Nuffield Health

Arrhythmias

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EXETER HEART
TOTAL CARDIAC CARE

Arrhythmias

- A big topic!
- Commonest AF, Flutter and SVT
- VT rare
- But, ventricular ectopics common
- Bradyarrhythmia -> Dr Podd breakout.

Outline

- Symptoms from arrhythmias
- Investigating arrythmia
- Treatment approach
    - Atrial Flutter
    - AF
    - SVT

Symptoms of Arrhythmia

- **Palpitations**
- Fatigue
- Light-headedness
- Chest discomfort
- Dyspnoea
- Altered consciousness

Definition of Palpitations

- Awareness of the heartbeat
- Disagreeable sensation of pulsation
- Or movement in the chest and/or adjacent areas
- Implicit is a sense of unpleasantness

Palpitations are Common

- 1 in 200 of ED consultations
- Up to 1 in 100 of GP consultations
- Second only to chest pain as presenting complaint for cardiologists

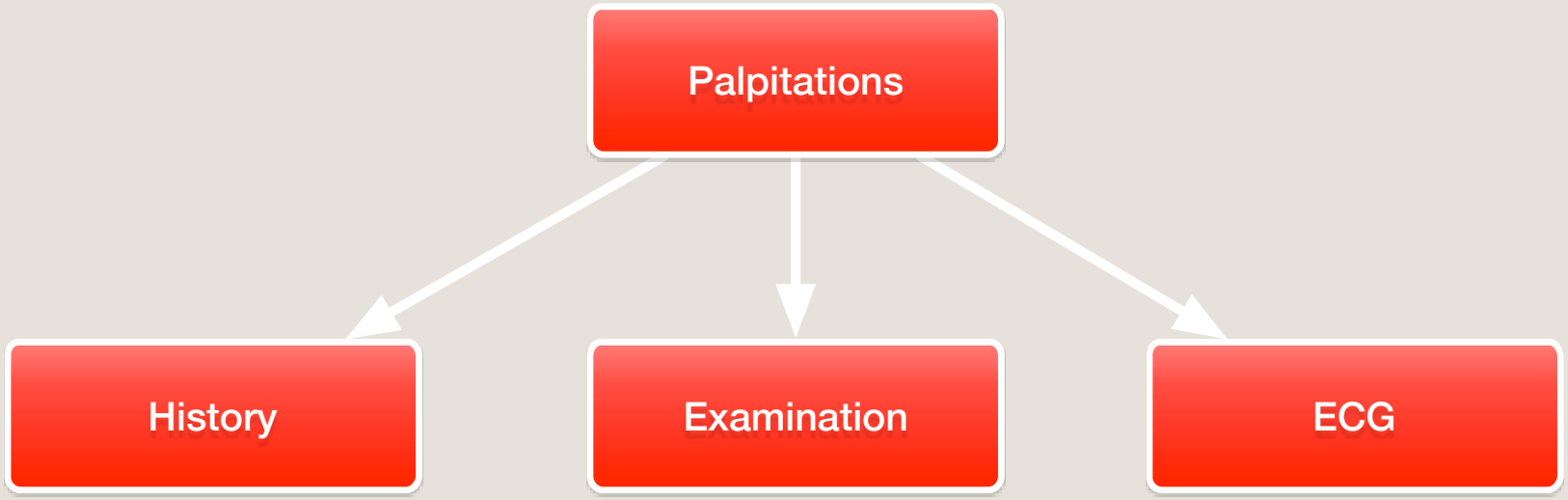
Palpitations and Arrhythmia

- Arrhythmias commonly cause palpitations
- Palpitations are a common symptom
- But not all palpitations are due to arrhythmia

Causes of Palpitations

- Cardiac arrhythmias
- Pacemaker issues
- Structural heart diseases
- Psychosomatic disorders
- Systemic diseases
- Medical and recreational drugs

Palpitations Assessment



History

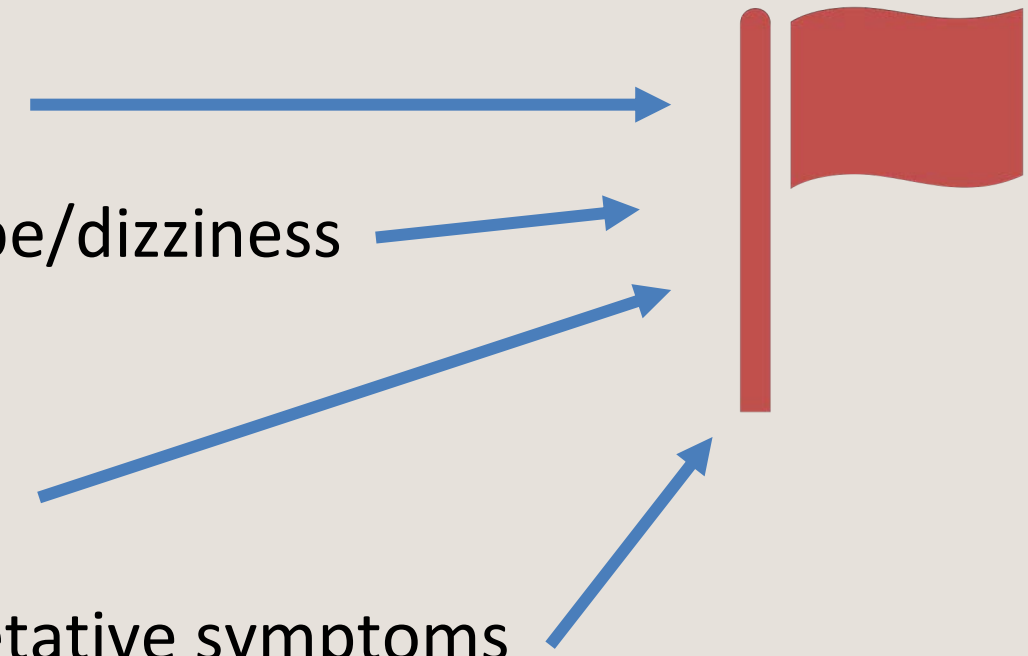
- Frequency? Daily/Weekly/Monthly/Yearly
- Type of palp? Rate/Rhythm/Character
- Onset/Offset and Duration?
- Circumstances at initiation? Exercise/positional
- Associated symptoms? Haemodynamic compromise?

Character of Palpitations

- **Extrasystole** – Skipping, missing beat, heart sinking, often at rest
- **Anxiety** – regular, slight increase HR, tingling in hands/face, lump in throat, chest pain, dysponea
- **Arrythmia** – beating/fluttering, reg or irregular, sudden onset and offset, typically>5 mins

History of haemodynamic compromise?

- Dyspnoea
- Syncope
- Pre-syncope/dizziness
- Fatigue
- Chest pain
- Neurovegetative symptoms



History

- PMHx?: Cardiac disease/Thyroid/Systemic
- FHx?: Sudden cardiac death/Cardiac disease
- Drug Hx
- SHx: Drug misuse?

Examination

- **?Signs of structural heart disease**
- Hypertension
- Murmur 
- Heart failure 
- Vascular disease
- Systemic disease

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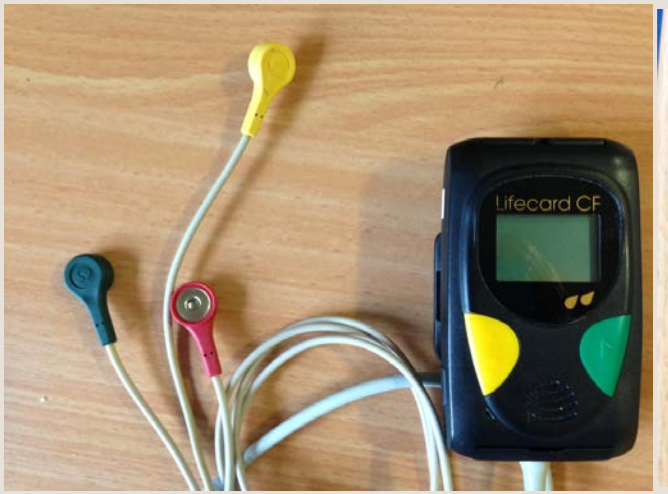
ECG

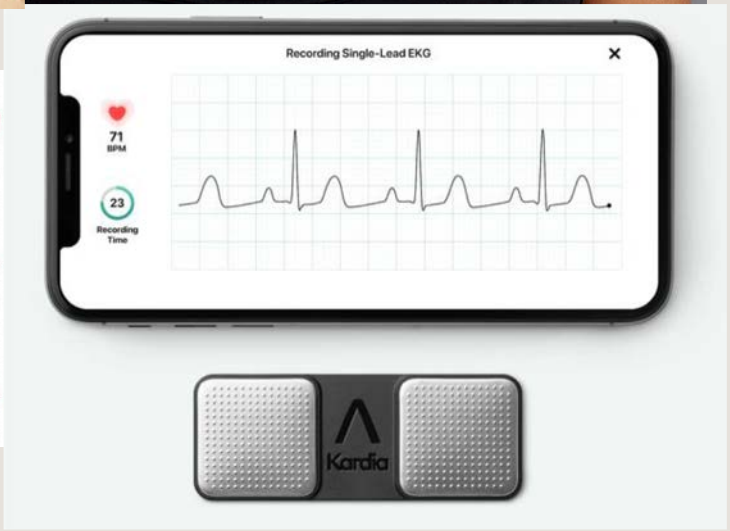
- During palpitations a 12-lead ECG is the diagnostic gold standard
- Normal + palps = not arrhythmic
- Abnormal + palps = arrhythmic diagnosis
- If no symptoms still instructive for presence/abscence of structural heart disease
- But diagnosis tentative

Investigations

- 12 lead ECG
- Bloods only if suspect systemic disease, e.g. TFTs
- Echo only if suspect structural heart disease
- Rhythm monitoring can be helpful

Rhythm Monitoring





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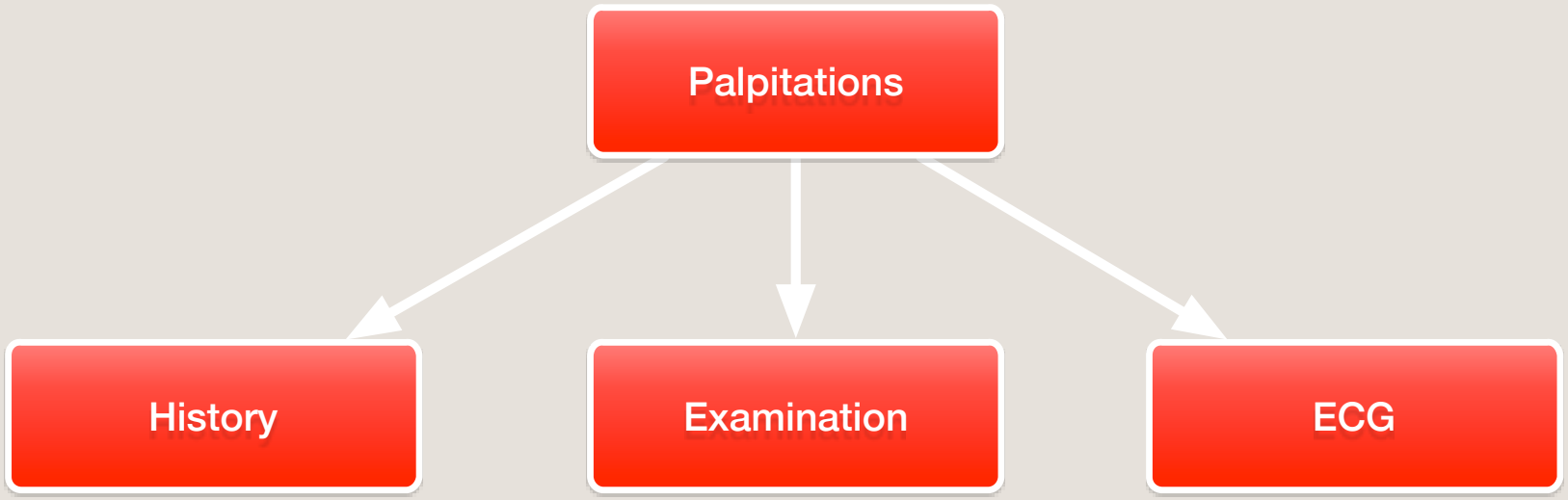
Palpitations Assessment



- Brief palps, gradual onset
- No symptoms of haemodynamic compromise
- Extra-systolic type or Anxiety type
- No structural heart disease
- Normal 12 lead ECG

