Delirium Cordis

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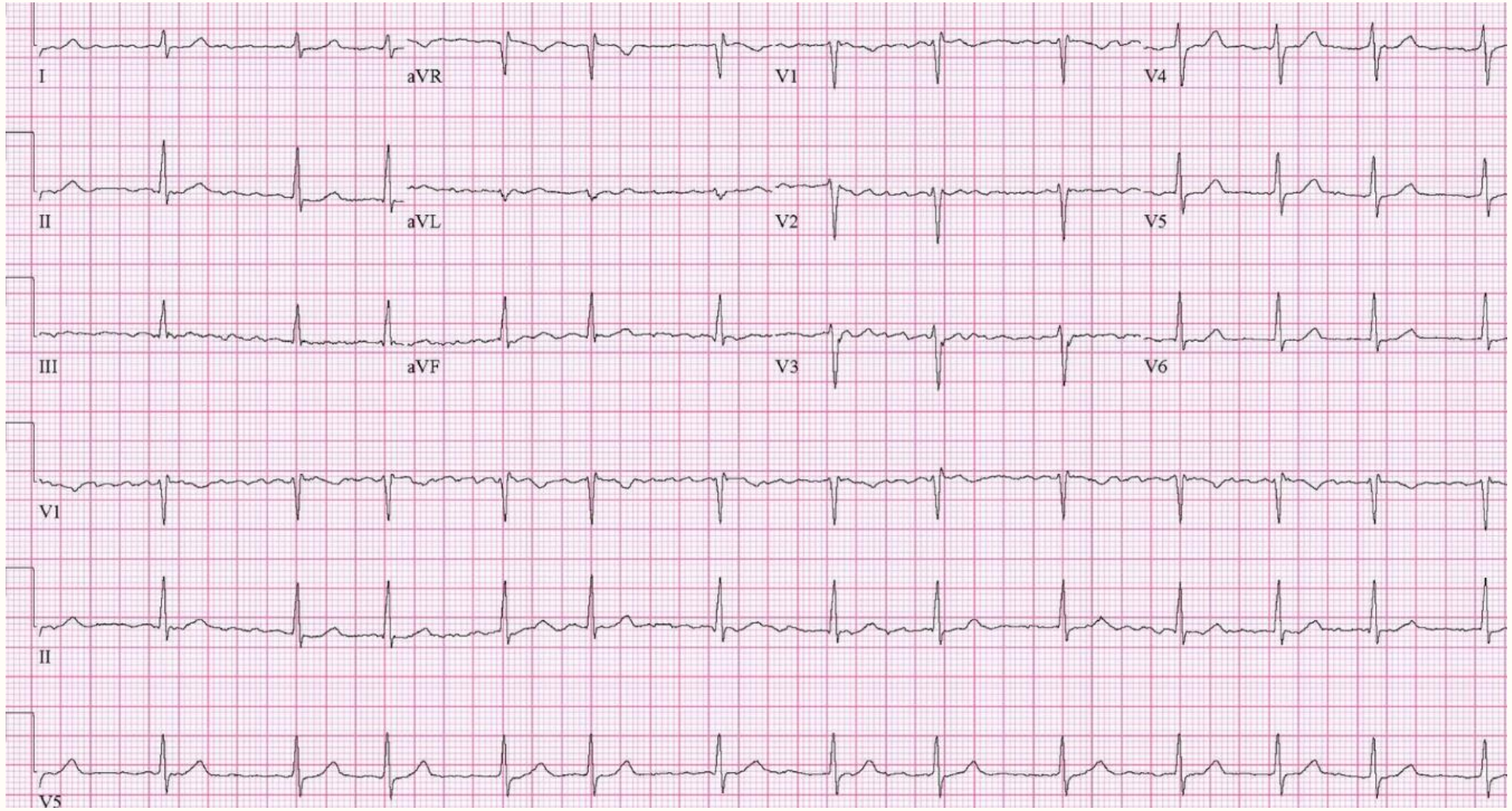
Clinical History

A 67-year-old lady is visited due to a history of recent onset rapid palpitations.



Clinical History

- She is now asymptomatic with NSR on ECG.
- PMH: HTN (5 years)
- Drugs: Amlodipine 5mg daily, Bisoprolol 2.5mg bid
- Ph/Ex.: BMI 32 kg/m2, BP 143/85 mmHg, otherwise Unremarkable

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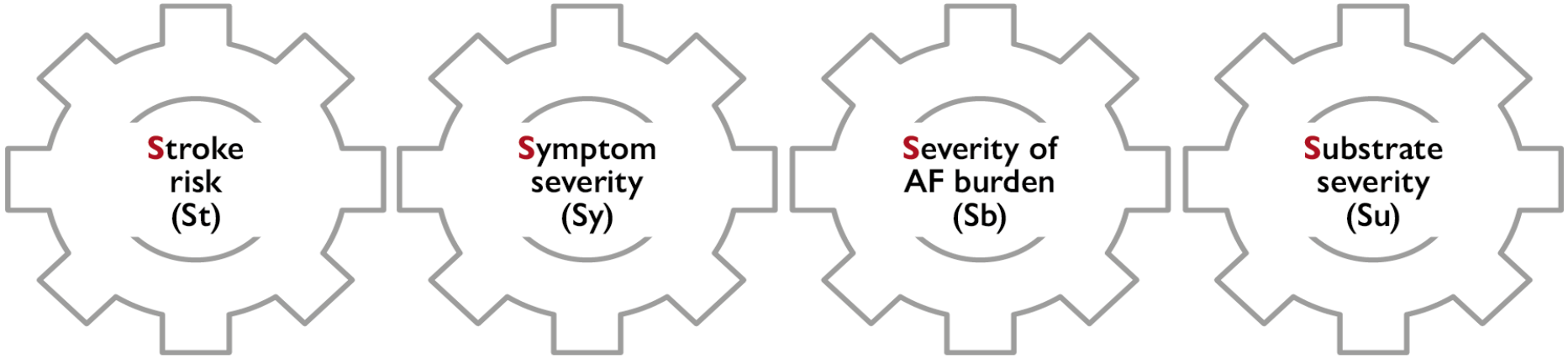
What would you recommend as the next step?

4S AF Scheme



	Stroke risk (St)	Symptom severity (Sy)	Severity of AF burden (Sb)	Substrate severity (Su)
DESCRIPTION	Truly low risk of stroke • Yes • No	• Asymptomatic/mildly symptomatic • Moderate • Severe or disabling	• Spontaneously terminating • AF duration and density of episodes per unit of time	• Comorbidities/ cardiovascular risk factors • Atrial cardiomyopathy (atrial enlargement / dysfunction / fibrosis)
Commonly used assessment tool(s)	**CHA_2DS_2-VASc score**	**EHRA symptom score** QoL questionnaires	• **Temporal pattern of AF** (Paroxysmal, Persistent, Long-standing persistent, Permanent) • **Total AF burden** (total time in AF per monitoring period, the longest episode, number of episodes, etc.)	• **Clinical assessment** Incident AF risk scores, AF progression risk scores • **Imaging** (TTE, TOE, CT, cardiac MRI), biomarkers

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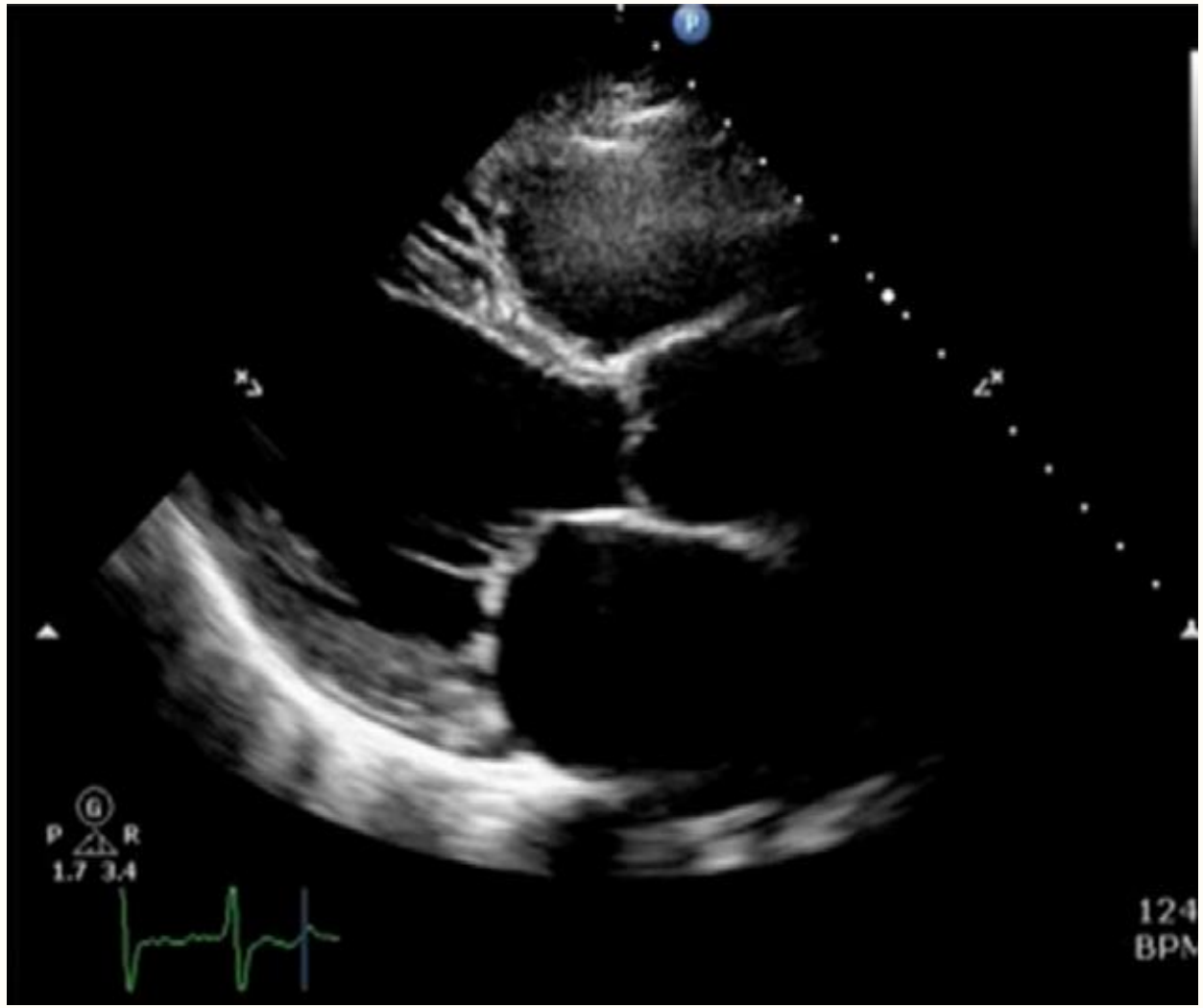
Further work-up

- Lab tests normal except for LDL of 140 mg/dl
- Echocardiogram: LVEF 60%, mild LVH with IVS 12 mm, LA diameter 42 mm
- Holter monitoring: Mean HR 58 bpm, Frequent atrial ectopies



What's her CHA2DS2-VASc score?

