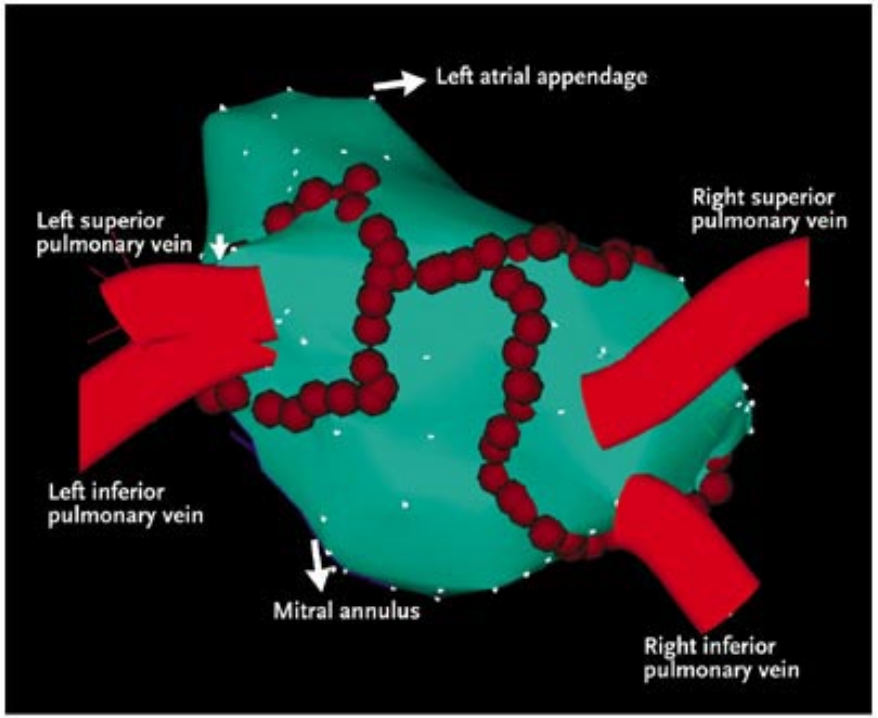
ICE / EGM - Guided PV Antra and SVC Isolation – Natale's Approach