Often STOP here

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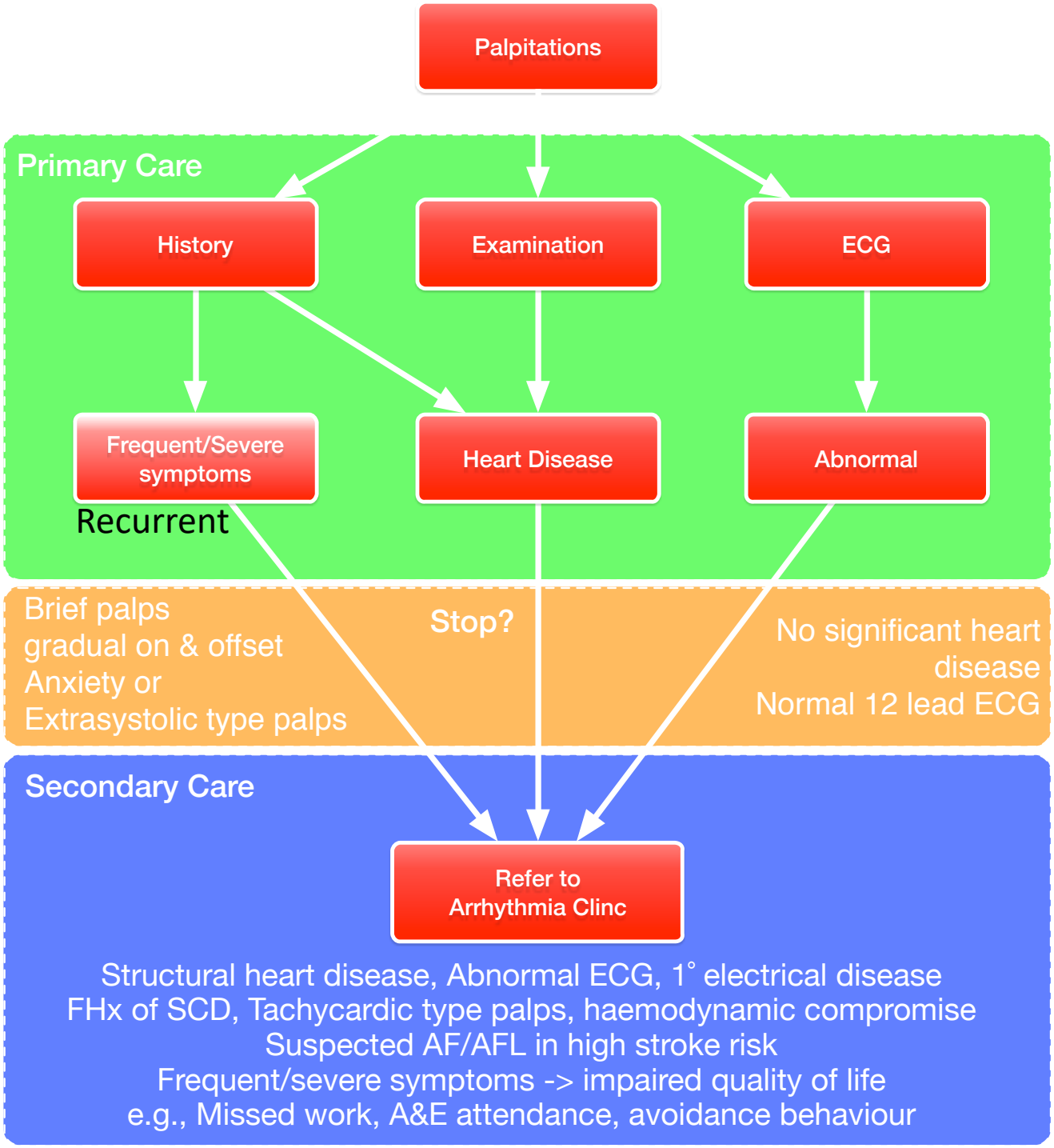
When to refer on?

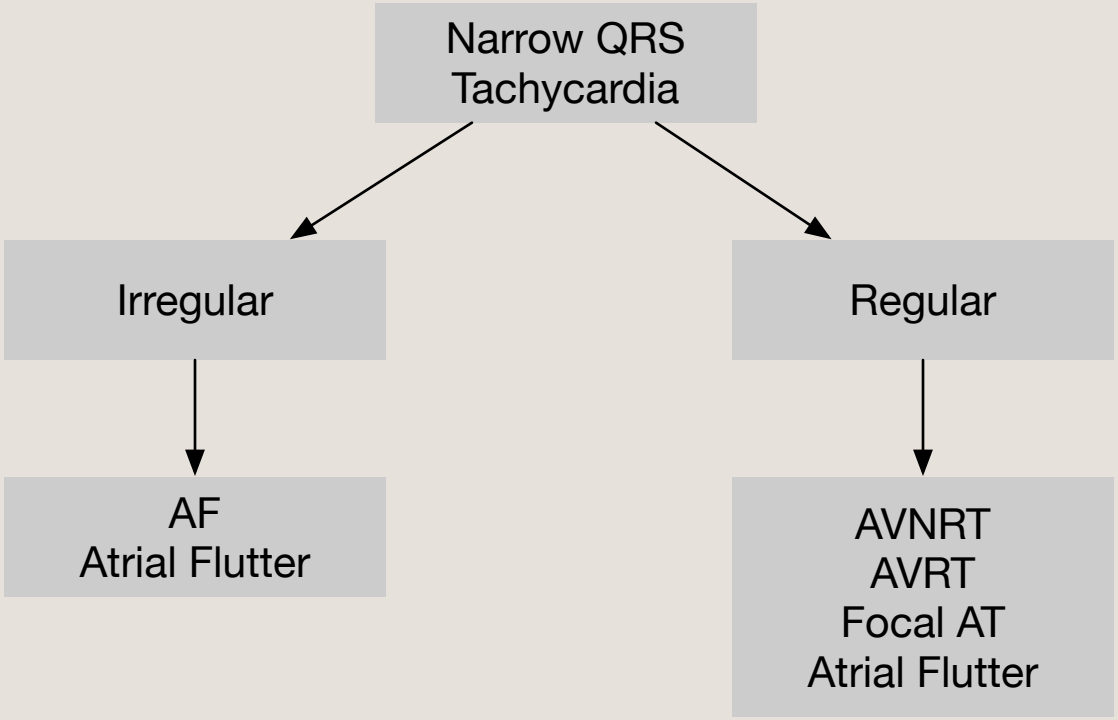
- Structural heart disease
- Abnormal ECG or 1˚ electrical disorder
- FHx of SCD
- Tachycardiac palpitation character
- Haemodynamic compromise symptoms
- Suspected AF/AFL with significant stroke risk
- Severe/frequent/recurrent symptoms -> impaired quality of life
- e.g., missed work, attended A+E, avoidance behaviour

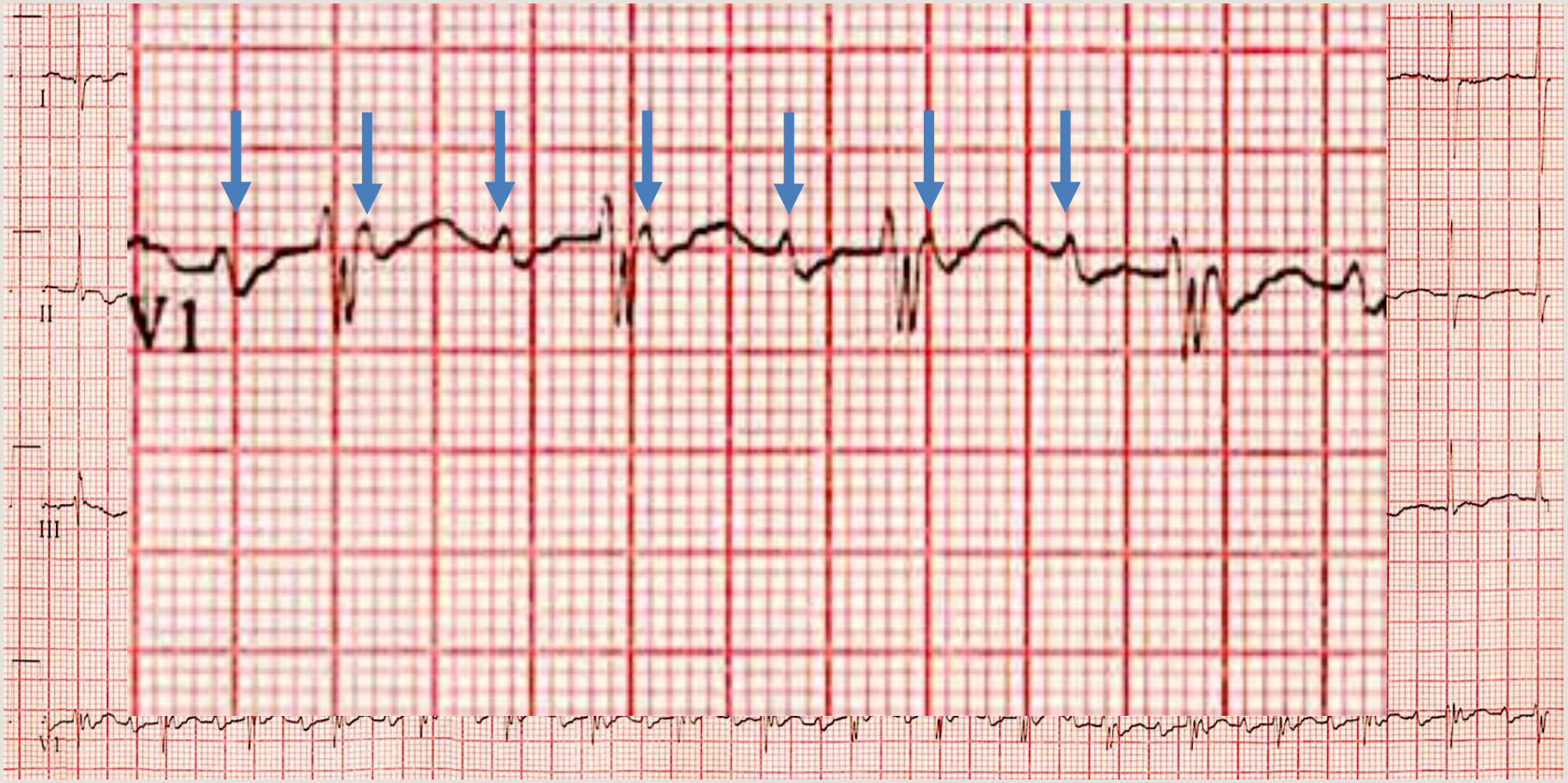

Palpitations
Primary Care
History
Examination
ECG
Frequent/Severe symptoms
Heart Disease
Abnormal
Recurrent
Brief palps
gradual on & offset
Anxiety or
Extrasystolic type palps
Stop?
No significant heart disease
Normal 12 lead ECG
Secondary Care
Refer to Arrhythmia Clinc
Structural heart disease, Abnormal ECG, 1˚ electrical disease
FHx of SCD, Tachycardic type palps, haemodynamic compromise
Suspected AF/AFL in high stroke risk
Frequent/severe symptoms -> impaired quality of life
e.g., Missed work, A&E attendance, avoidance behaviour

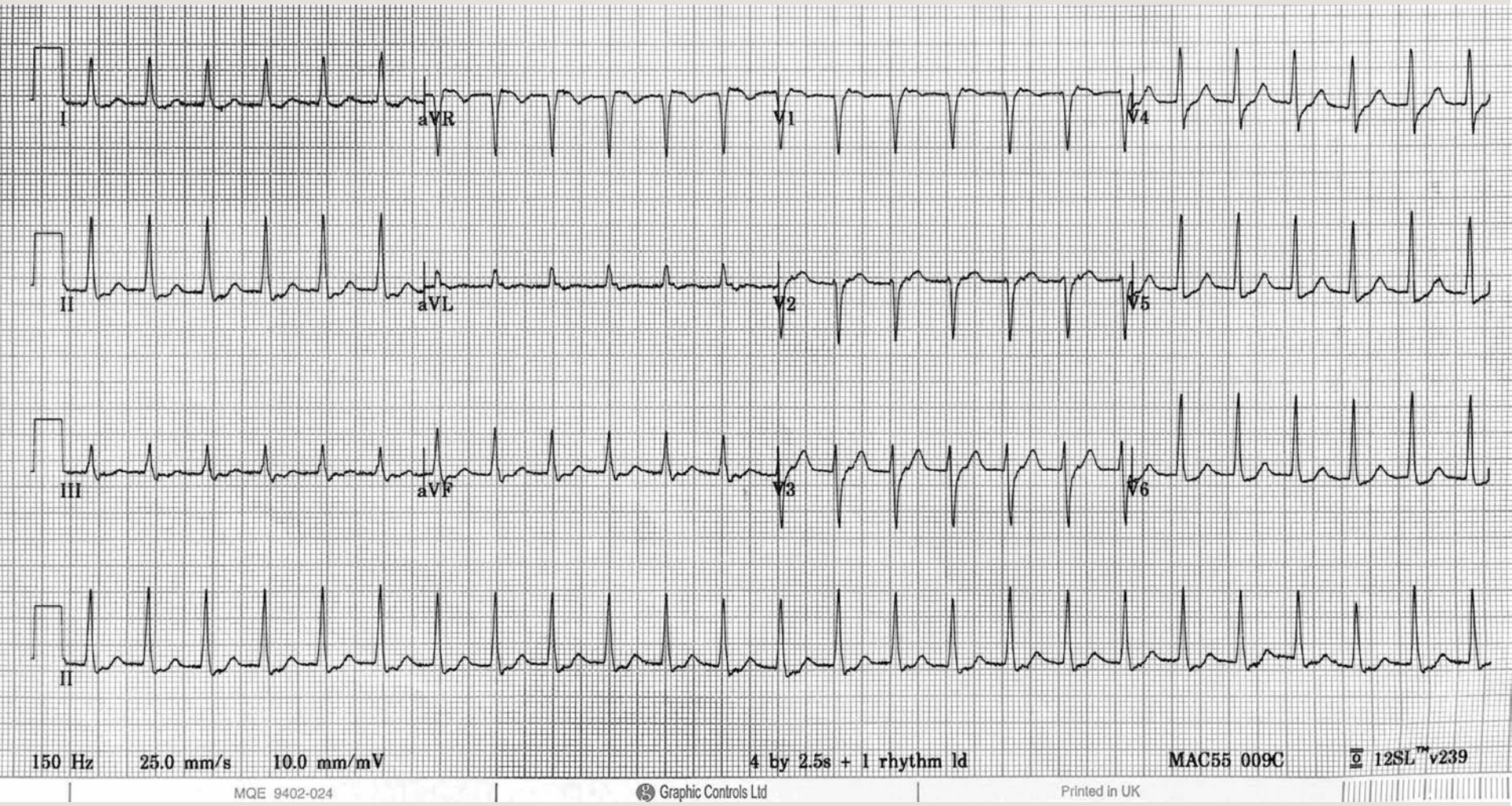
Narrow QRS Tachycardia

- Commonest arrhythmias are narrow complex
- AF
- Atrial Flutter
- SVT
- Atrial tachycardia