- 0
- 1
- 2
- 3

Risk Index	Score
Congestive heart failure	1
Hypertension	1
Age >75	2
Diabetes mellitus	1
prior Stroke or TIA	2
Vascular disease*	1
Age 65-74	1
Sex category (female)	1

What's her bleeding risk?

HAS-BLED score

- 0
- 1
- 2
- 3

Letter	Clinical characteristic*	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

*Hypertension is defined as systolic blood pressure > 160 mmHg.

INR = international normalized ratio.

Would you start anticoagulation?

For stroke risk assessment, a risk-factor–based approach is recommended, using the CHA_2DS_2-VASc clinical stroke risk score to initially identify patients at 'low stroke risk' (CHA_2DS_2-VASc score = 0 in men, or 1 in women) who should not be offered antithrombotic therapy.	I	A
OAC is recommended for stroke prevention in AF patients with CHA_2DS_2-VASc score ≥2 in men or ≥3 in women.	I	A
For stroke prevention in AF patients who are eligible for OAC, NOACs are recommended in preference to VKAs (excluding patients with mechanical heart valves or moderate-to-severe mitral stenosis).	I	A

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Divergence of opinion in score 1

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OAC should be considered for stroke prevention in AF patients with a CHA_2DS_2-VASc score of 1 in men or 2 in women. Treatment should be individualized based on net clinical benefit and consideration of patient values and preferences.	IIa	B

2019 AHA/ACC/HRS AHA/ACC/HRS Guidelines		
COR	LOE	Recommendations
IIb	C- LD	**For patients with AF and a CHA_2DS_2-VASc score of 1 in men and 2 in women, prescribing an oral anticoagulant to reduce thromboembolic stroke risk may be considered.**

Do not forget about Appropriate Dosing!

	Dabigatran	Rivaroxaban	Apixaban	Edoxaban
Standard dose	150 mg b.i.d.	20 mg o.d.	5 mg b.i.d.	60 mg o.d.
Lower dose	110 mg b.i.d.			
Reduced dose		15 mg o.d.	2.5 mg b.i.d.	30 mg o.d.
Dose-reduction criteria	Dabigatran 110 mg b.i.d. in patients with: • Age ≥80 years • Concomitant use of verapamil, or • Increased bleeding risk	CrCl 15–49 mL/min	At least 2 of 3 criteria: • Age ≥80 years, • Body weight ≤60 kg, or • Serum creatinine ≥1.5 mg/dL (133 µmol/L)	If any of the following: • CrCl 15–50 mL/min, • Body weight ≤60 kg, • Concomitant use of dronedarone, ciclosporin, erythromycin, or ketoconazole

What is the role of bleeding scores?!

For bleeding risk assessment, a formal structured risk-score–based bleeding risk assessment is recommended to help identify non-modifiable and address modifiable bleeding risk factors in all AF patients, and to identify patients potentially at high risk of bleeding who should be scheduled for early and more frequent clinical review and follow-up.	I	B
For a formal risk-score–based assessment of bleeding risk, the HAS-BLED score should be considered to help address modifiable bleeding risk factors, and to identify patients at high risk of bleeding (HAS-BLED score ≥3) for early and more frequent clinical review and follow-up.	IIa	B

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What would you recommend for the treatment of this patient?

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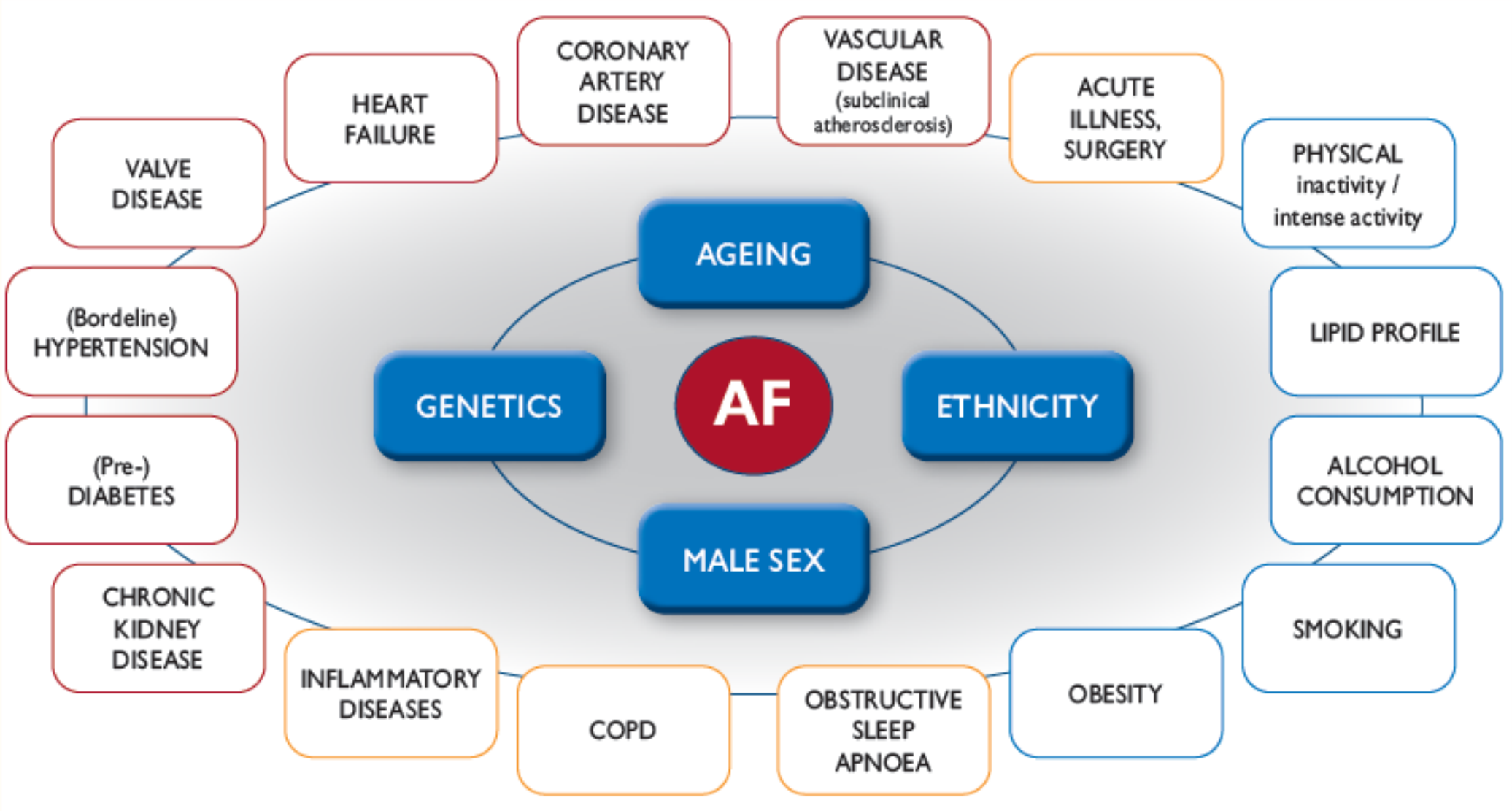
- Rate Control > Beta blockers
- Rhythm Control
  - Pill in the pocket approach
  - Long term anti-arrhythmic drug therapy
  - AF ablation
  - Pace and ablate