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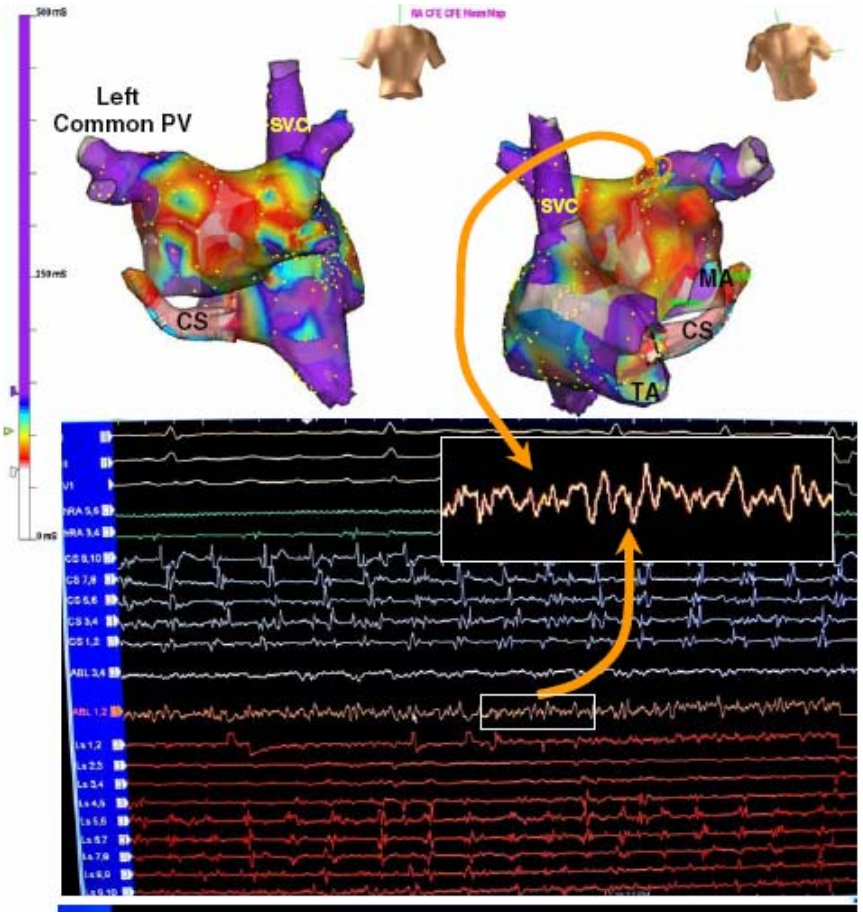
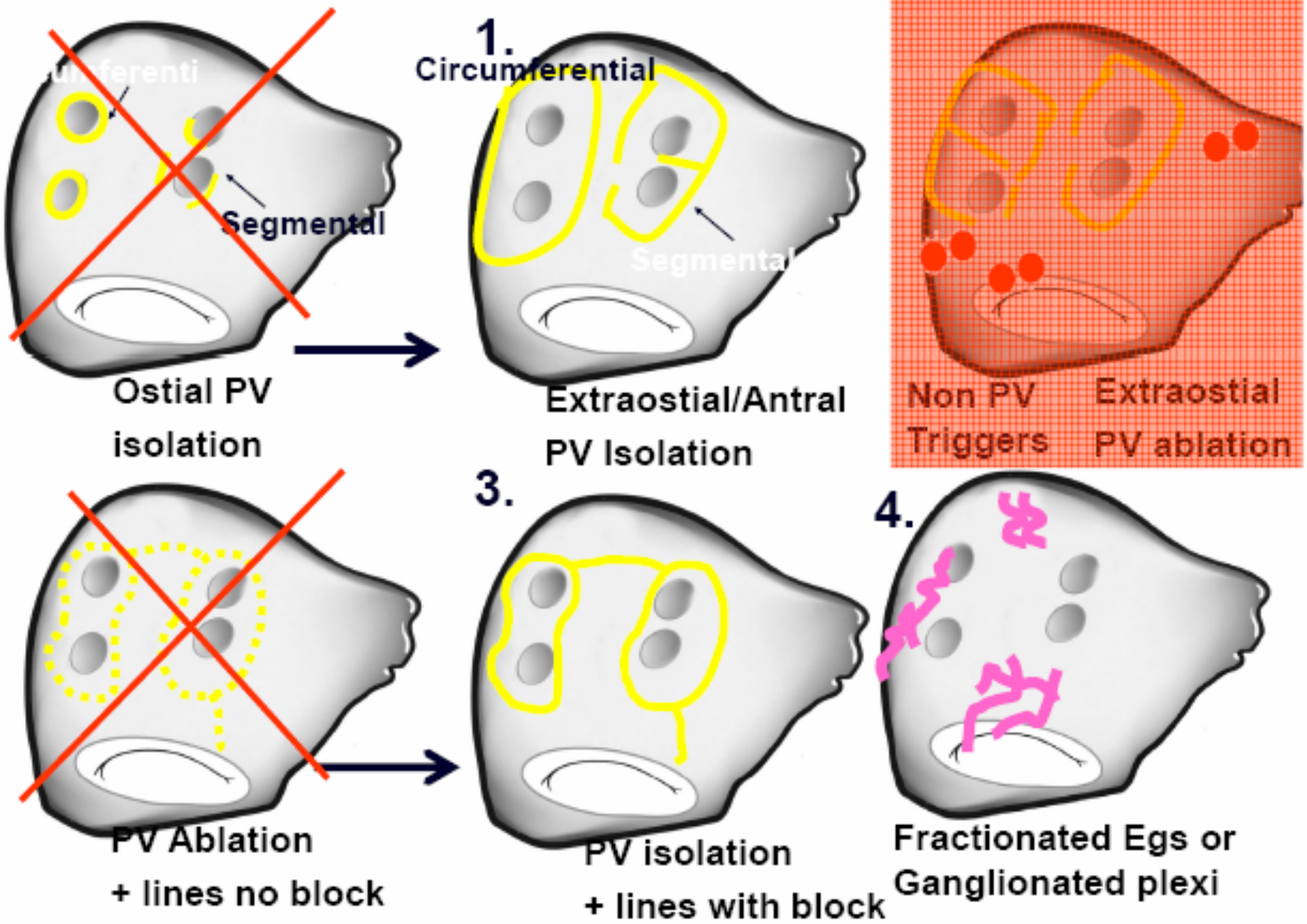