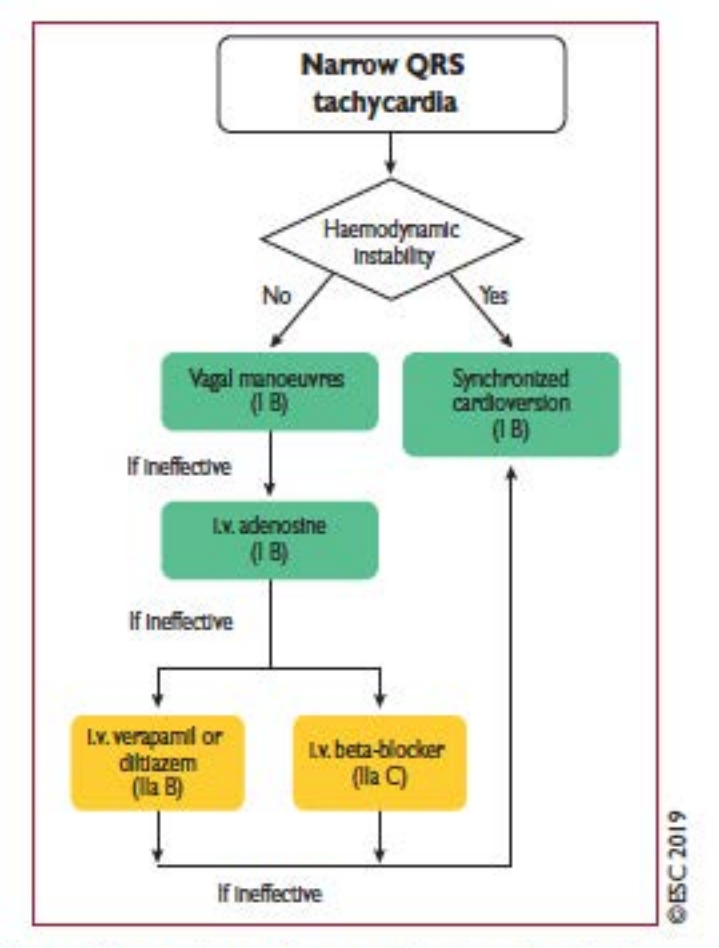
Type of Narrow Complex Arrhythmia



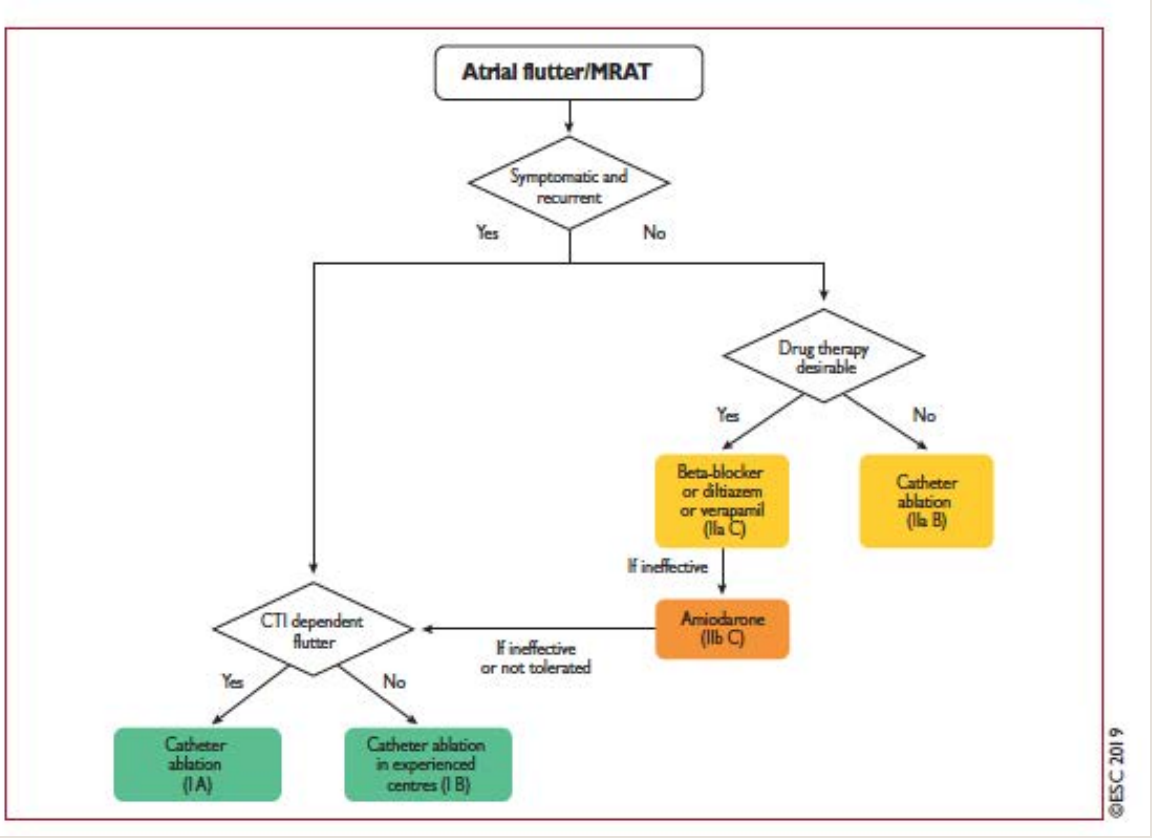

I
II
V1
III
V1

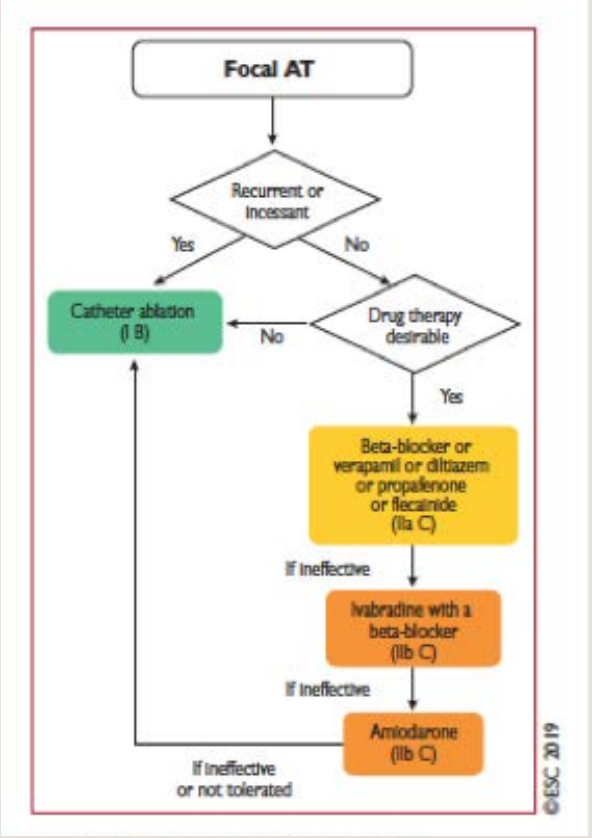

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
150 Hz
25.0 mm/s
10.0 mm/mV
4 by 2.5s + 1 rhythm ld
MAC55 009C
12SL™v239
MQE 9402-024
Graphic Controls Ltd
Printed in UK

Acute Therapy

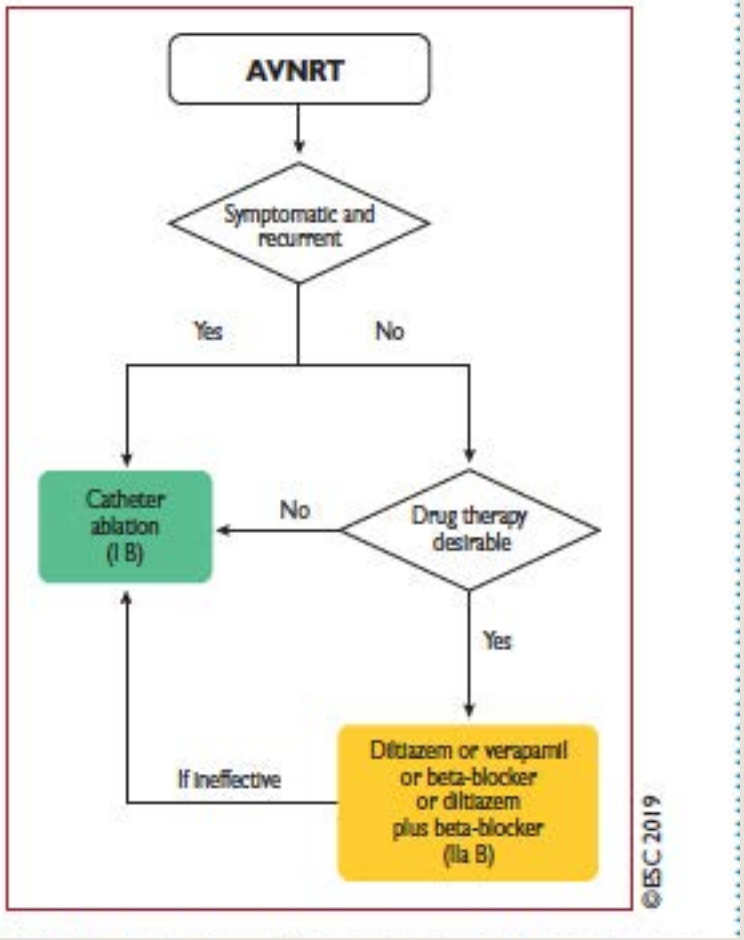


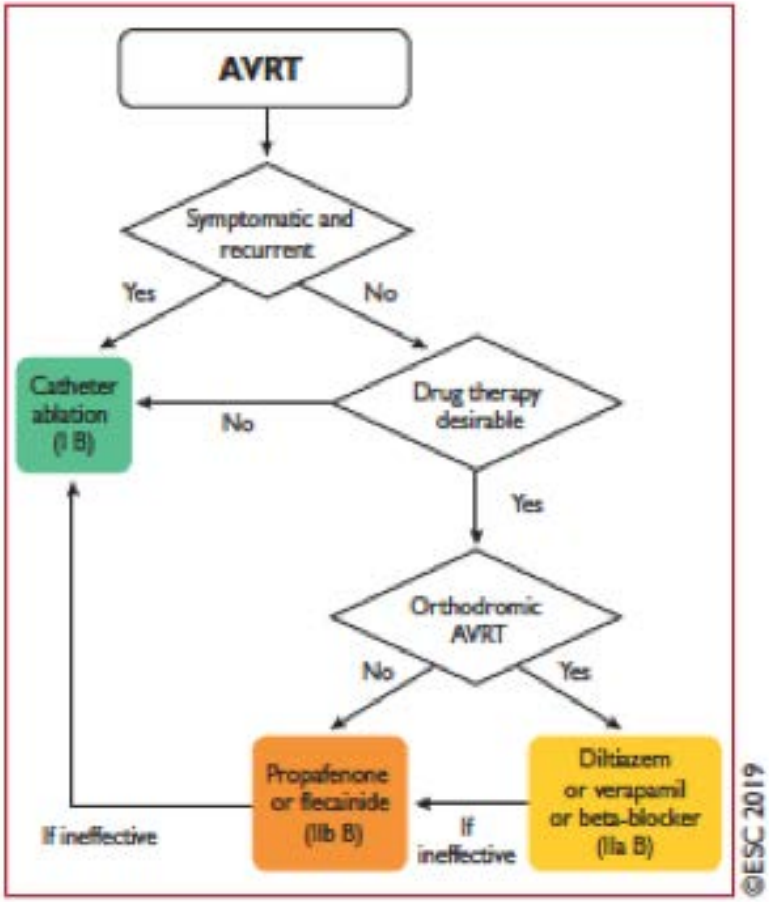
Chronic Therapy





Chronic Therapy





Ablation Outcomes

Table 11 **Average success and complication rates of catheter ablation for supraventricular tachycardia**

	Acute success (%)	Recurrence (%)	Complications (%)	Mortality (%)
Focal AT	85	20	1.4[a]	0.1
Cavotricuspid-dependent atrial flutter	95	10	2[b]	0.2
AVNRT	97	2	0.3[c]	0.01
AVRT	92	8	1.5[d]	0.1

Success rates, recurrence, and complications for focal atrial tachycardia and atrioventricular re-entrant tachycardia vary, being dependent on the location of the focus or pathway, respectively.[11–13,203–208]

[a]Vascular complications, AV block, and pericardial effusion.

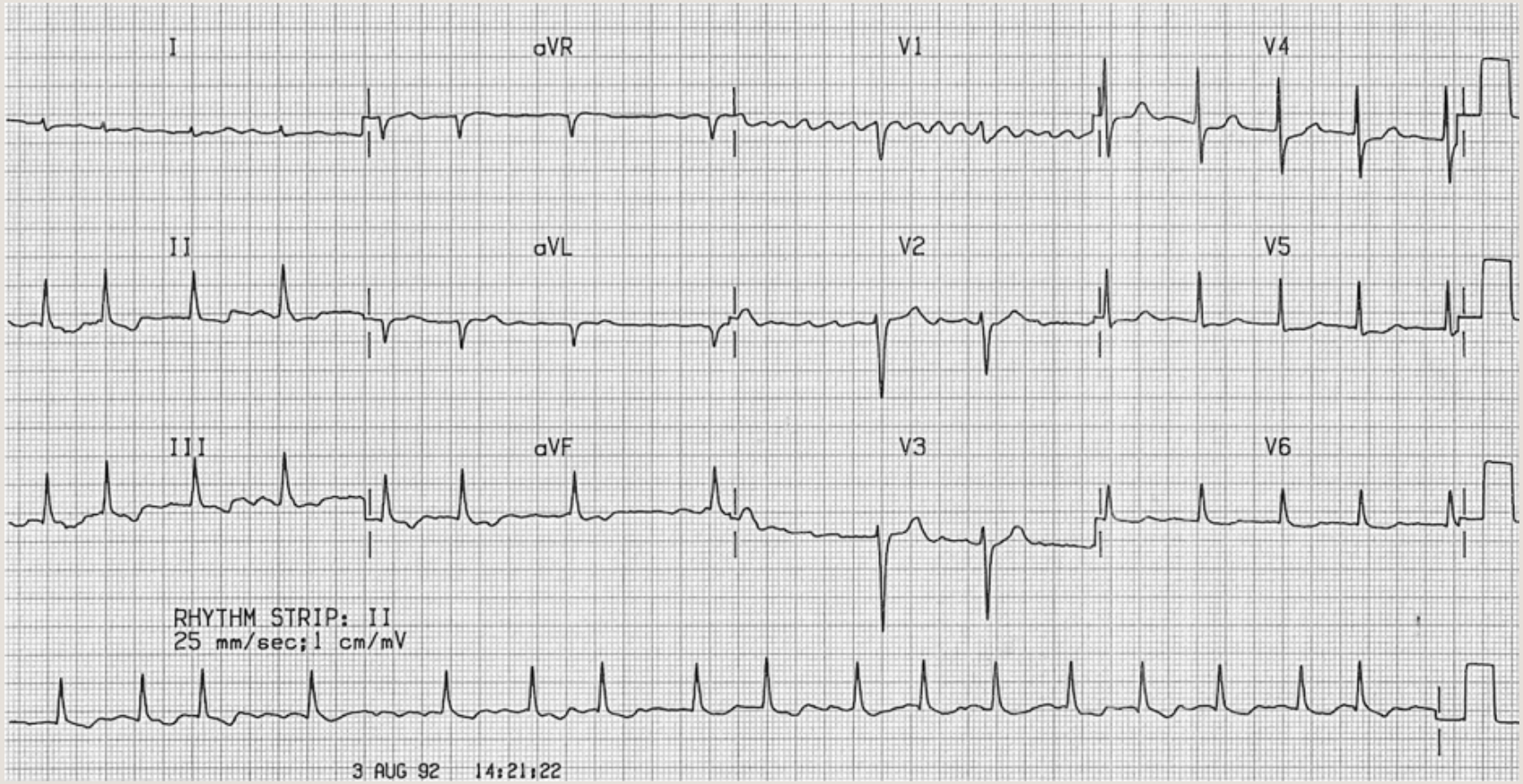
[b]Vascular complications, stroke, myocardial infarction, and pericardial effusion.