Importance of Risk Factors for AF



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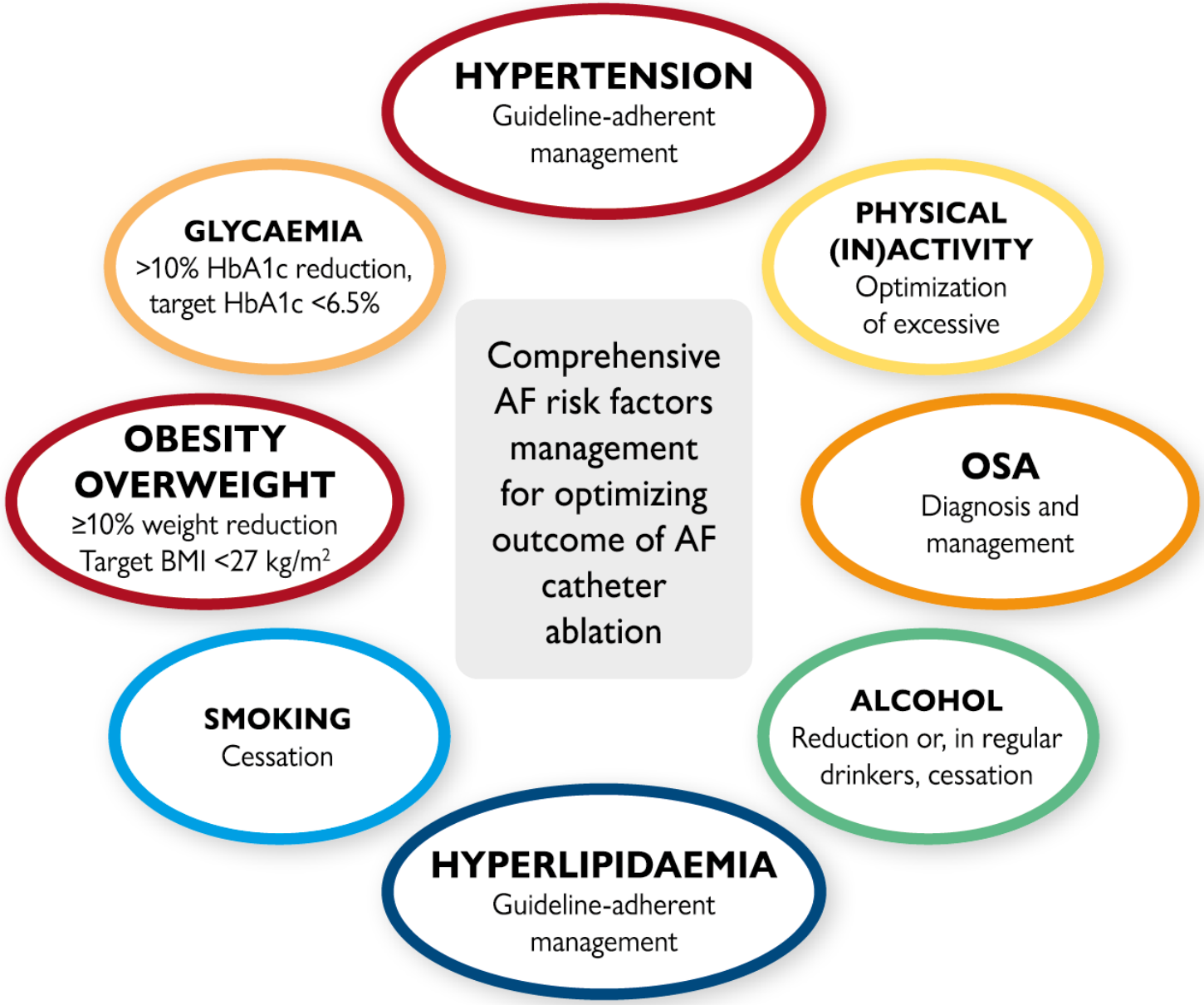
Management of Risk Factors and Comorbidities



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Treat AF: The ABC Pathway

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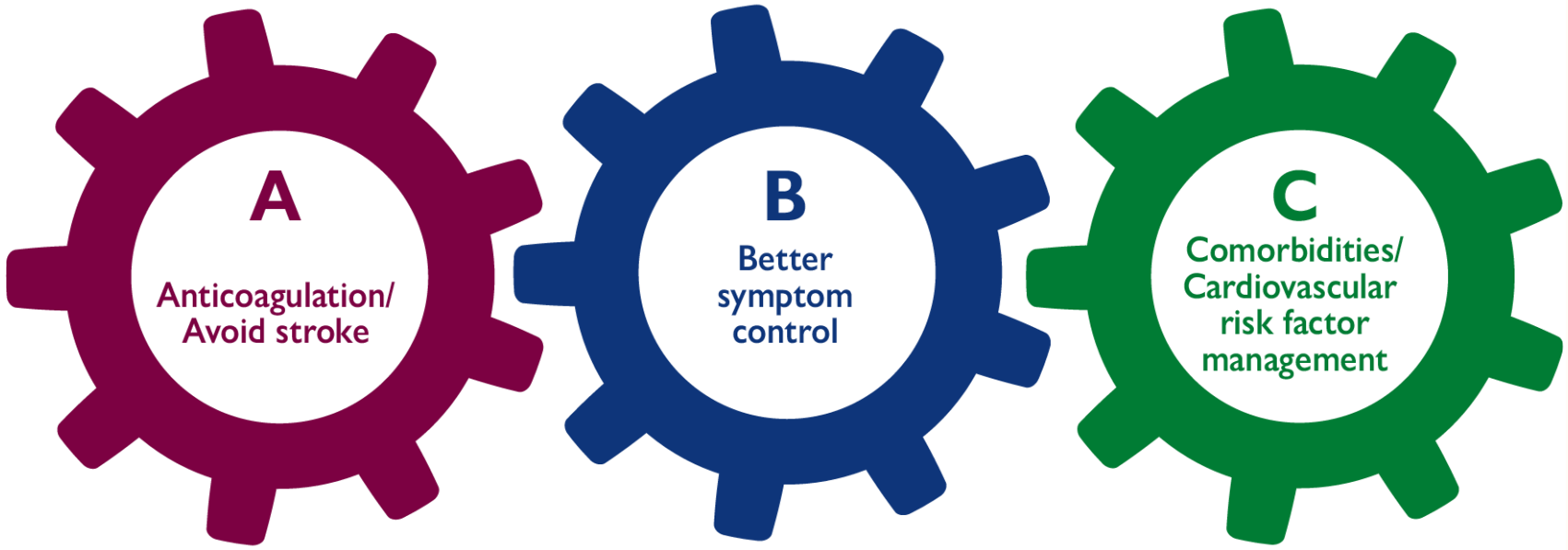

1. Identify low-risk patients CHA_2DS_2-VASc 0(m), 1(f)
2. Offer stroke prevention if $CHA_2DS_2VASc \geq 1$(m), 2(f)

Assess bleeding risk, address modifiable bleeding risk factors

3. Choose OAC (NOAC or VKA with well-managed TTR)

Assess symptoms, QoL and patient's preferences

Optimize rate control

Consider a rhythm control strategy (CV, AADs, ablation)

Comorbidities and cardiovascular risk factors

Lifestyle changes (obesity reduction, regular exercise, reduction of alcohol use, etc.)

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Factors favoring Catheter Ablation