Ablation of permanent AF

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

Mauricio Arruda · Andrea Natale

AF Ablation Strategies



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

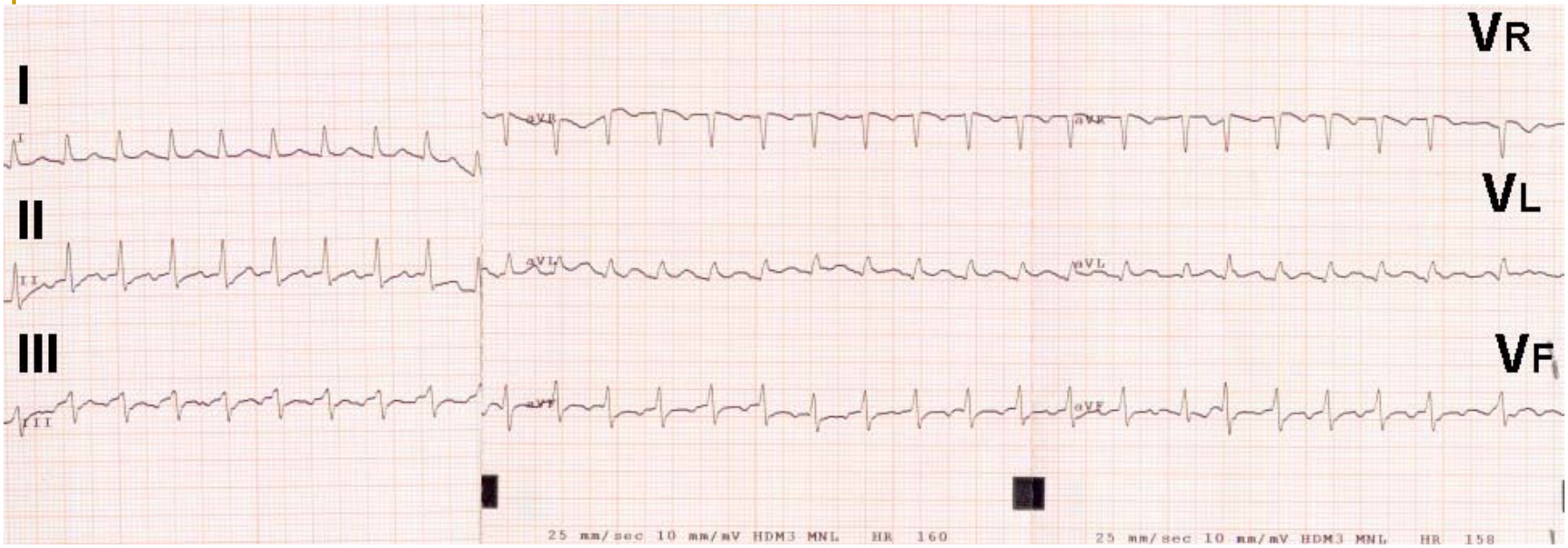
Anticoagulation and Strategies to Prevent Thromboembolism

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.