[c]Vascular complications, AV block, and pericardial effusion.

[d]Vascular complications, AV block, myocardial infarction, pulmonary thromboembolism, and pericardial effusion.

AT = atrial tachycardia; AV = atrioventricular; AVNRT = atrioventricular nodal re-entrant tachycardia; AVRT = atrioventricular re-entrant tachycardia.

Narrow but Irregular



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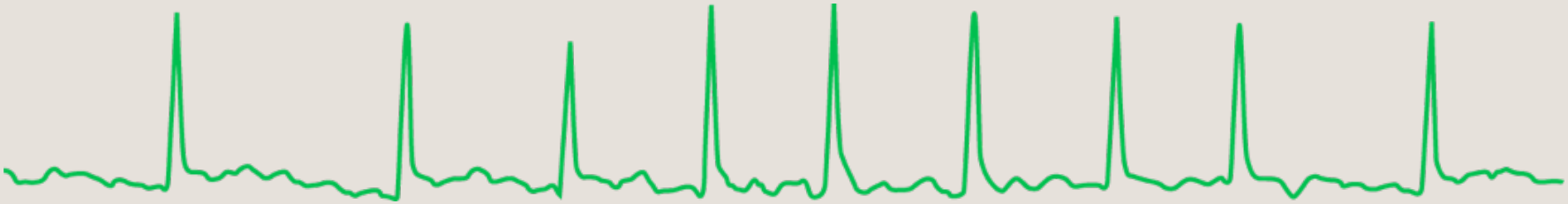
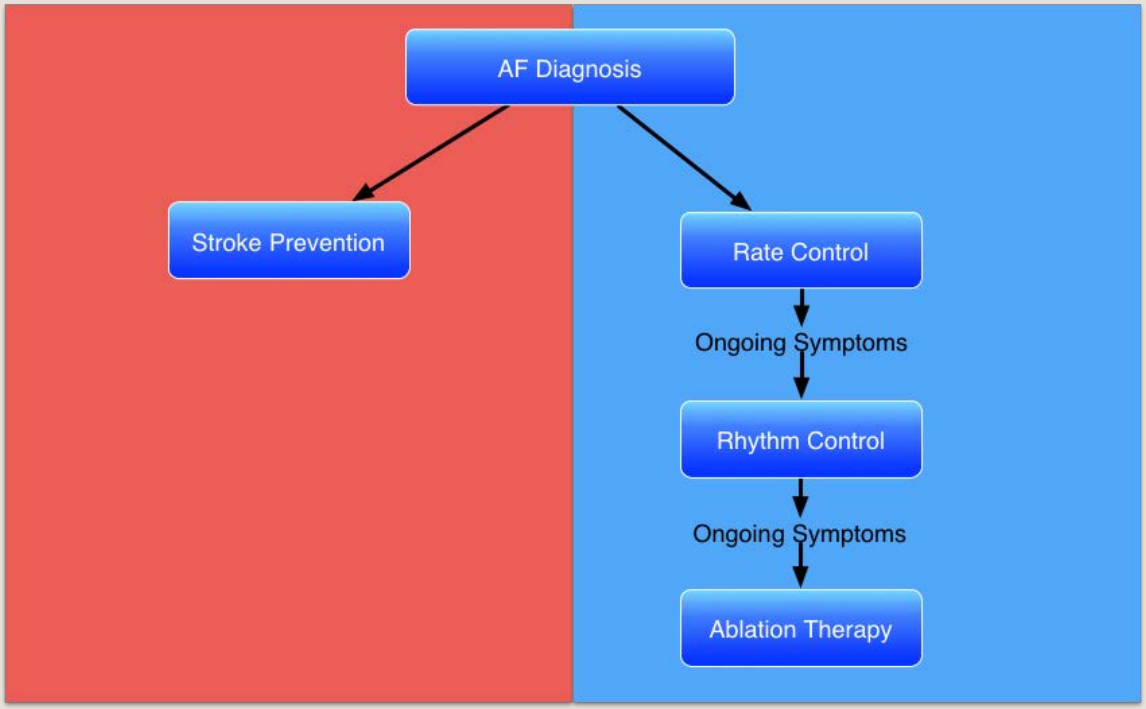
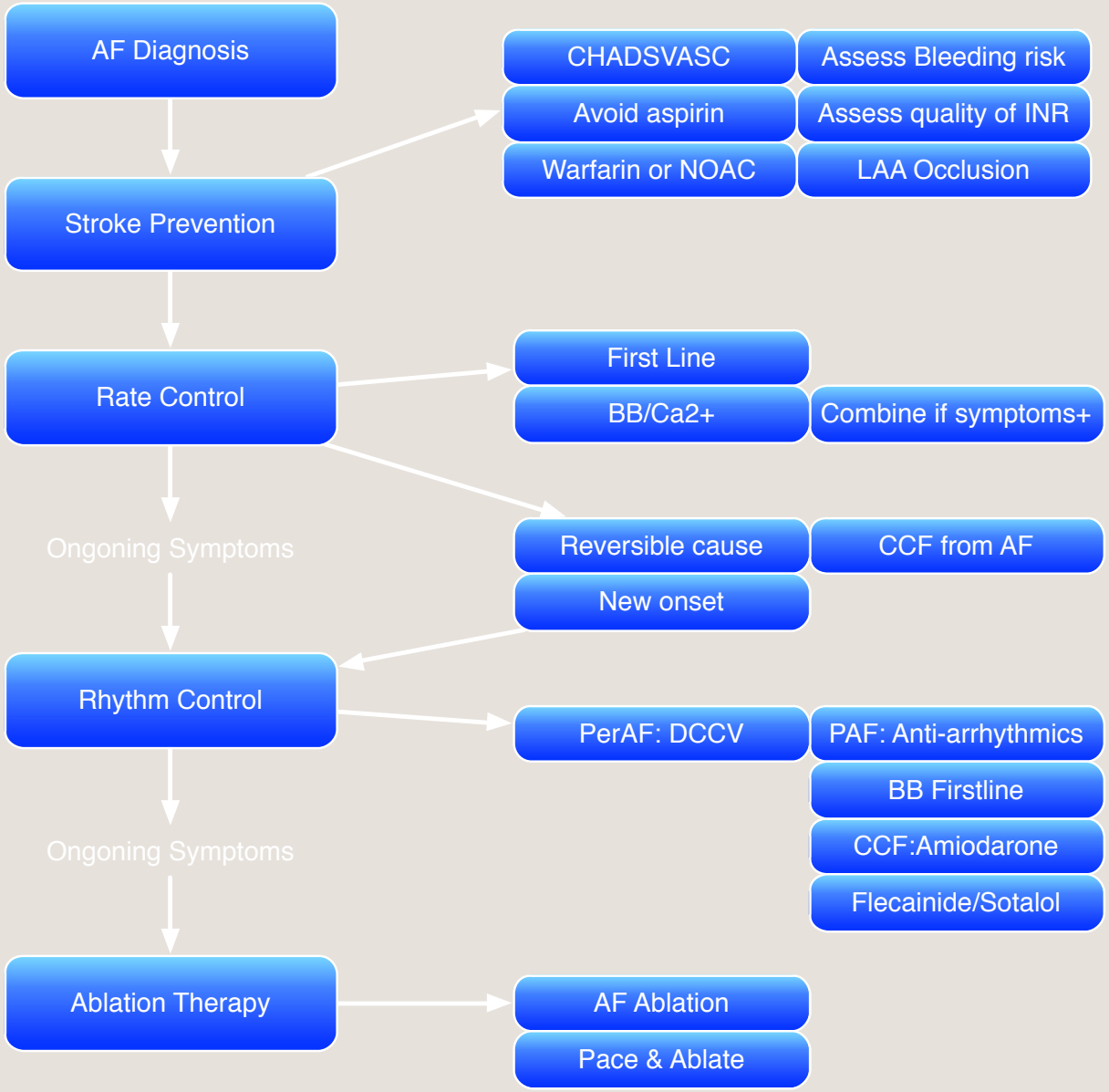
TOTAL CARDIAC CARE

Specific Arrhythmias - AF







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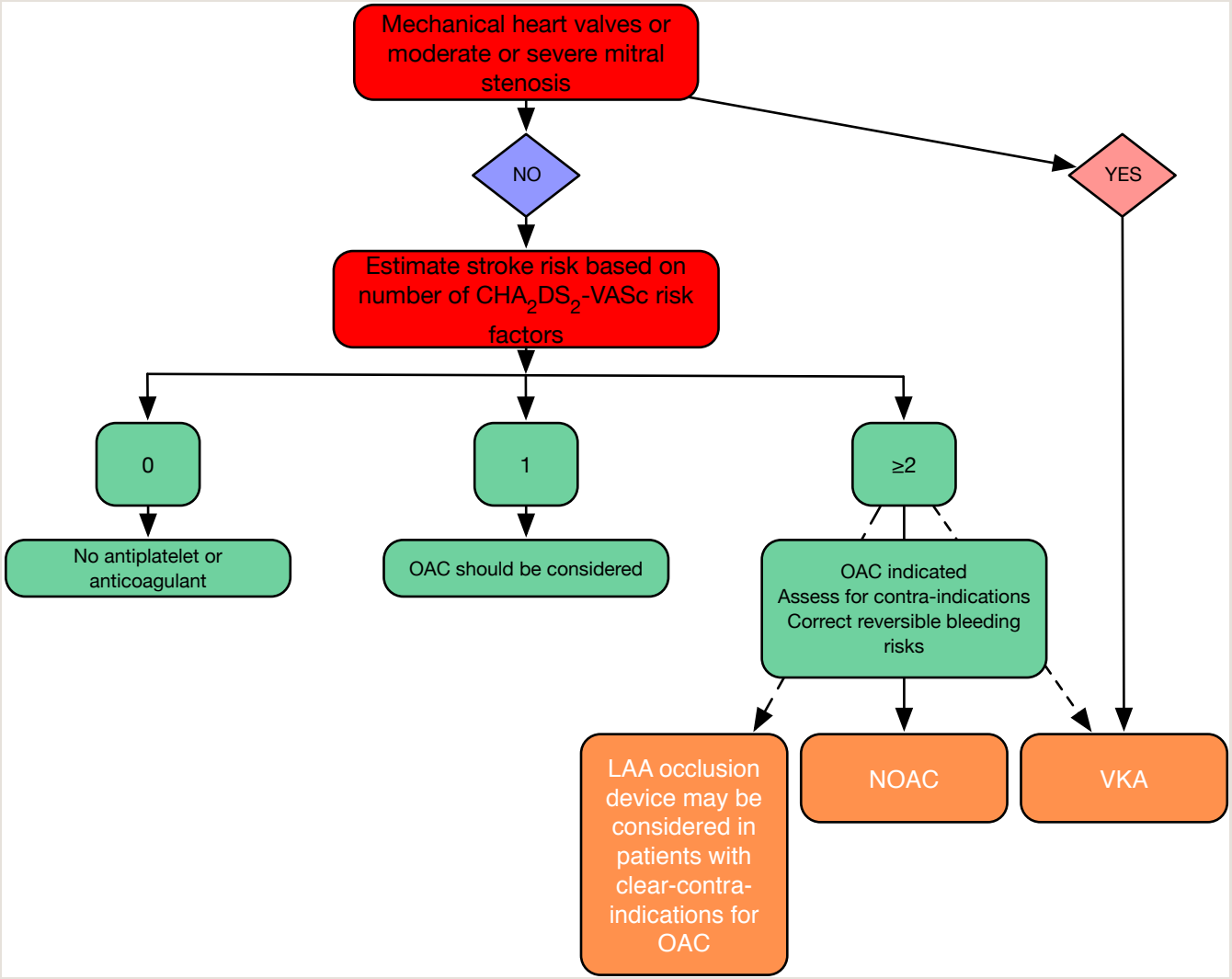
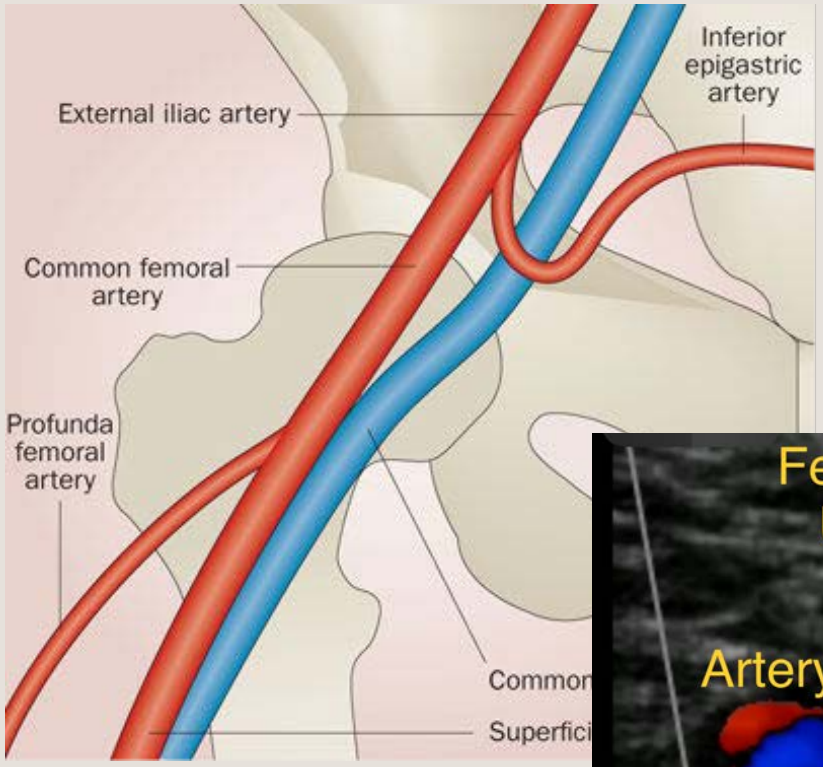
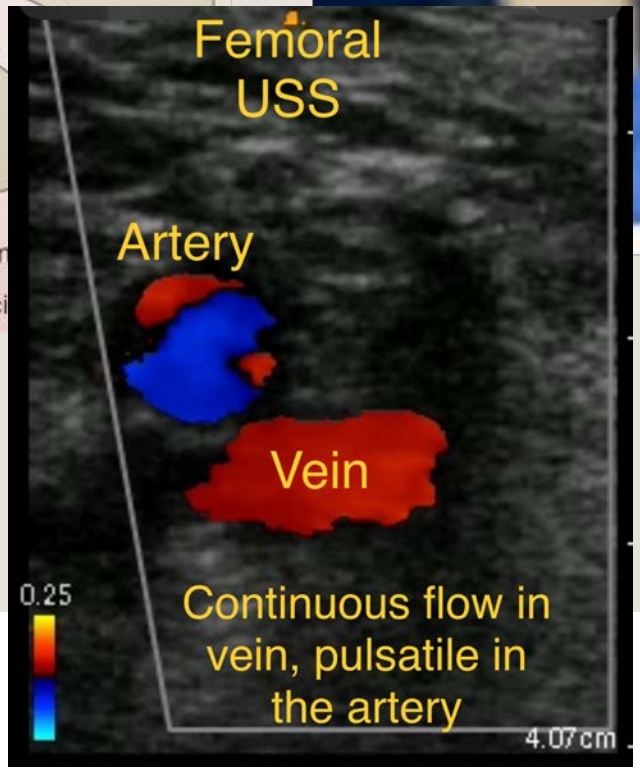