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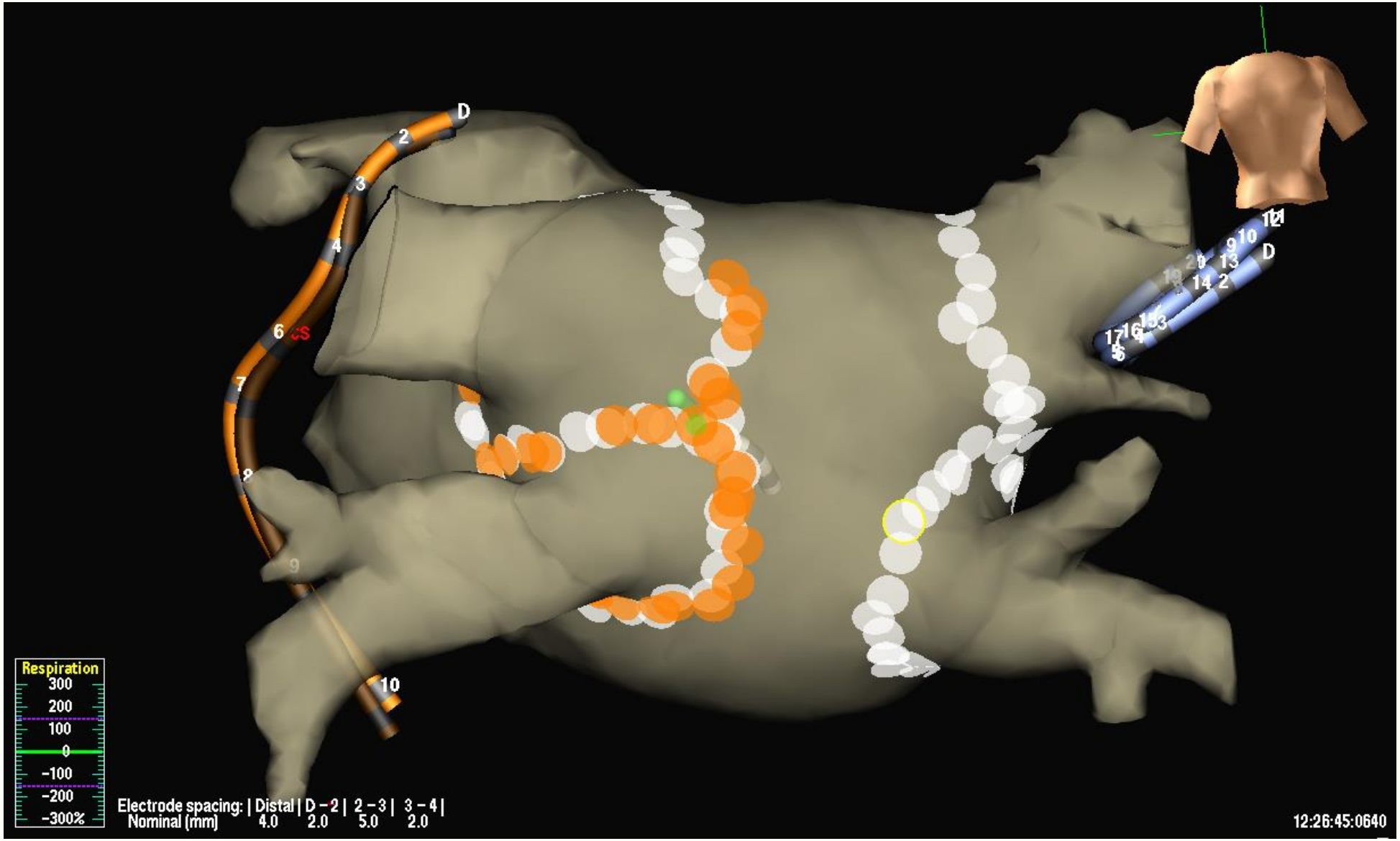
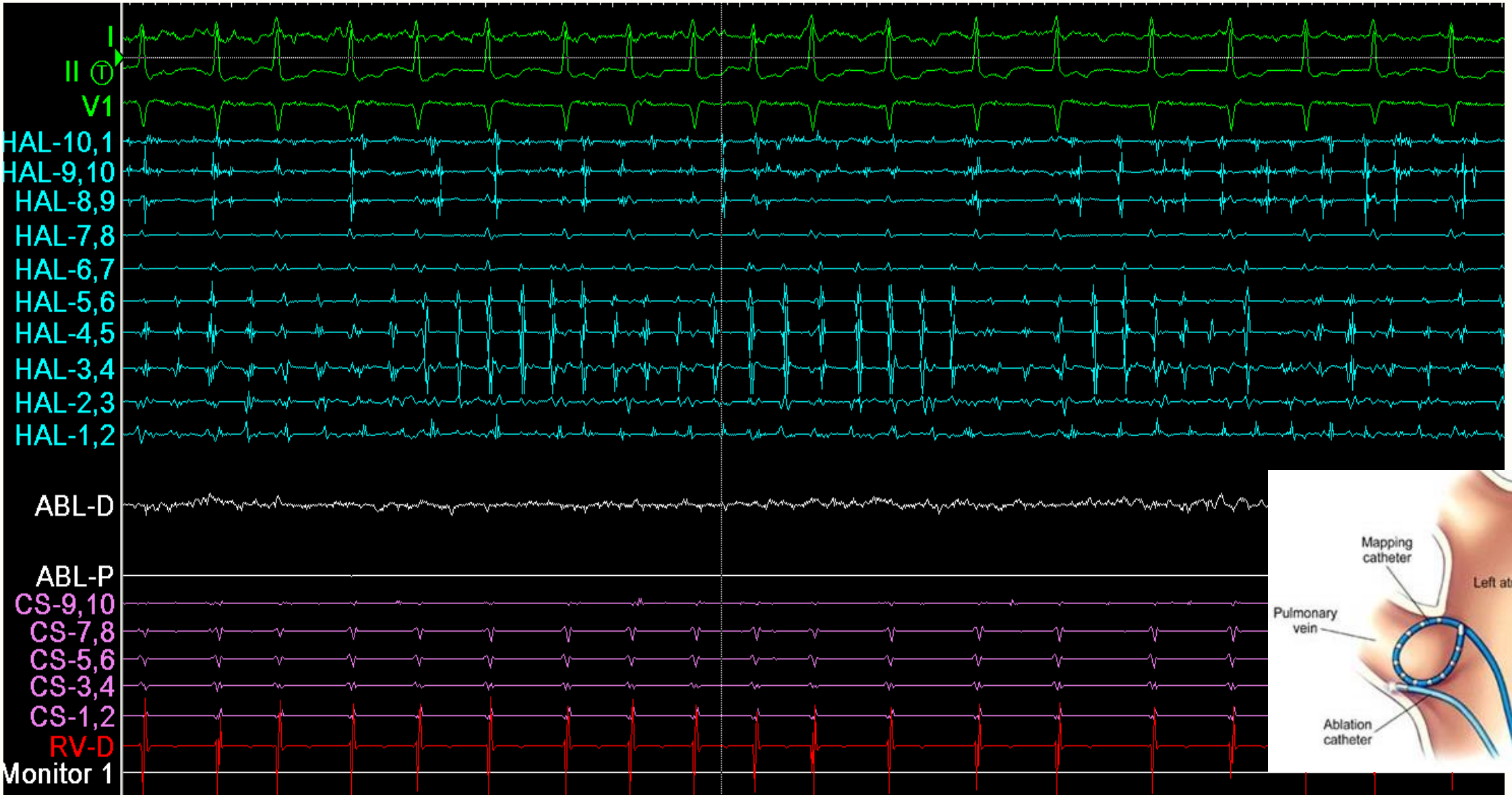
- Younger age
- Arrhythmia induced cardiomyopathy
- No or few comorbidities/ heart disease
- Higher arrhythmia burden
- More severe symptoms
- No or minimal atrial substrate/ remodeling

Point to Point AF Ablation: 3D Mapping



PV Isolation by RF Ablation



Termination of AF during PVI

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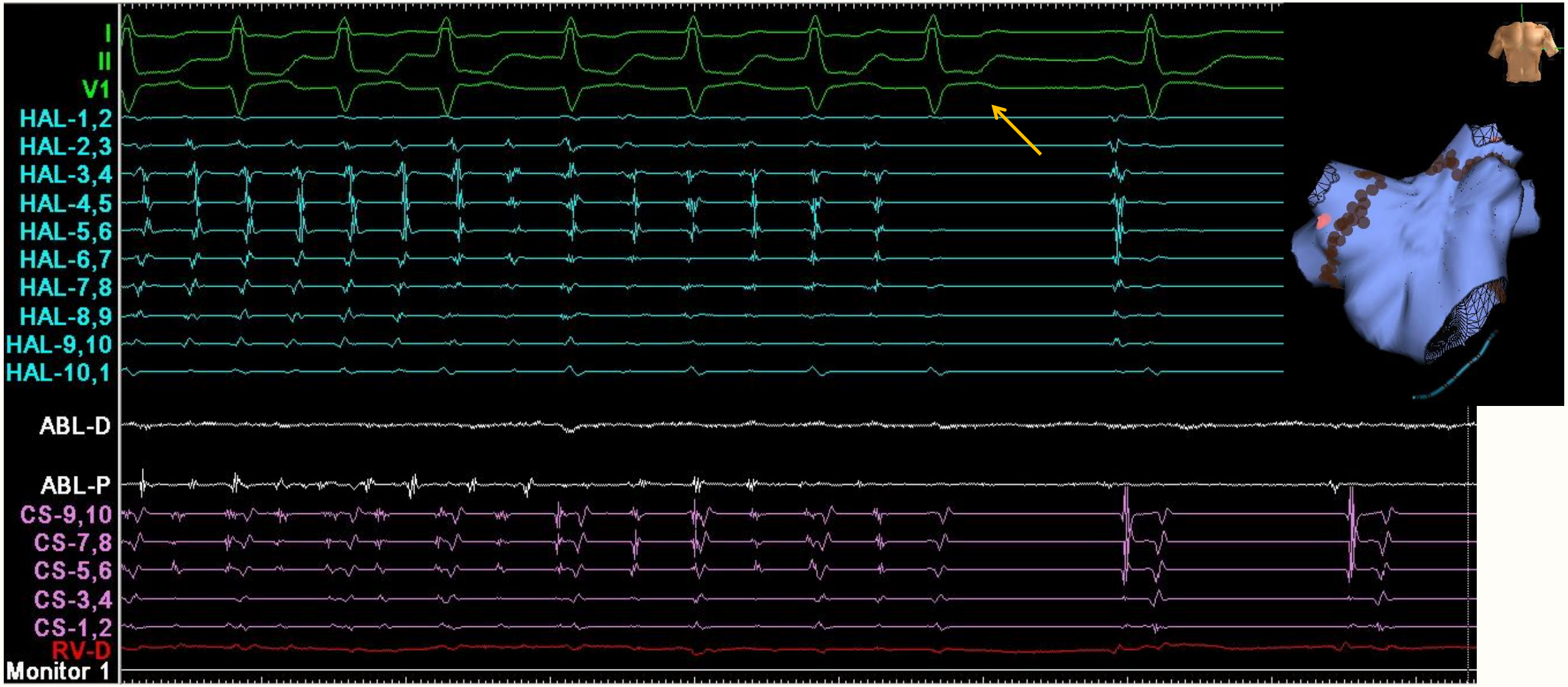
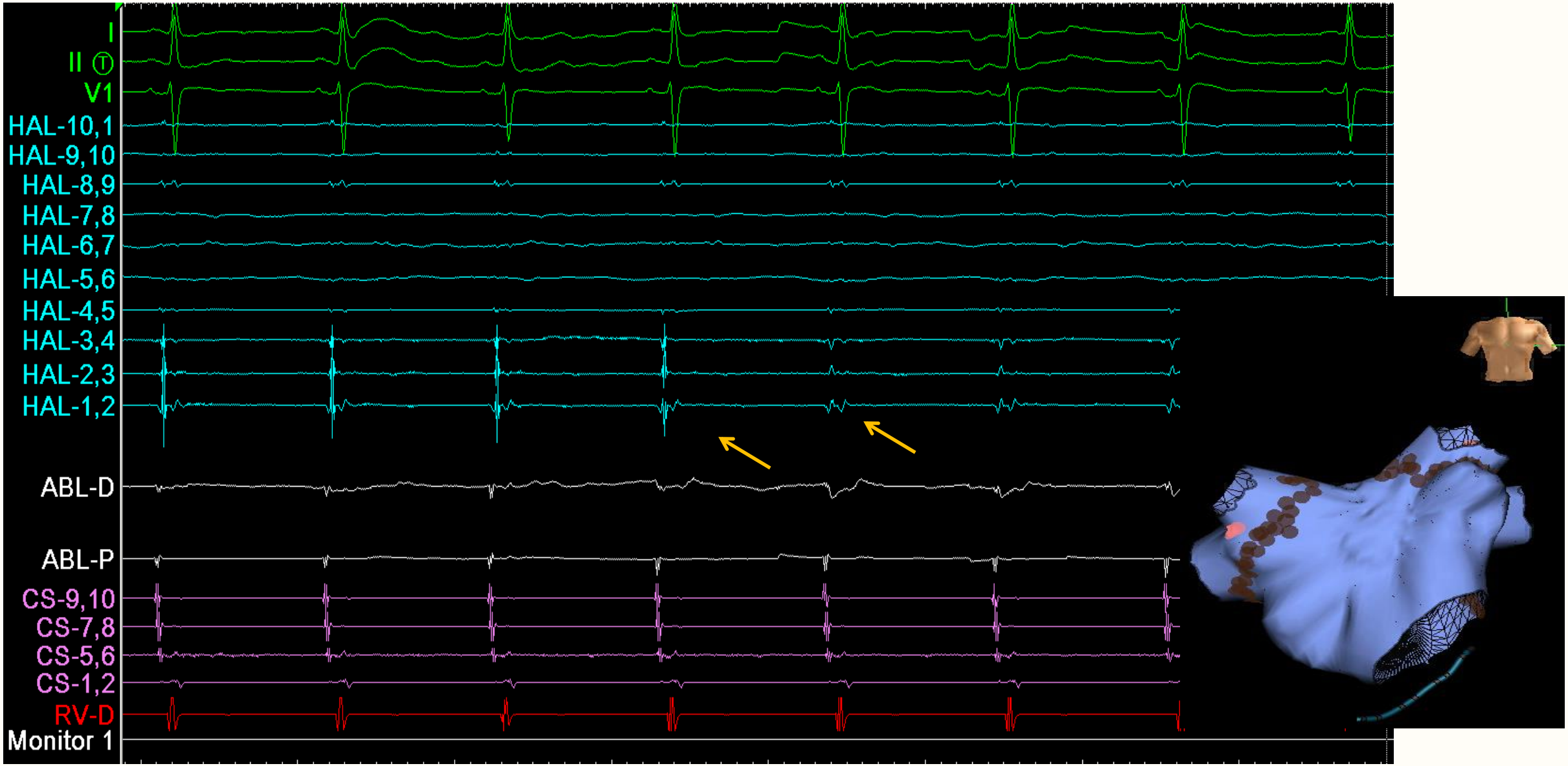
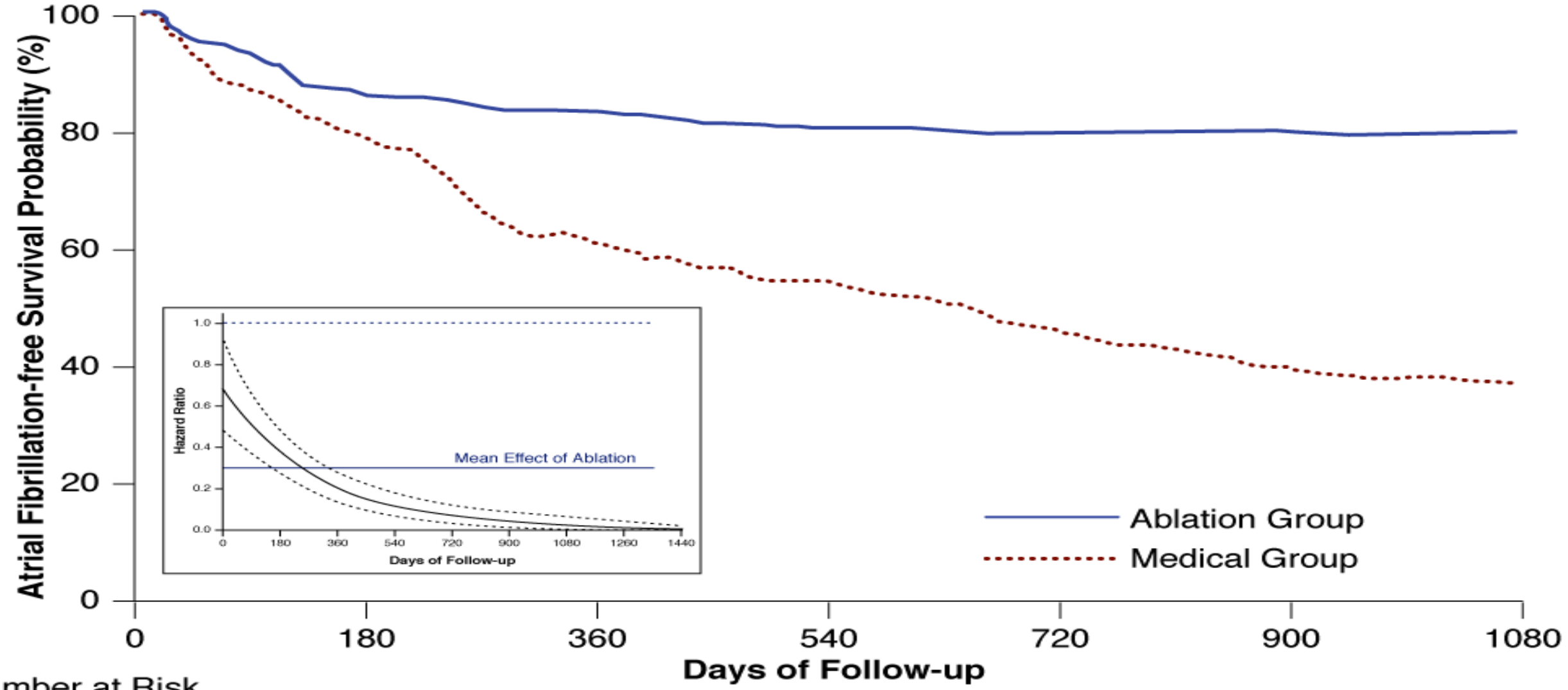