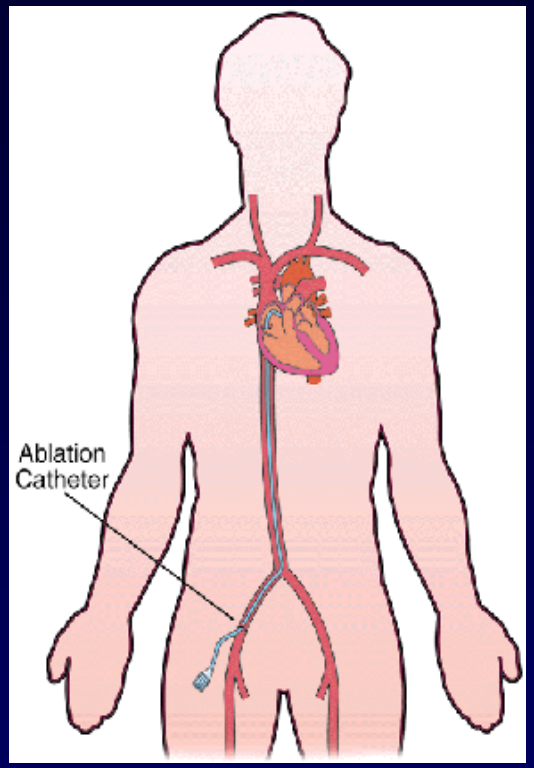
גבר בן 49

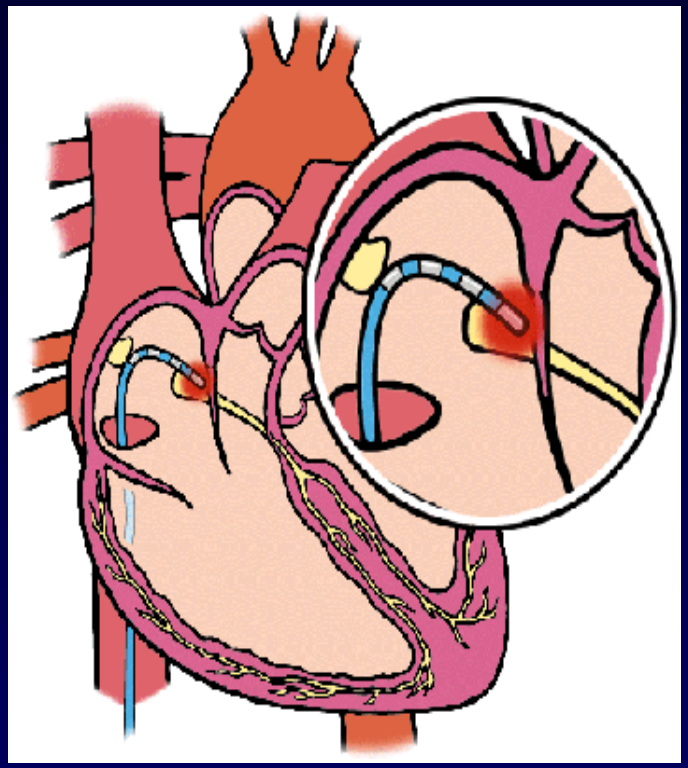
- לאחר אבלציה circumferential +++
- 3 חודשים AMIODARONE
- לאחר 3 חודשים – יתר תריסיות – טופל
- תירואיד תקין חזר עם ההפרעה הבאה