Mechanical heart valves or moderate or severe mitral stenosis
NO
YES
Estimate stroke risk based on number of CHA_2DS_2-VASc risk factors
0
1
≥2
No antiplatelet or anticoagulant
OAC should be considered
OAC indicated
Assess for contra-indications
Correct reversible bleeding risks
LAA occlusion device may be considered in patients with clear-contra-indications for OAC
NOAC
VKA

AF Ablation





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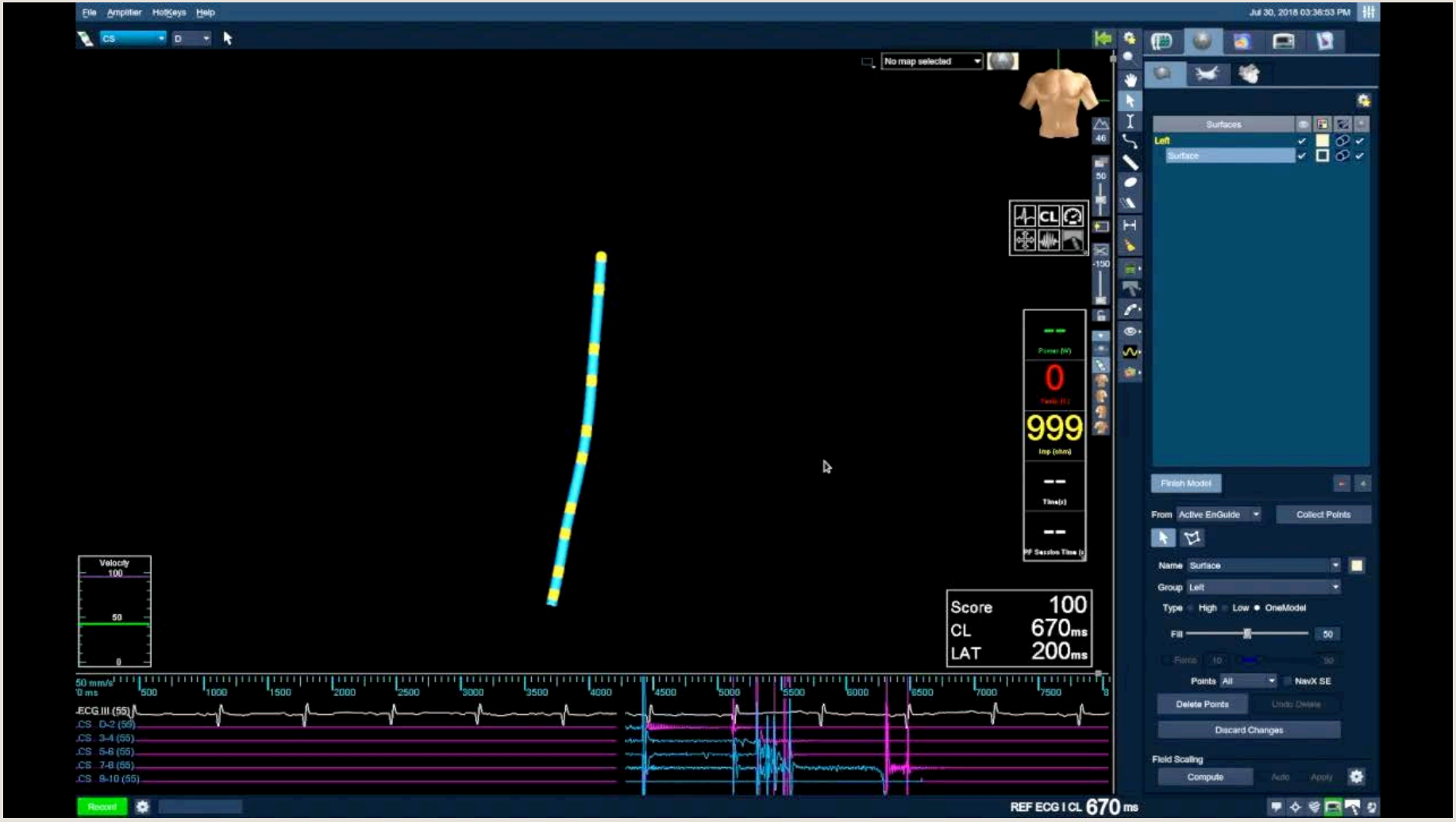

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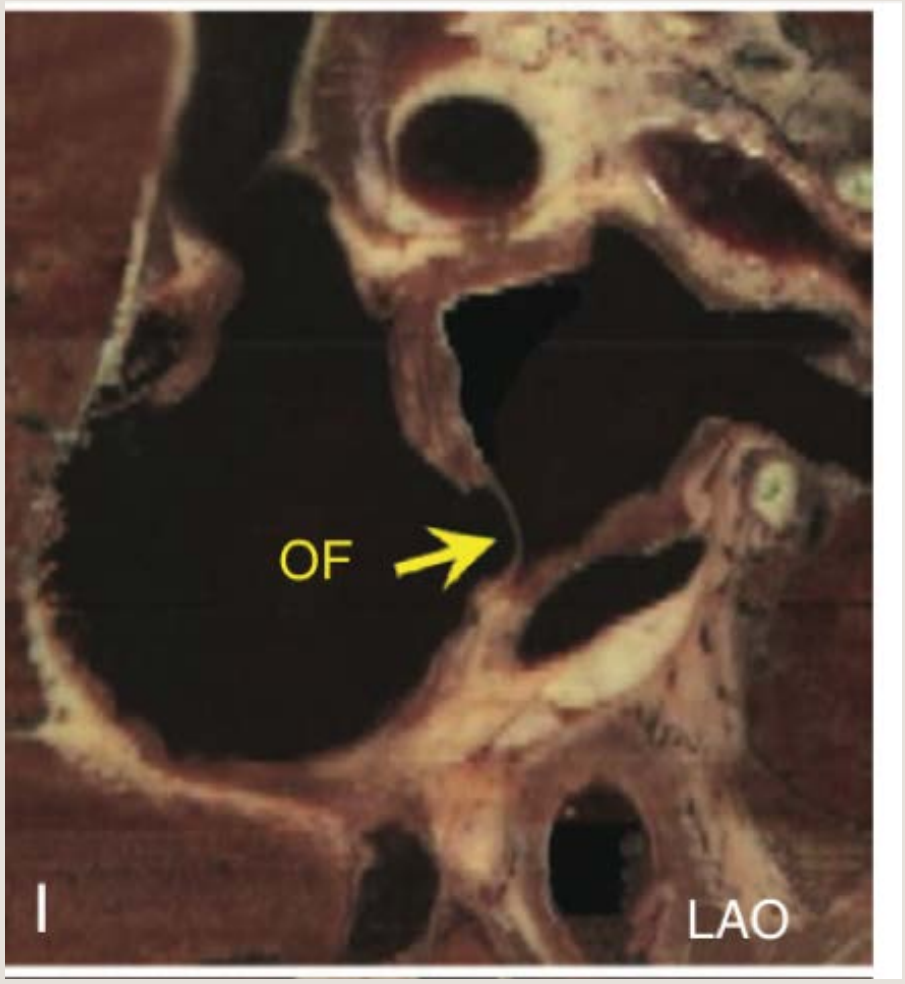
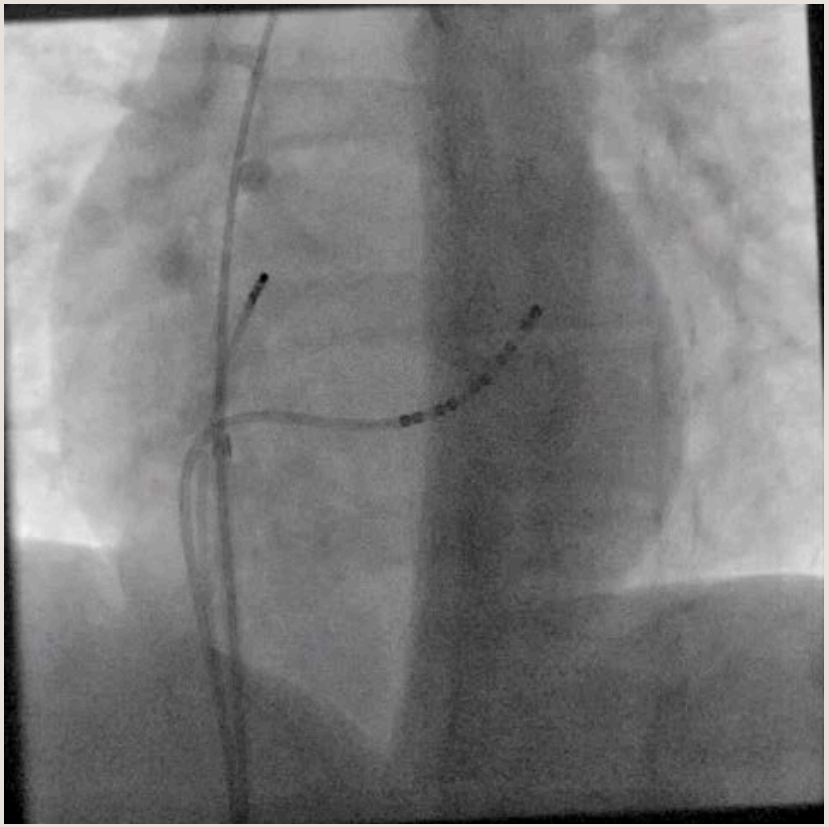
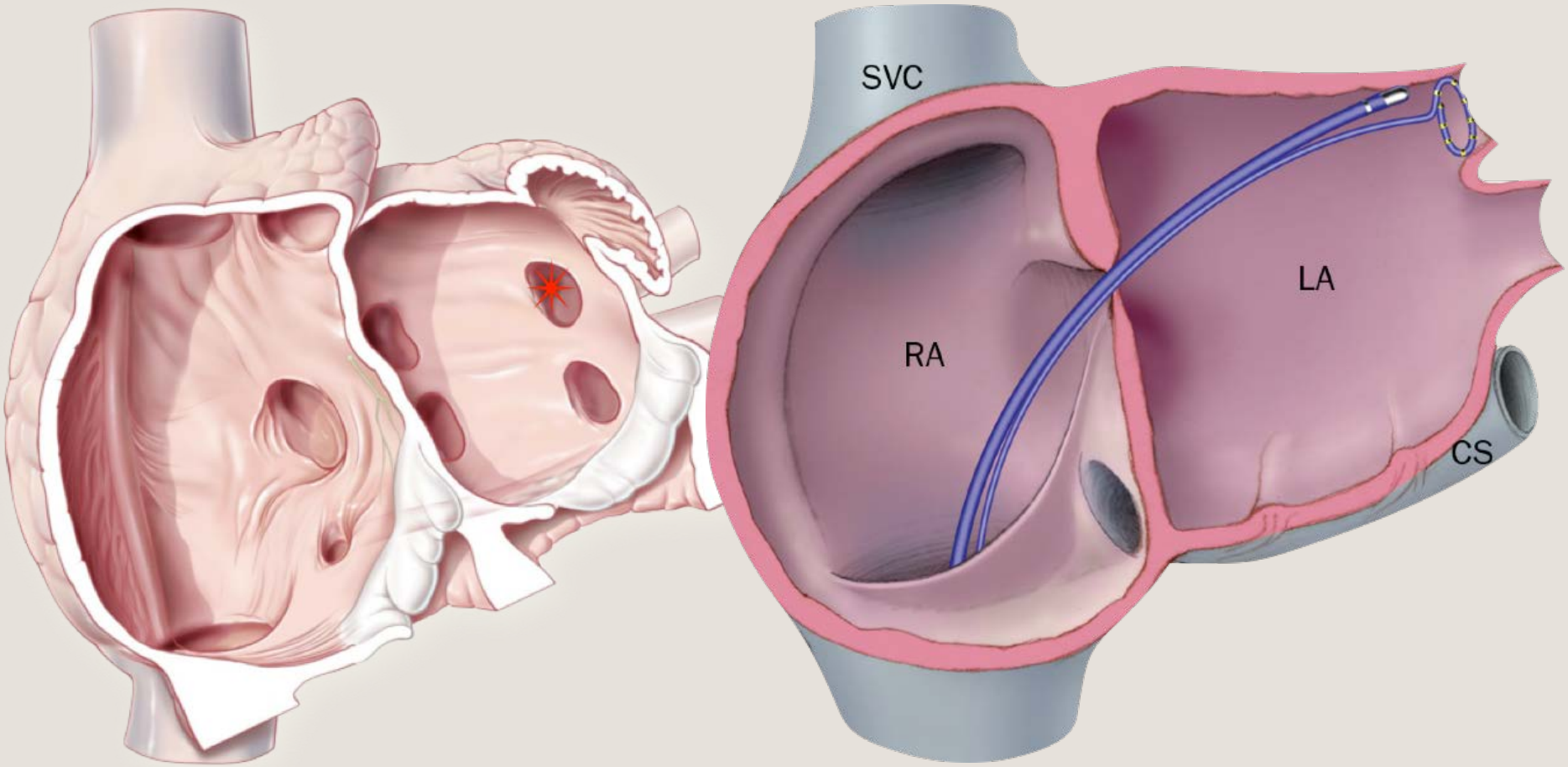