Loss of PV Potentials during Burn



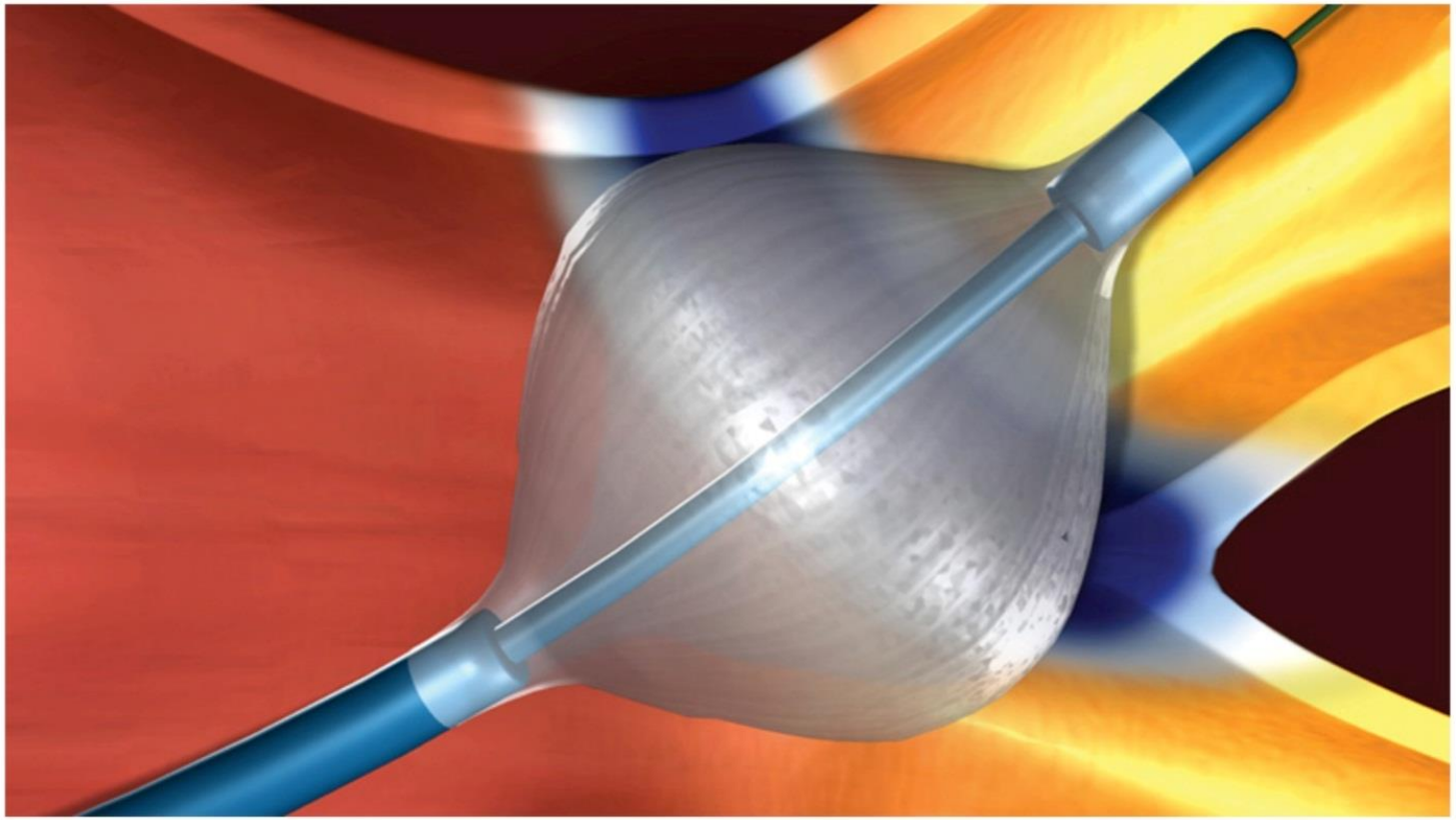
LA Circumferential Ablation: Recurrence of AF