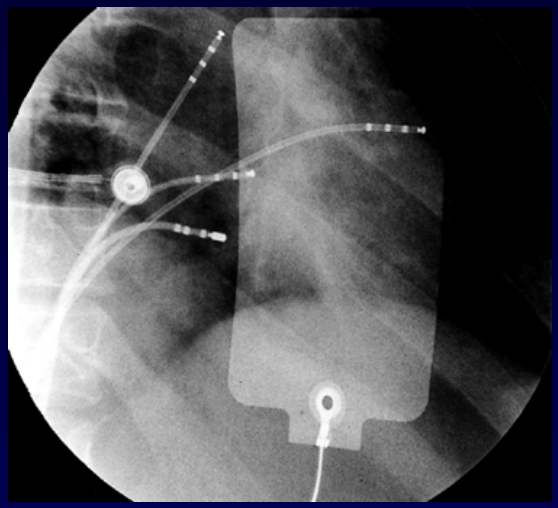


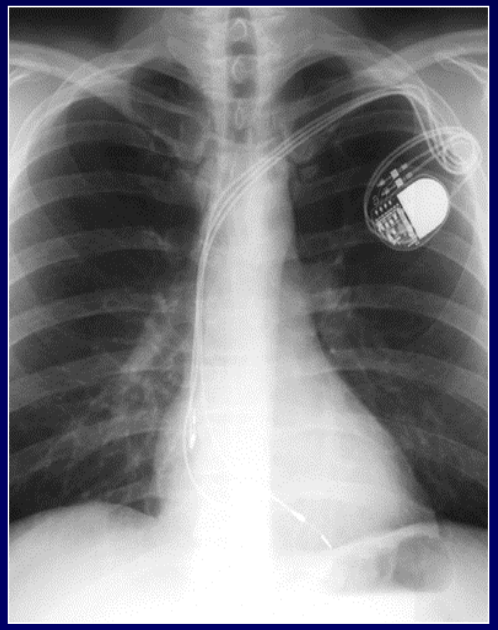
Left atrial flutter

AV Nodal (AVJ) Ablation + CRT









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.)

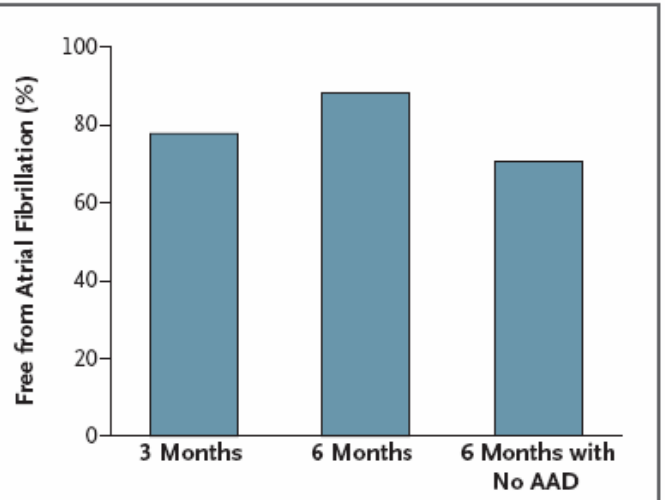
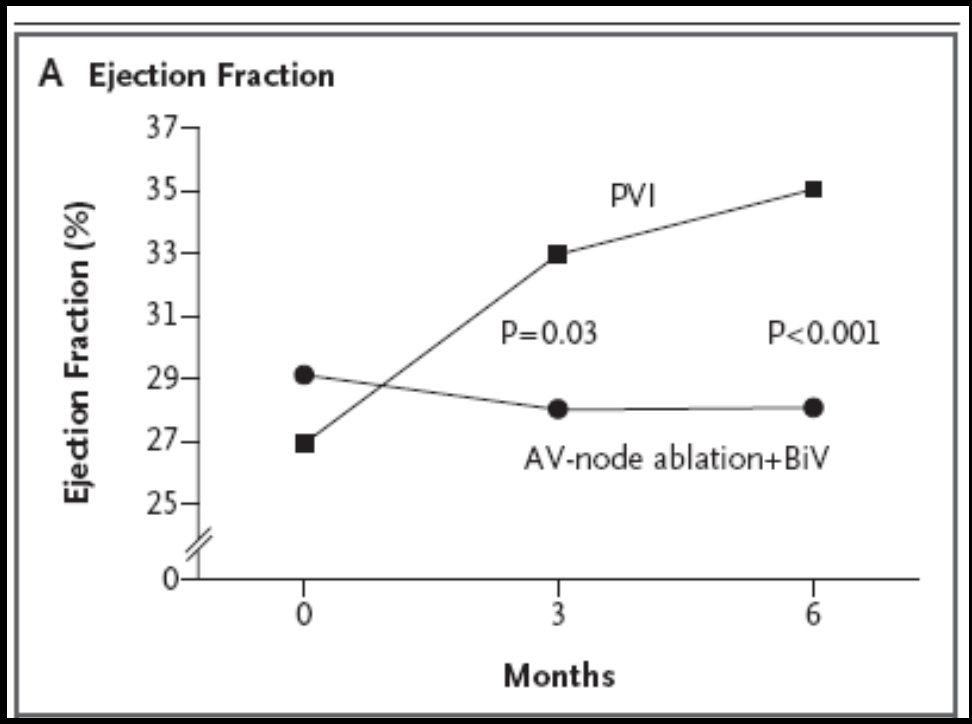