AF driven by Pulmonary Veins



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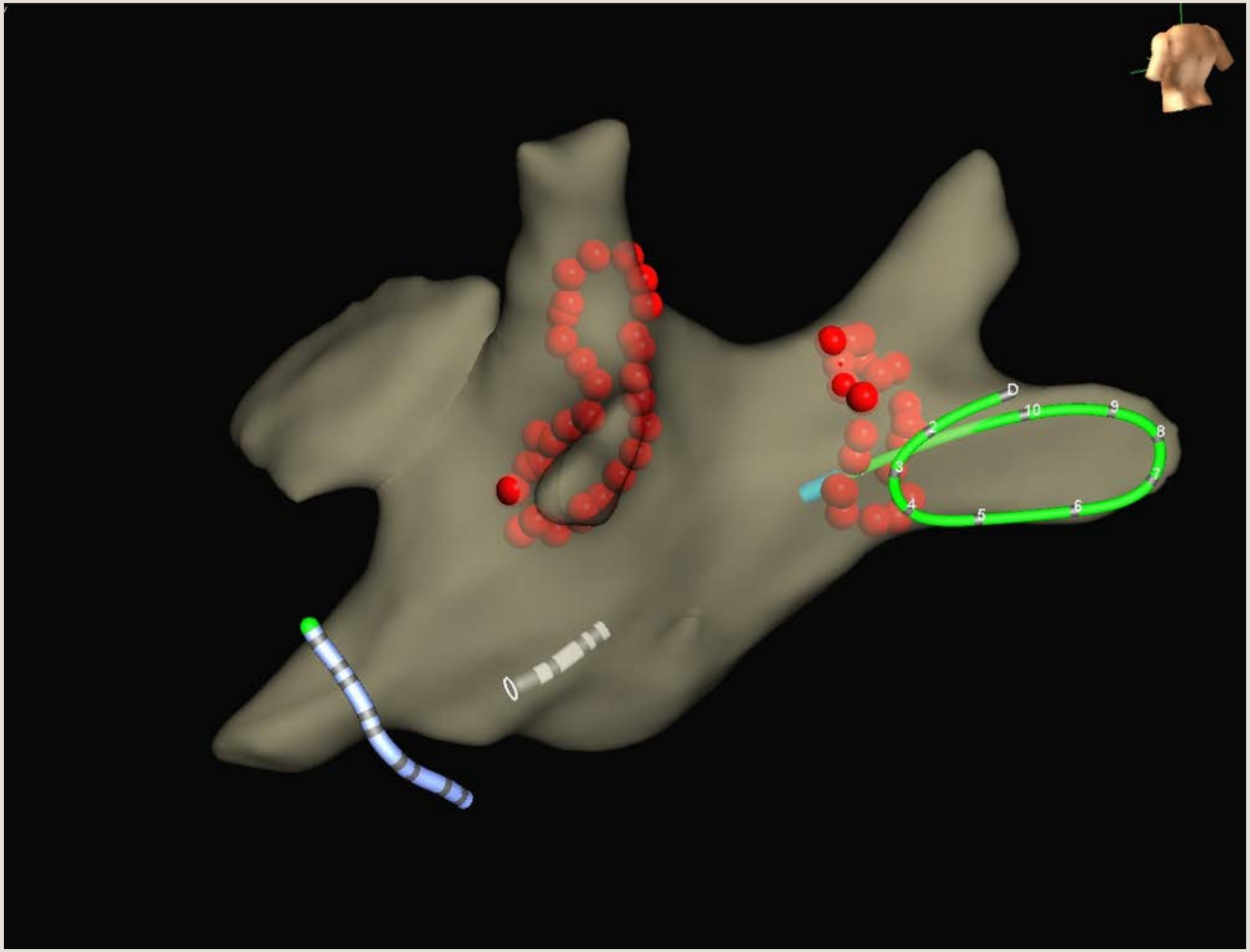
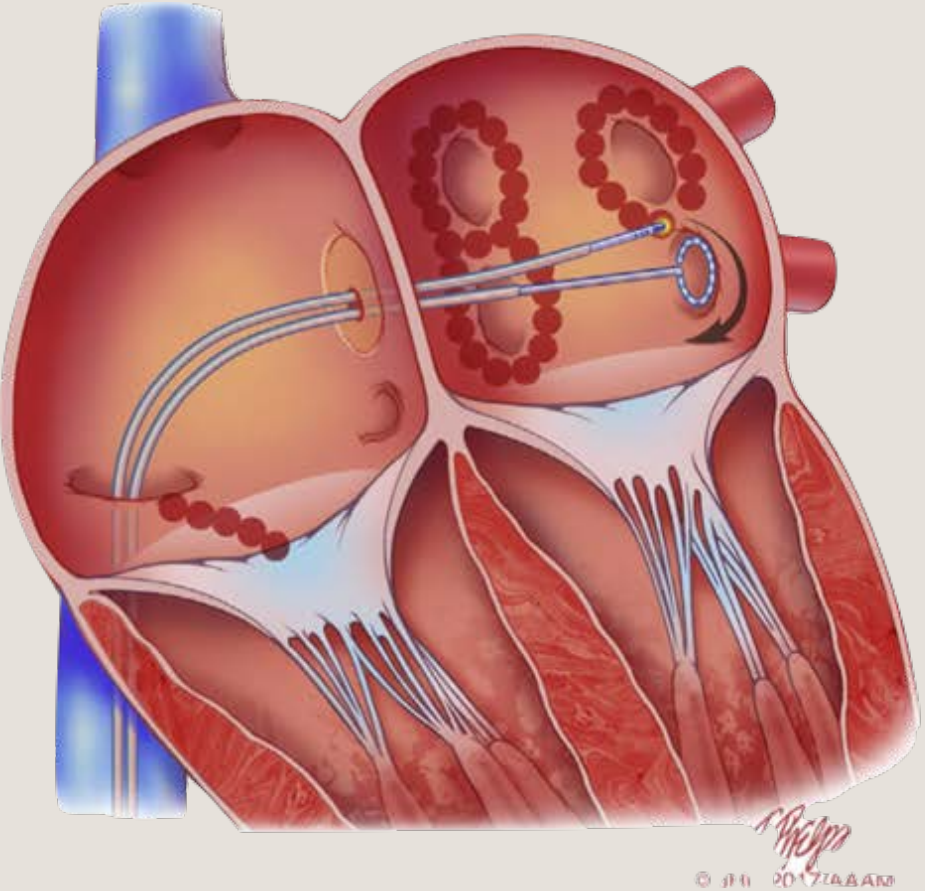
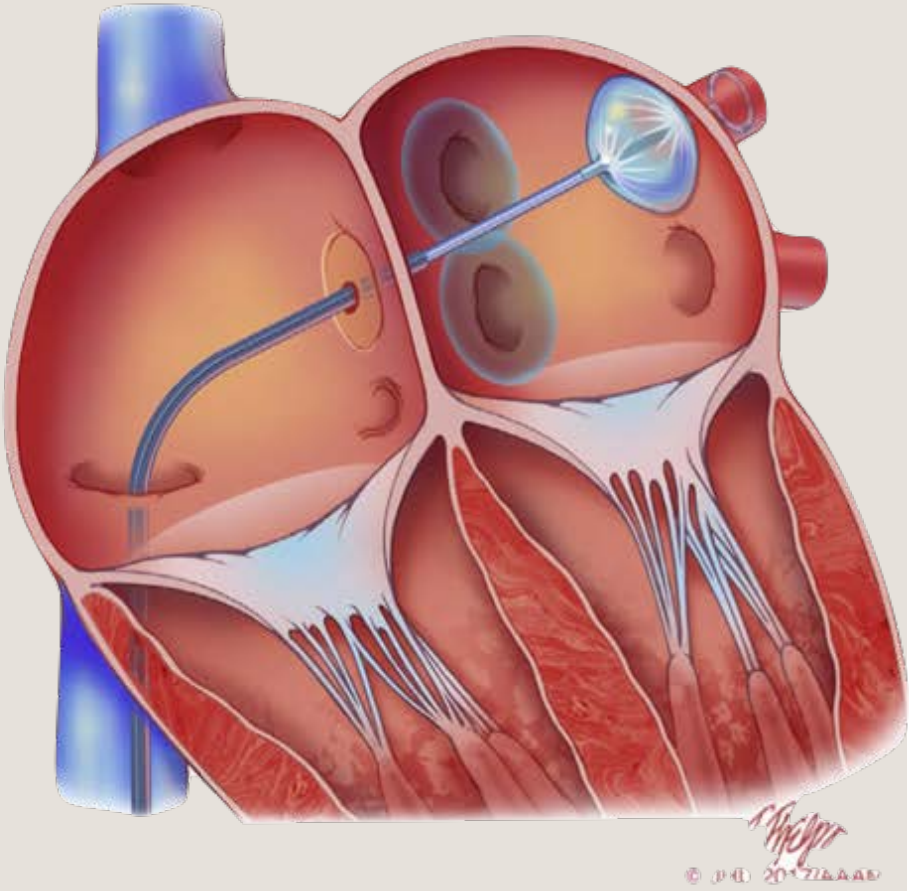

D
10
9
8
2
3
4
5
6

Nuffield Health





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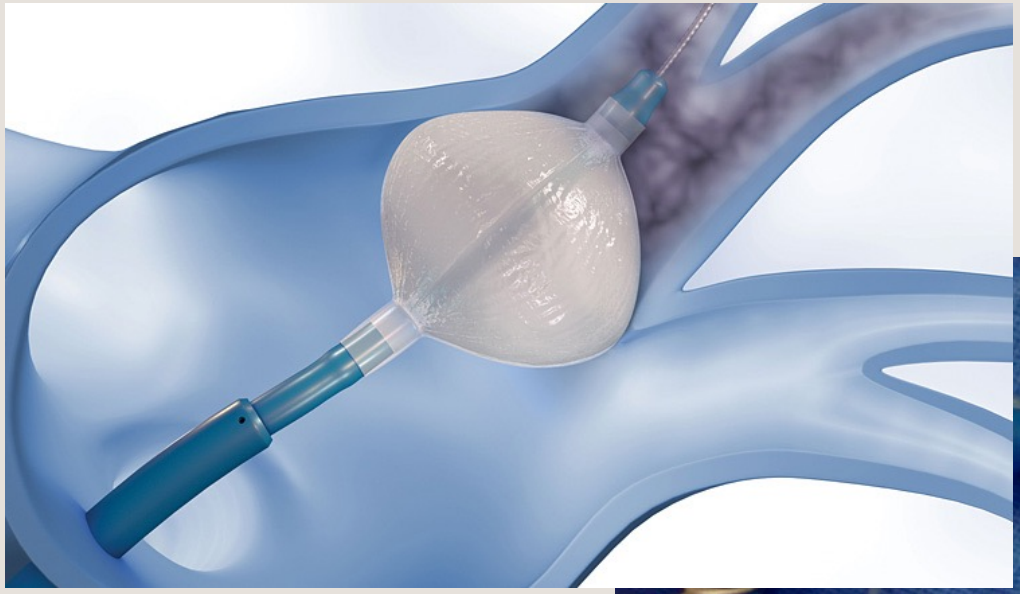
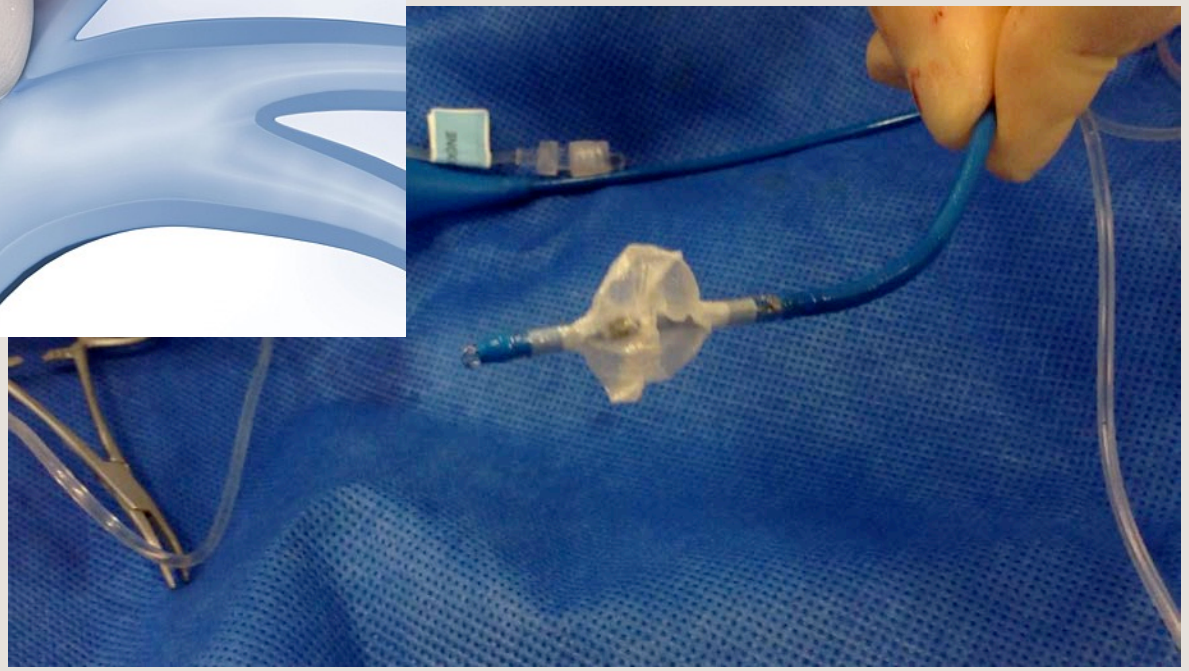
Cryoballon for AF