Number at Risk

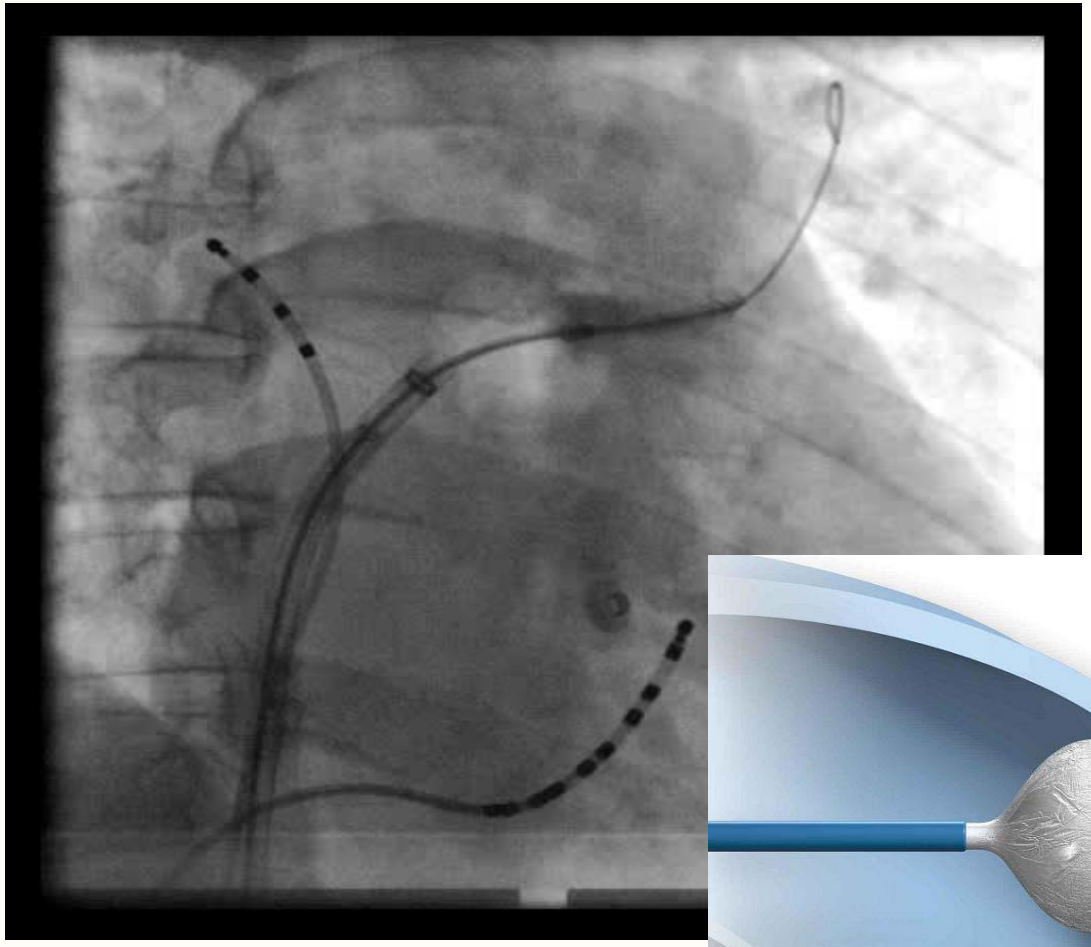
Ablation	589507	479	379	282	217	135
Medical	582456	354	277	207	141	97