Figure 2. Freedom from Atrial Fibrillation in Patients Undergoing Pulmonary-Vein Isolation with or without Antiarrhythmic Drugs (AAD).



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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.

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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*

גבר בן 50

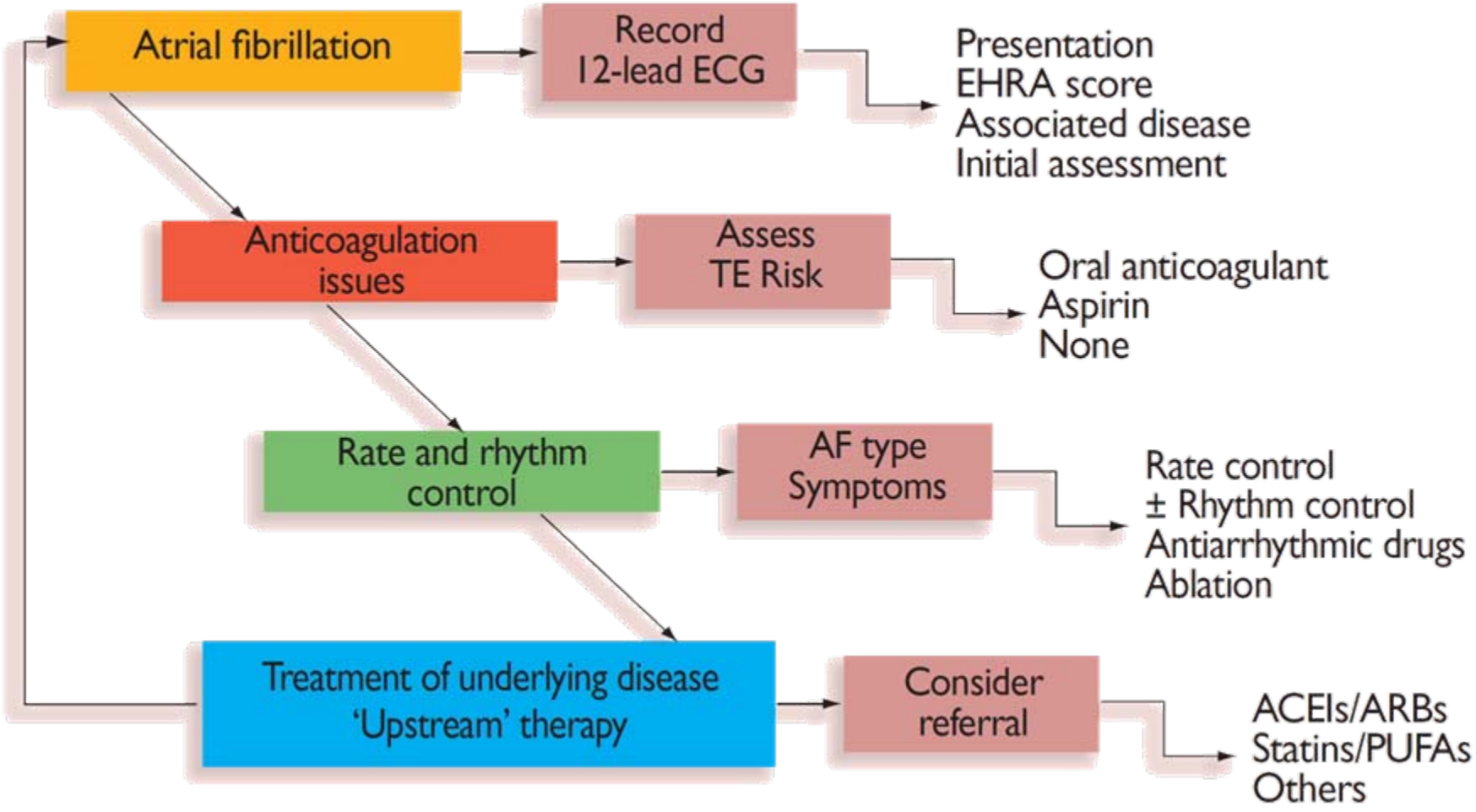
- עבר השתלת CRTP
- AVJ ABLATION
- חש טוב EF = 55%
- נוגדי קרישה?