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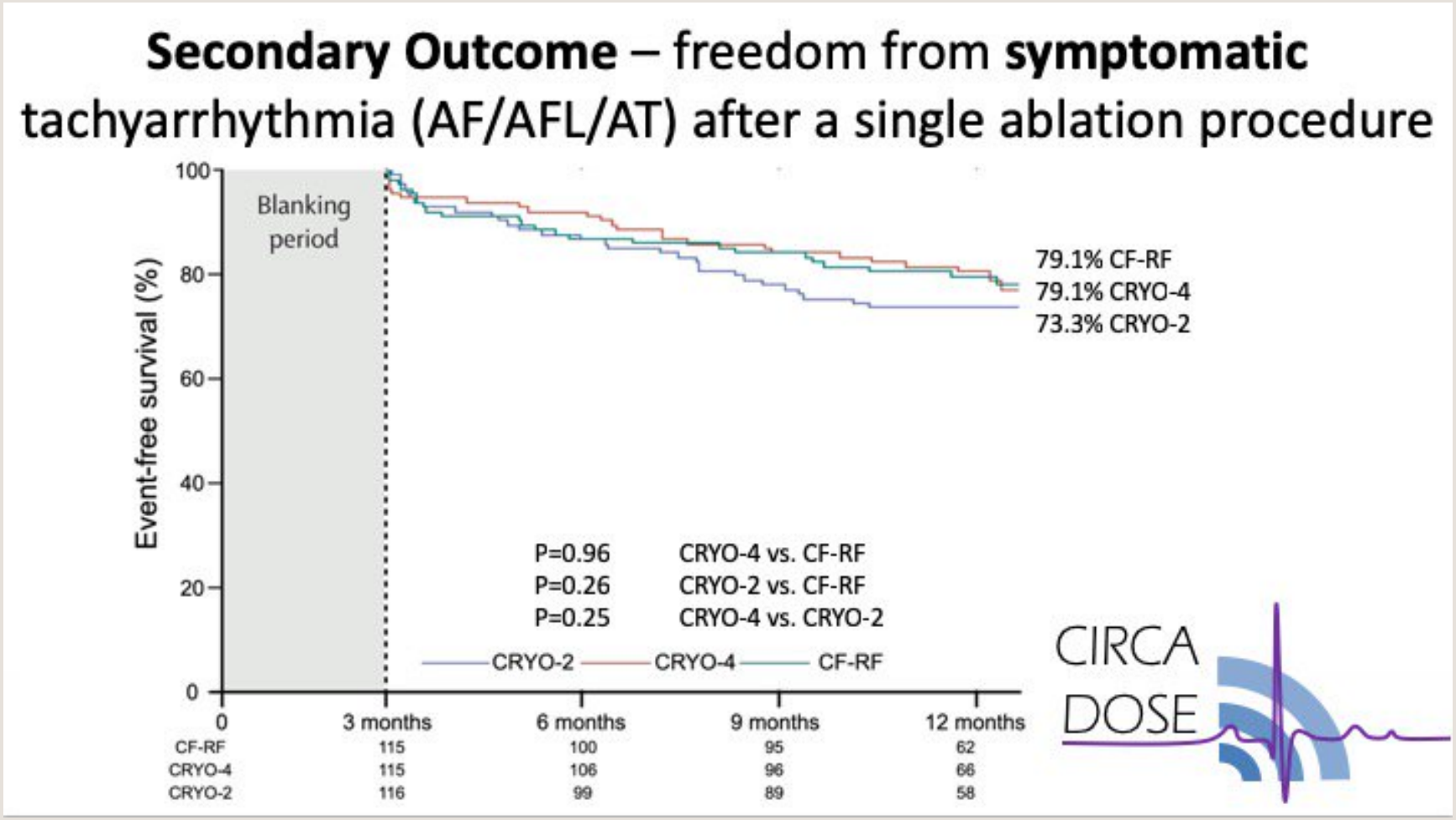
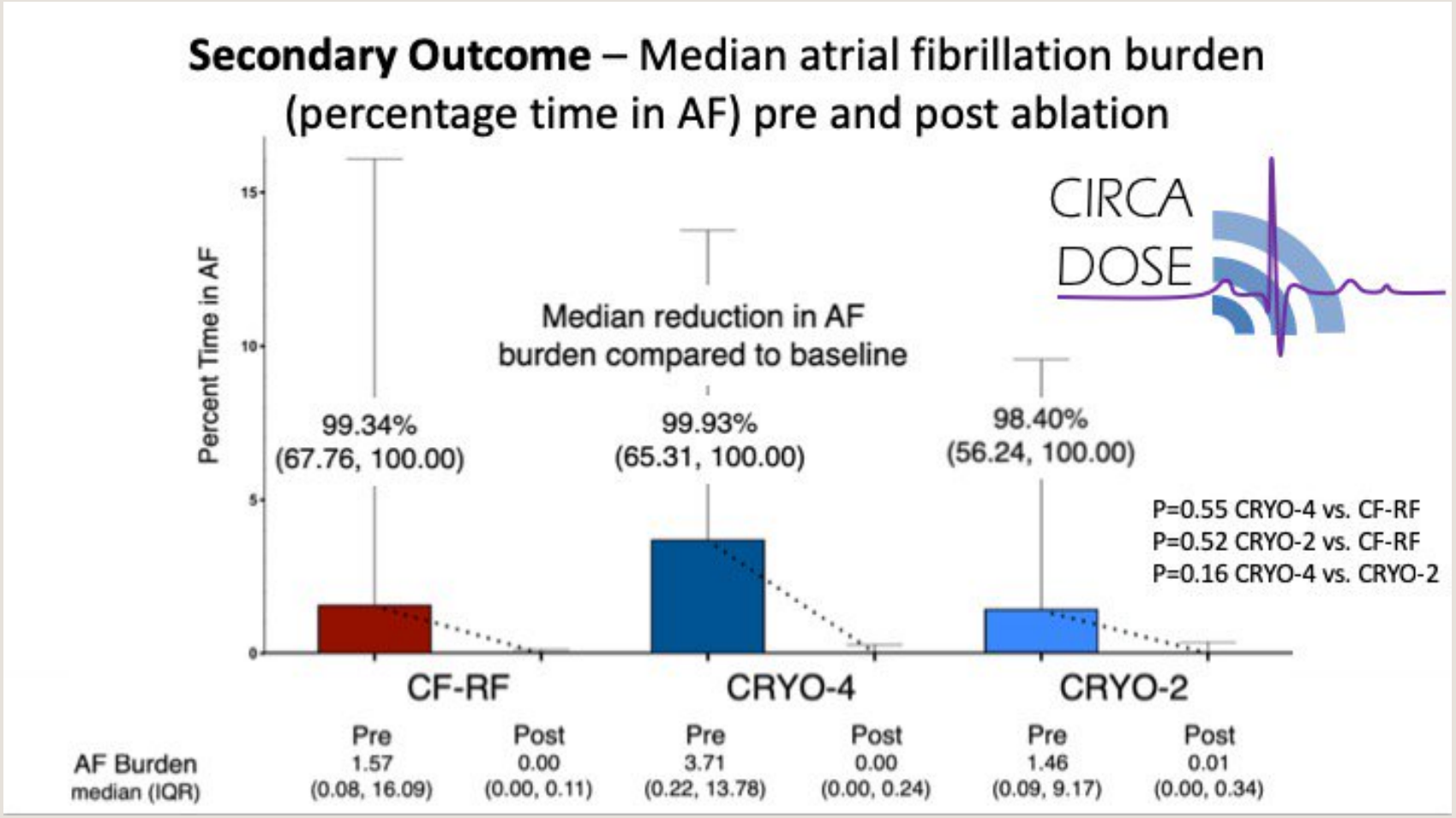
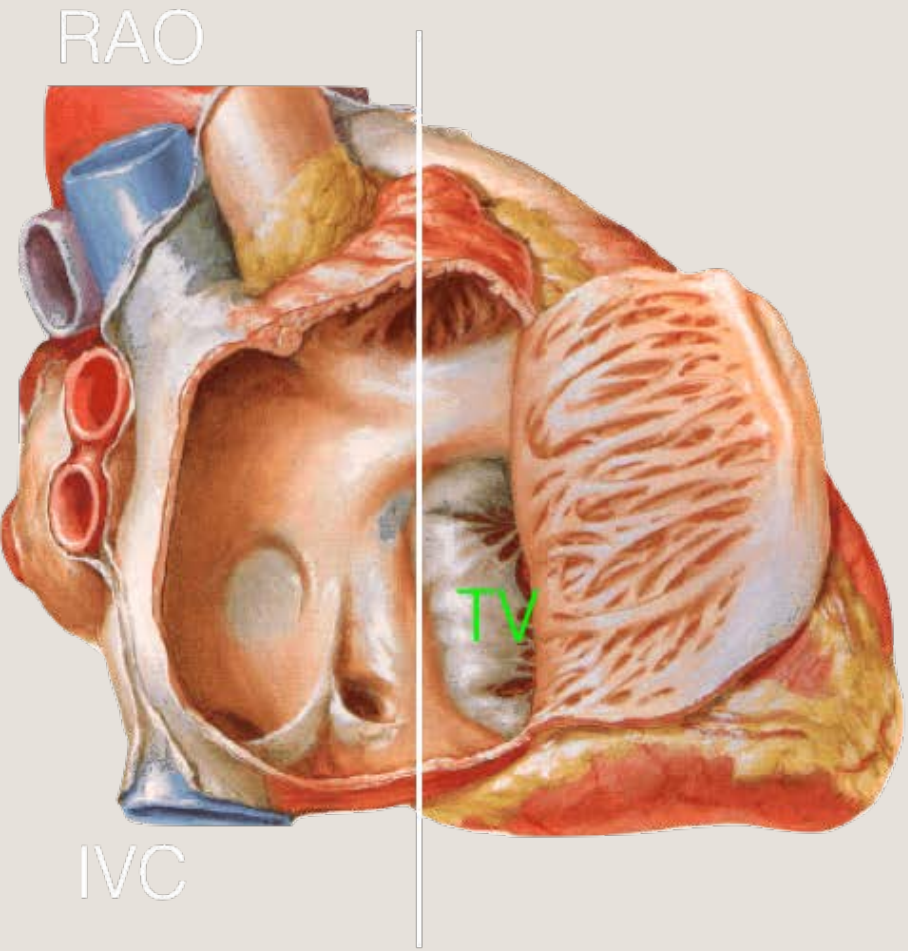
Outcome of AF Ablation