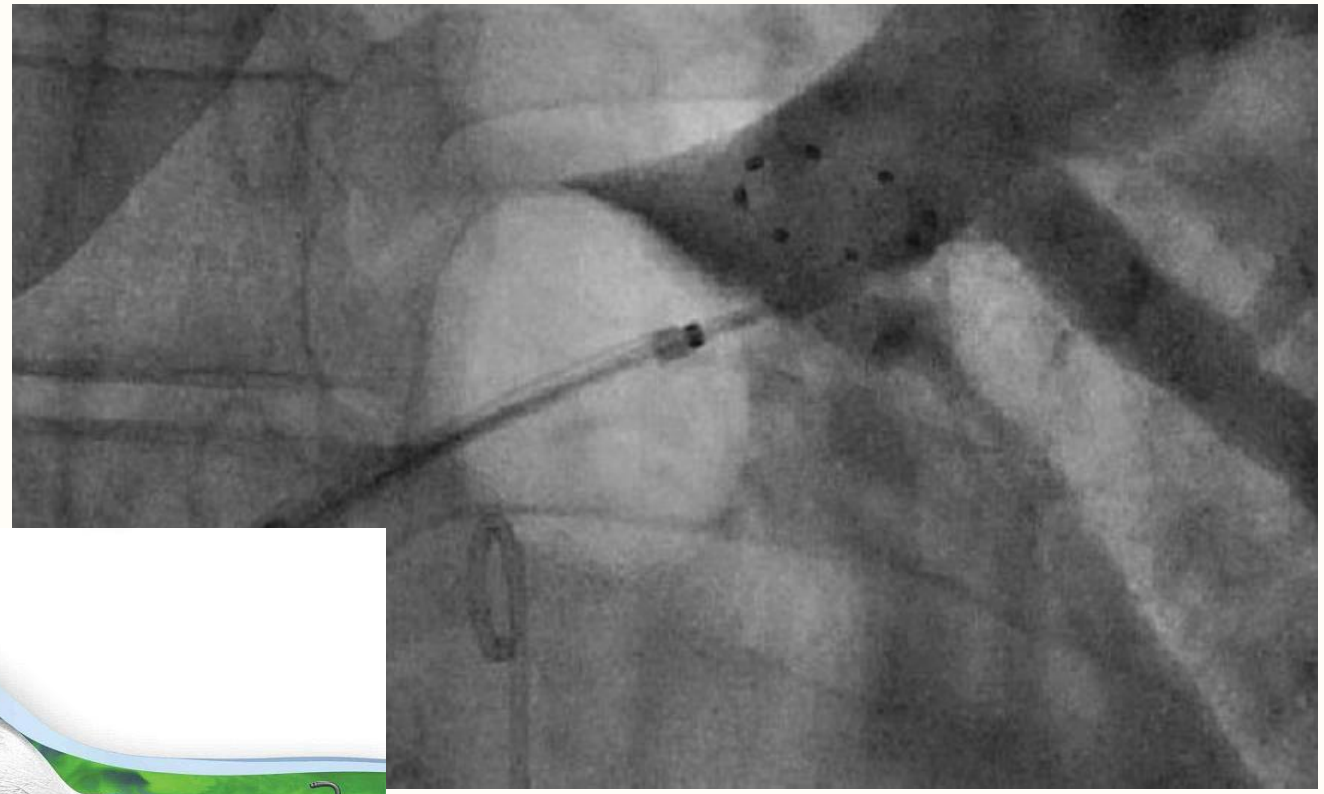
Single Shot AF Ablation: Cryoablation

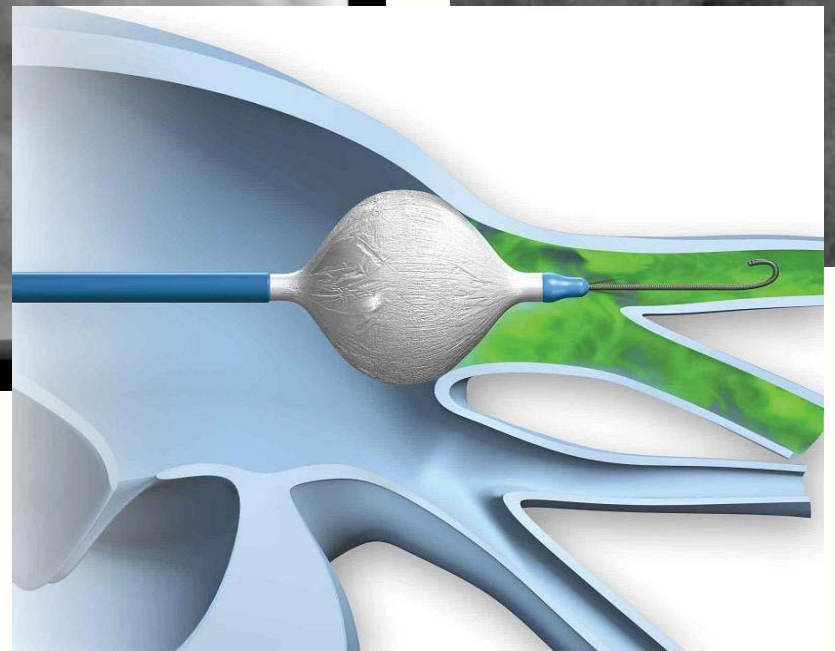


- Removes heat from the tissue
- Ablates at the point of balloon contact

PV Isolation by Cryoablation

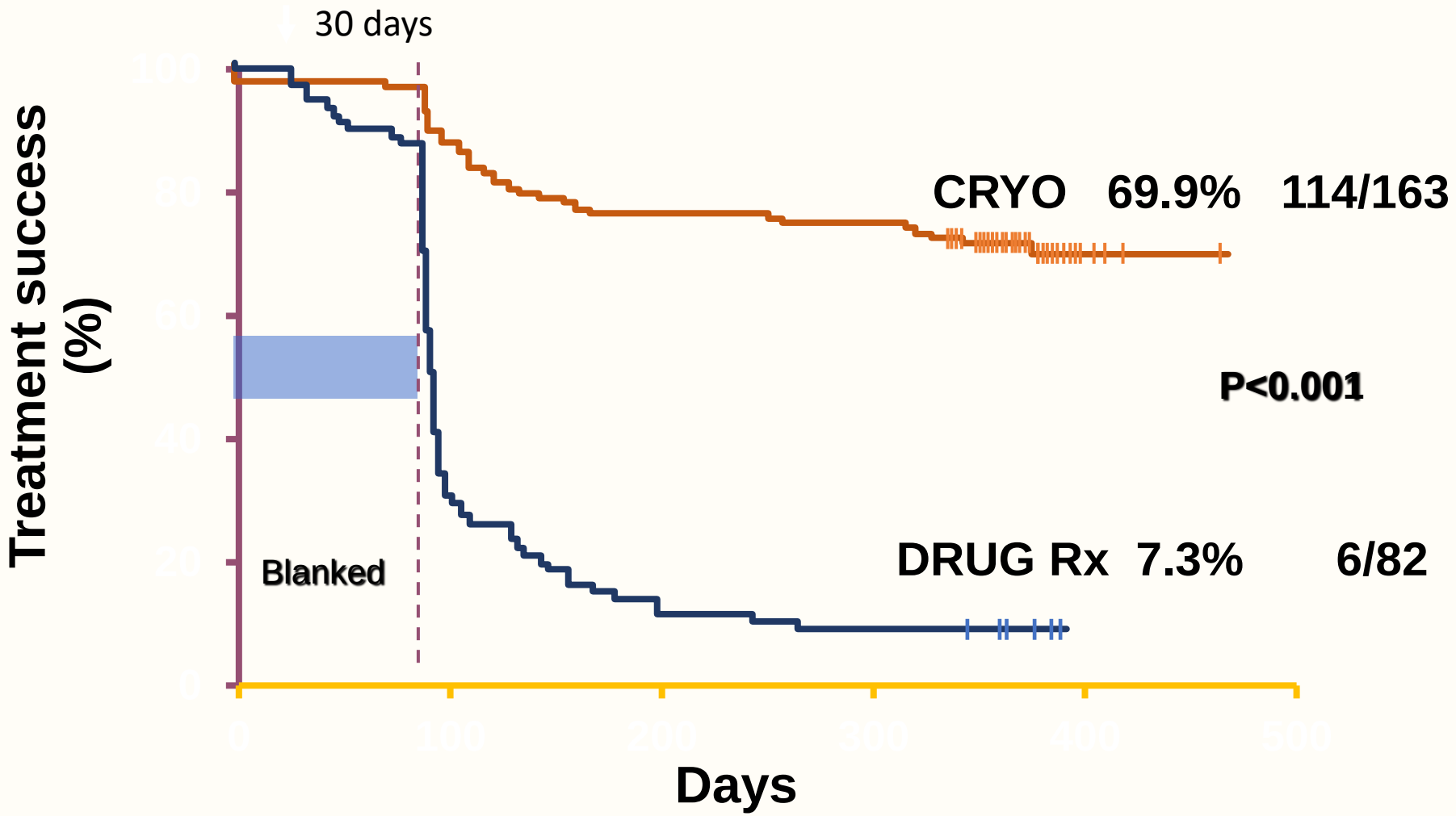






Cryo, Loss of Pulmonary Vein Potentials

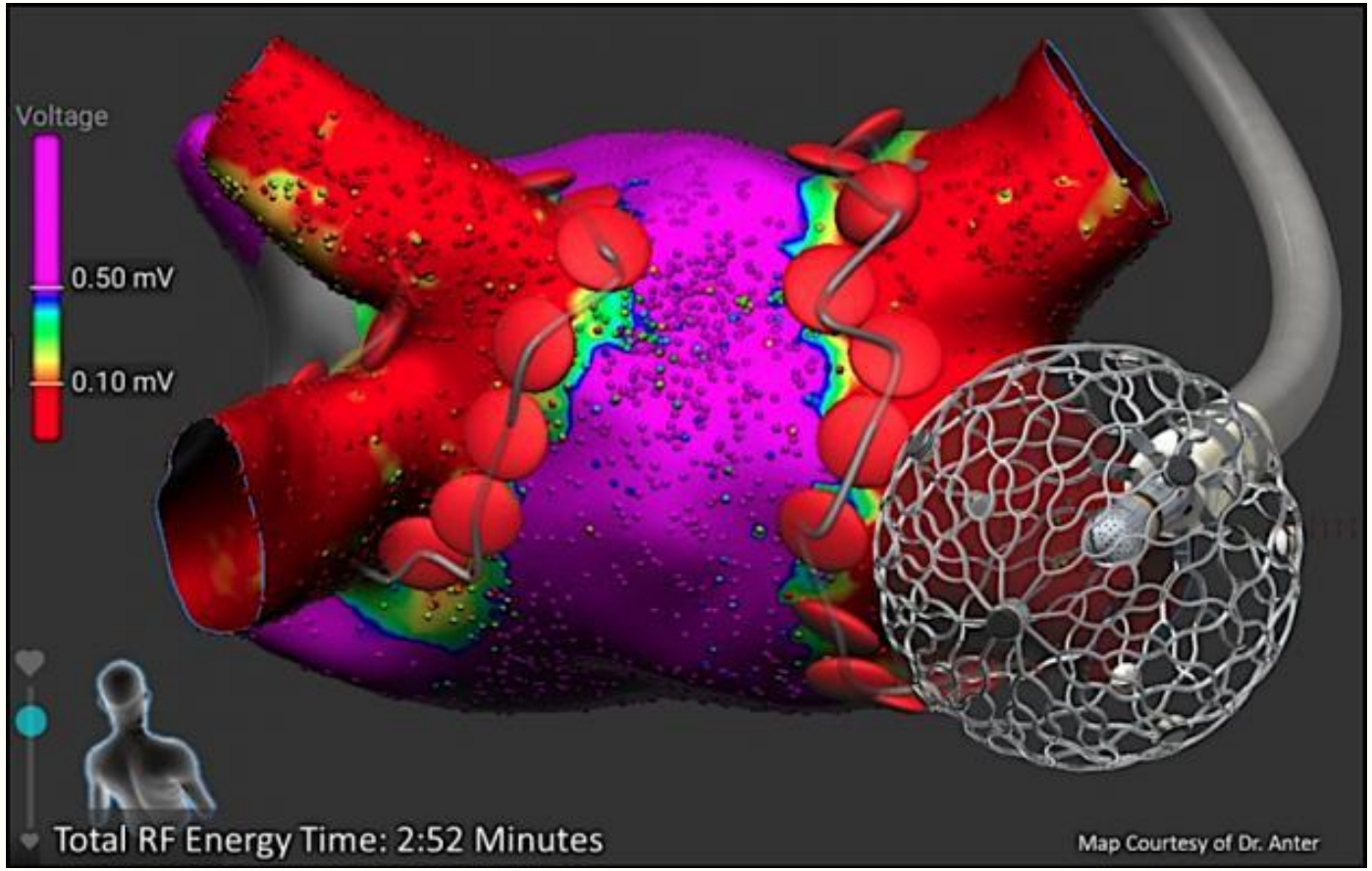
STOP-AF Trial



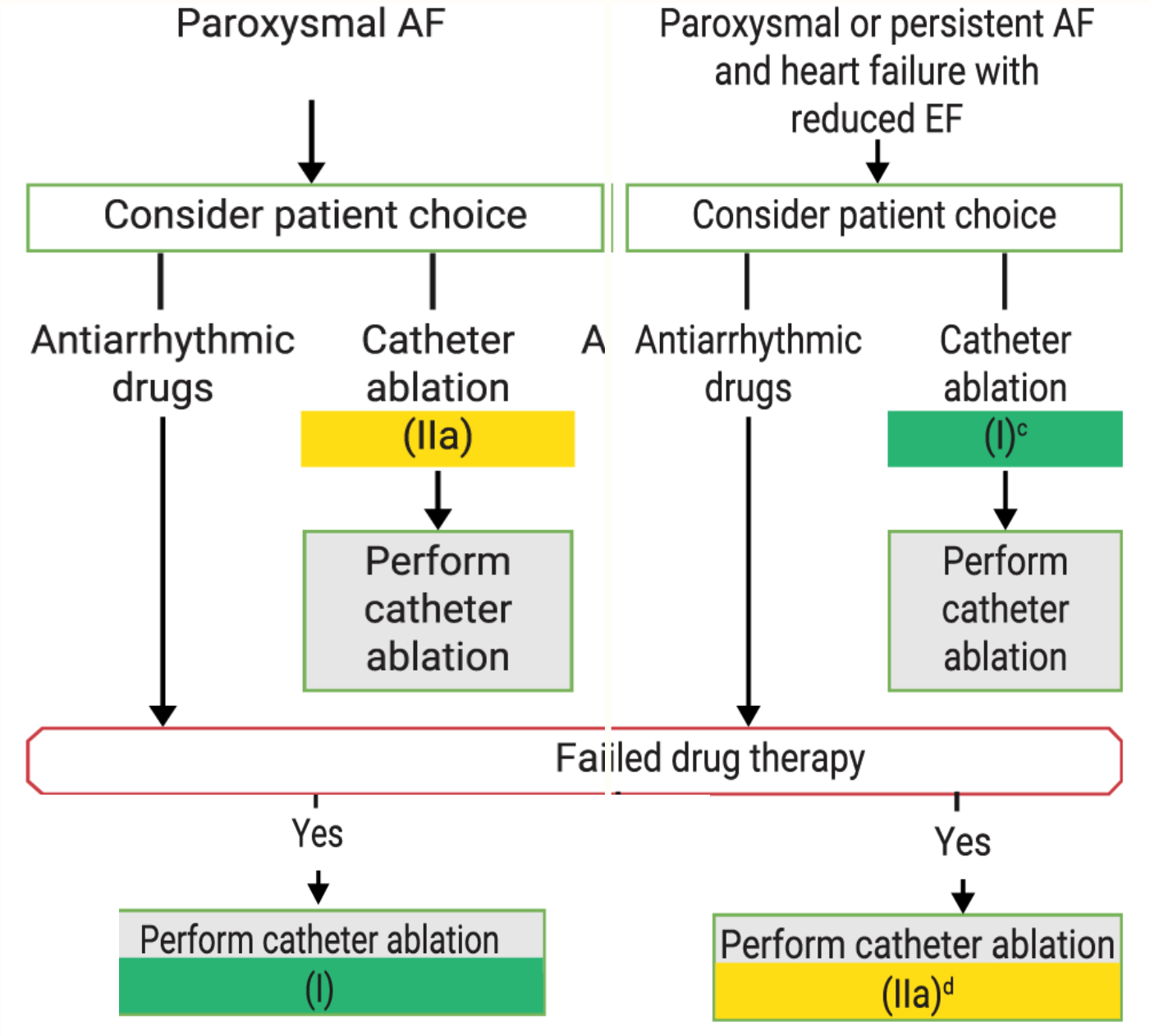
Packer DL, et al. Cryoballoon ablation of pulmonary veins for paroxysmal atrial fibrillation: first results of the North American Arctic Front (STOP AF) pivotal trial.J Am Coll Cardiol. 2013;61(16):1713–1723.