Atrial Fibrillation in Athletes

Recommendations	Class[a]	Level[b]
When a 'pill-in-the-pocket' approach with sodium channel blockers is used, sport cessation should be considered for as long as the arrhythmia persists, and until 1–2 half-lives of the antiarrhythmic drug used have elapsed.	IIa	C
Isthmus ablation should be considered in competitive or leisure-time athletes with documented atrial flutter, especially when therapy with flecainide or propafenone is intended.	IIa	C
Where appropriate, AF ablation should be considered to prevent recurrent AF in athletes.	IIa	C

Recommendations	Class[a]	Level[b]
When a specific cause for AF is identified in an athlete (such as hyperthyroidism), it is not recommended to continue participation in competitive or leisure time sports until correction of the cause.	III	C
It is not recommended to allow physical sports activity when symptoms due to haemodynamic impairment (such as dizziness) are present.	III	C

Principles of Management



"Upstream" Therapy Primary Prevention

Agents Considered:

ACE inhibitors, Angiotensin receptor blockers, Aldosterone antagonists

Statins, PUFAs

ACEIs and ARBs should be considered for prevention of new-onset AF in patients with heart failure and reduced ejection fraction.	IIa	A
ACEIs and ARBs should be considered for prevention of new-onset AF in patients with hypertension, particularly with left ventricular hypertrophy.	IIa	B
Statins should be considered for prevention of new-onset AF after coronary artery bypass grafting, isolated or in combination with valvular interventions.	IIa	B

Statins may be considered for prevention of new-onset AF in patients with underlying heart disease, particularly heart failure.	IIb	B
Upstream therapies with ACEIs, ARBs, and statins are not recommended for primary prevention of AF in patients without cardiovascular disease.	III	C

"Upstream" Therapy – Secondary Prevention

Recommendations	Class[a]	Level[b]
Pre-treatment with ACEIs and ARBs may be considered in patients with recurrent AF *and* receiving antiarrhythmic drug therapy.	IIb	B
ARBs or ACEIs may be useful for prevention of recurrent paroxysmal AF or in patients with persistent AF in the absence of significant structural heart disease if these agents are indicated for other reasons (e.g. hypertension).	IIb	B

Documented AF + ≥1 risk factor for Stroke

Unsuitable for VKA

ACTIVE W
C&A versus VKA

ACTIVE A
C&A versus ASA

No Exclusion Criteria for ACTIVE I

ACTIVE I
Irbesartan versus Placebo

Partial Factorial Design

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ARRHYTHMIA/EP

Irbesartan in atrial fibrillation: No overall benefit, but it may prevent later heart failure

Principles of Management