Pulsed Field Ablation

- During electroporation trains of high-voltage electrical pulses in quiet short duration induces micropores and nanopores in the phospholipid bilayers of the outer cell membrane.
- One of the most promising features of PFA is tissue selectivity.



Indications for Catheter Ablation in Paroxysmal AF



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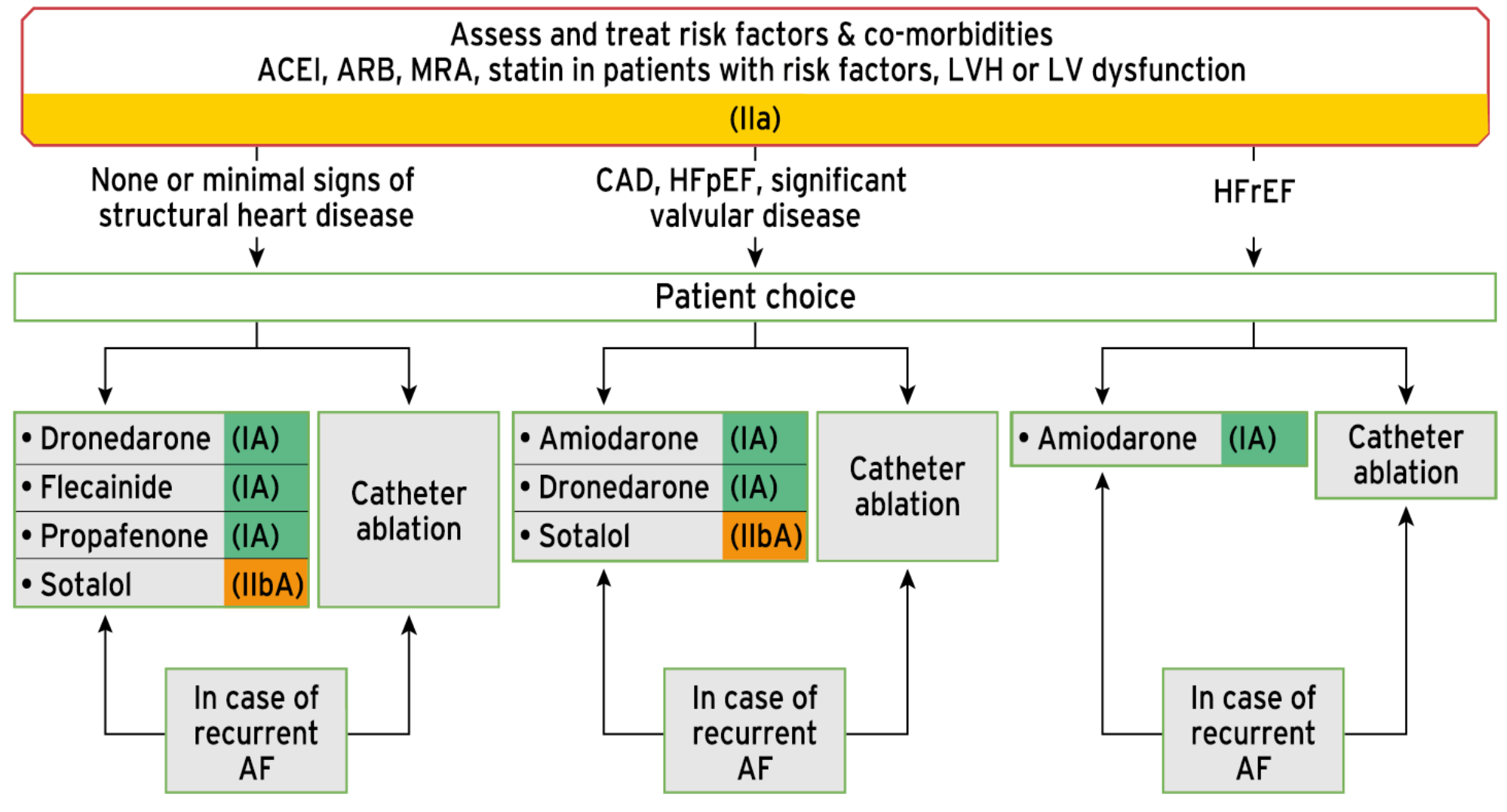
Choice of AADs



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Our patient's summary

- 67-year-old lady with symptomatic clinical paroxysmal AF
- Uncontrolled hypertension
- Obese (BMI 32)
- High LDL with intermediate ASCVD risk
- Medications: Amlodipine daily and Bisoprolol 2.5 bid

What drug would you choose if drug therapy is preferred?

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- Flecainide
- Propafenone
- Sotalol
- Amiodarone

Recommendations: A

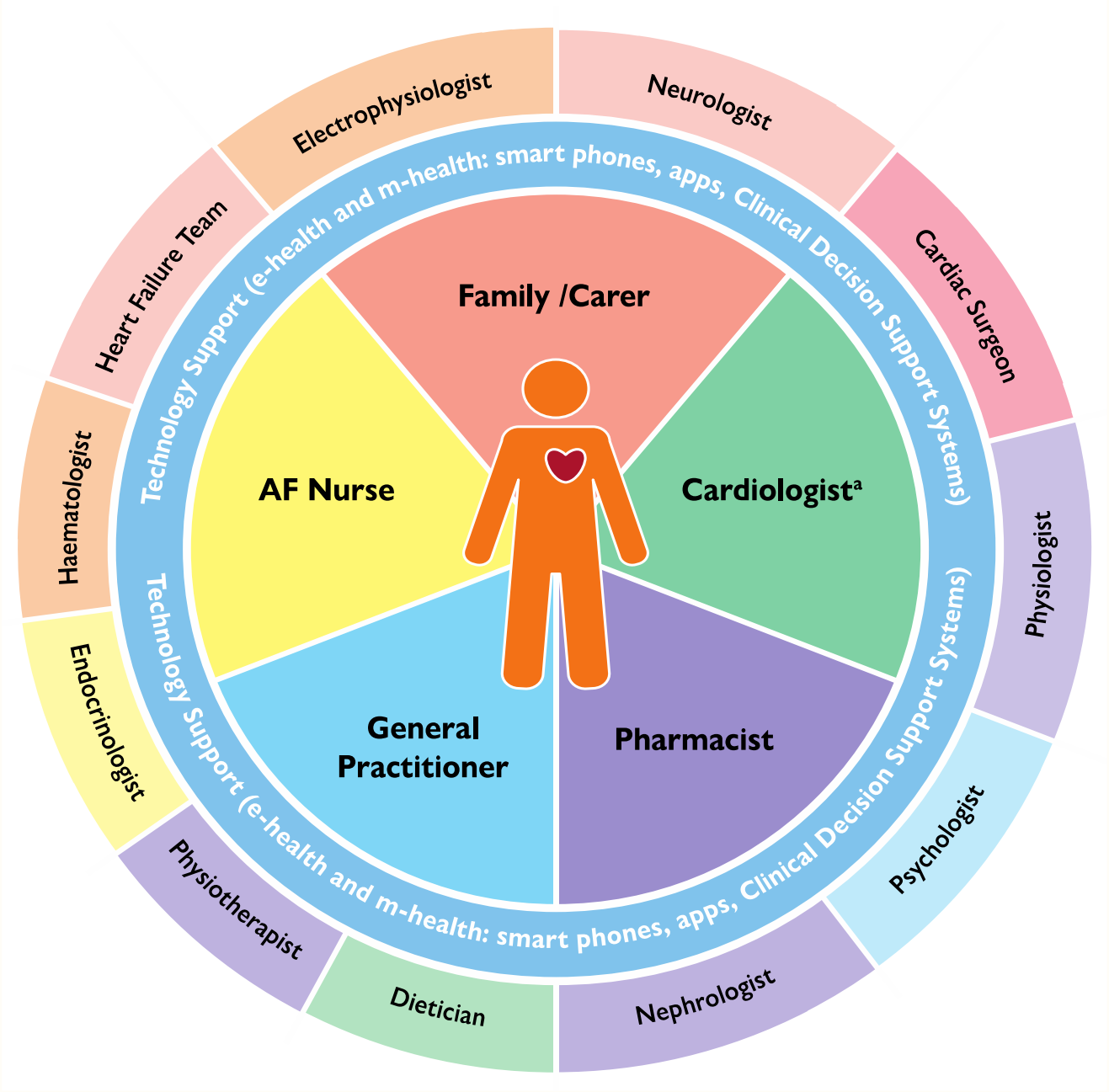
- CHA2DS2-VASc score of 3 with normal GFR
  - Full dose NOAC was advised.
  - Precautions, compliance, regular Creatinine measurement were discussed.
- HAS-BLED score of 1
  - Better hypertension control was emphasized.

Recommendations: B

- AF management options were fully discussed with the patient.
- Despite being a good candidate for AF ablation, anti-arrhythmic drug therapy was chosen for the first step.
- Considering the absence of major structural heart disease or comorbidities Flecainide was advised with appropriate precautions and the necessary follow-up routines.
- Bisoprolol was continued along with Flecainide pending careful follow-up for HR.

Recommendations: C

- Lifestyle modifications with regular exercise and weight reduction were advised.
- Adjustment of anti-hypertensive medications with combination pills incorporating ACEI/ARB was recommended.
- Intermediate risk ASCVD score > Statin was recommended if a trial of lifestyle modifications prove to be ineffective.



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