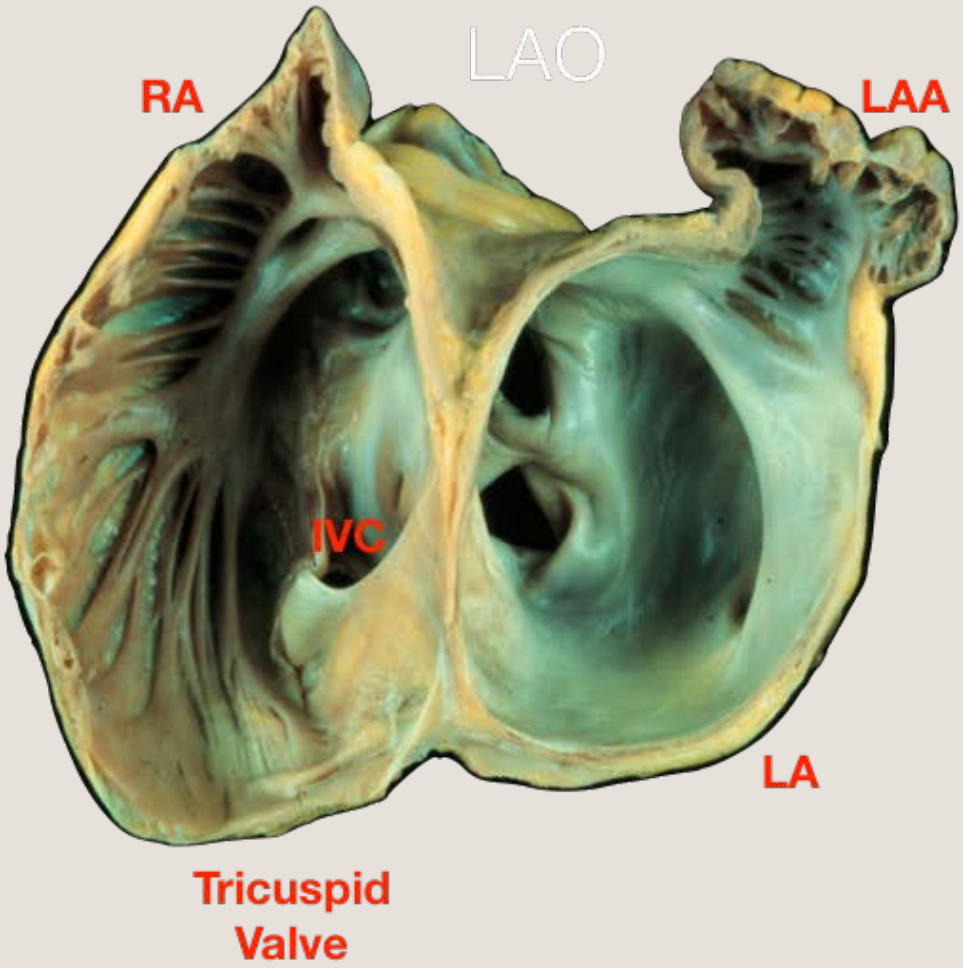


AF Burden


Secondary Outcome – Median atrial fibrillation burden (percentage time in AF) pre and post ablation
CIRCA DOSE
Percent Time in AF
15
10
5
0
Median reduction in AF burden compared to baseline
99.34% (67.76, 100.00)
99.93% (65.31, 100.00)
98.40% (56.24, 100.00)
P=0.55 CRYO-4 vs. CF-RF
P=0.52 CRYO-2 vs. CF-RF
P=0.16 CRYO-4 vs. CRYO-2
CF-RF
CRYO-4
CRYO-2
AF Burden median (IQR)
Pre 1.57 (0.08, 16.09)
Post 0.00 (0.00, 0.11)
Pre 3.71 (0.22, 13.78)
Post 0.00 (0.00, 0.24)
Pre 1.46 (0.09, 9.17)
Post 0.01 (0.00, 0.34)

Atrial Flutter





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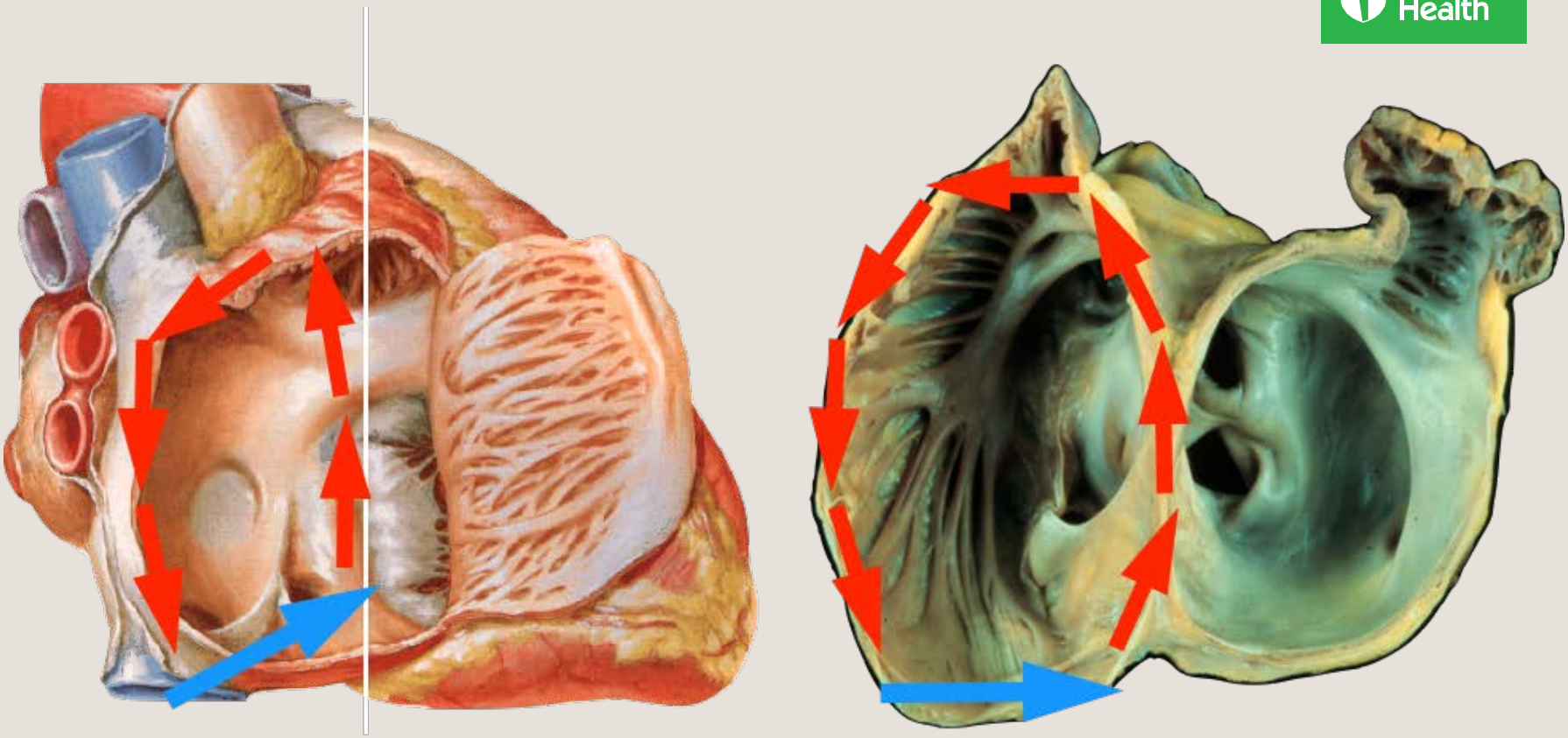
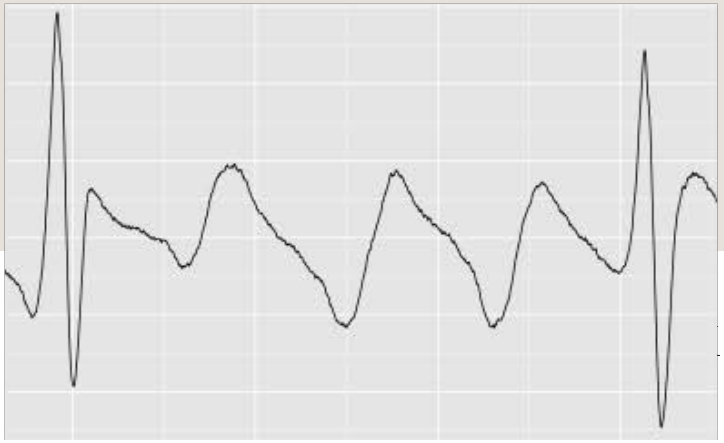


Typical
Flutter



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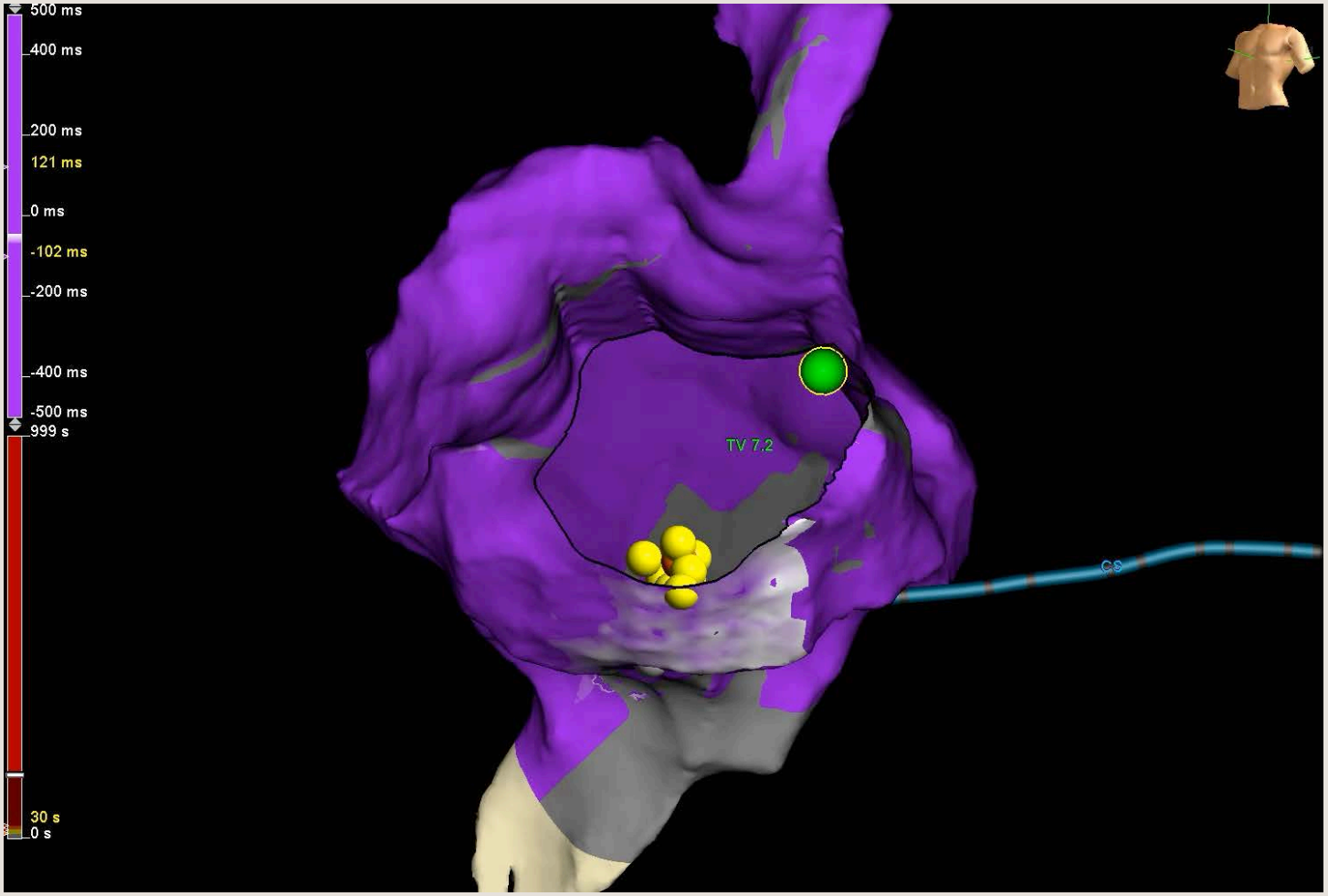
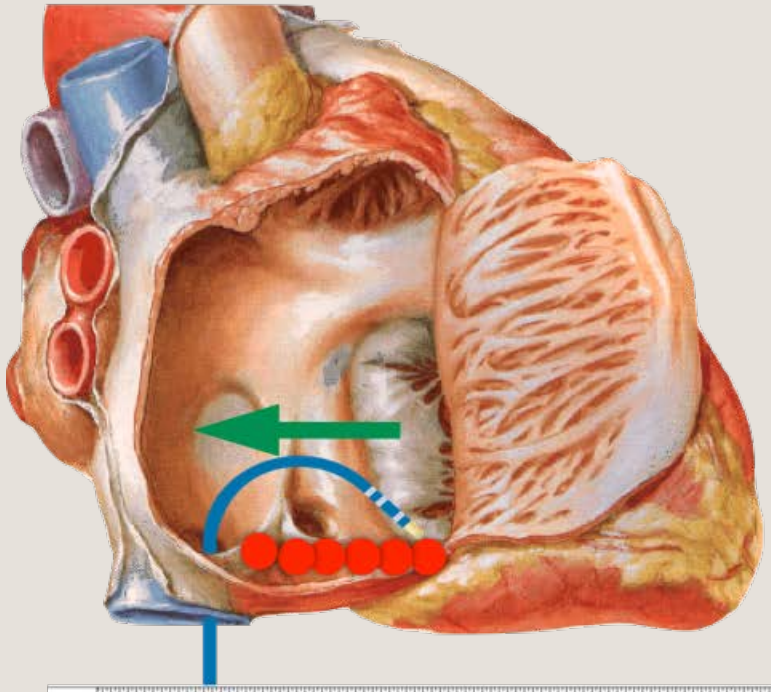
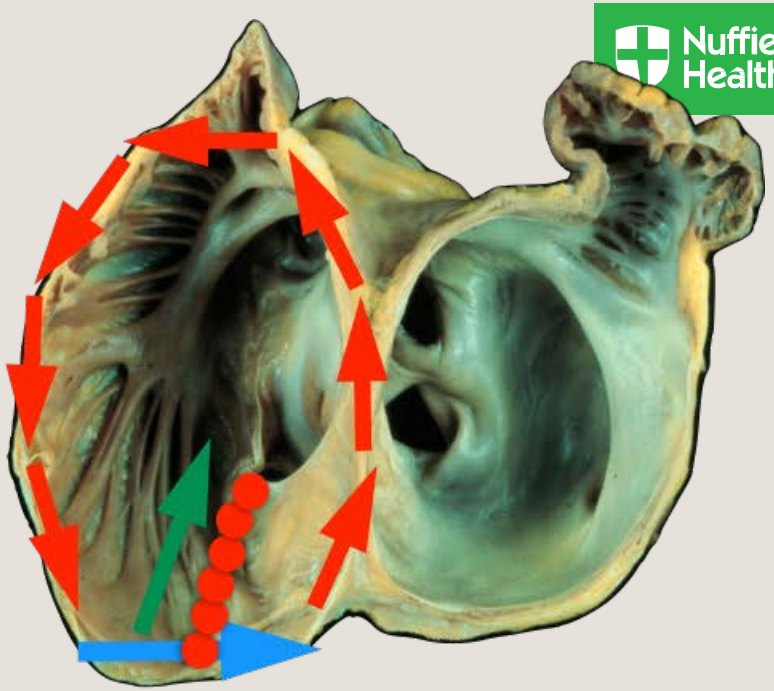

500 ms
400 ms
200 ms
121 ms
0 ms
-102 ms
-200 ms
-400 ms
-500 ms
999 s
30 s
0 s
TV 7.2
CS





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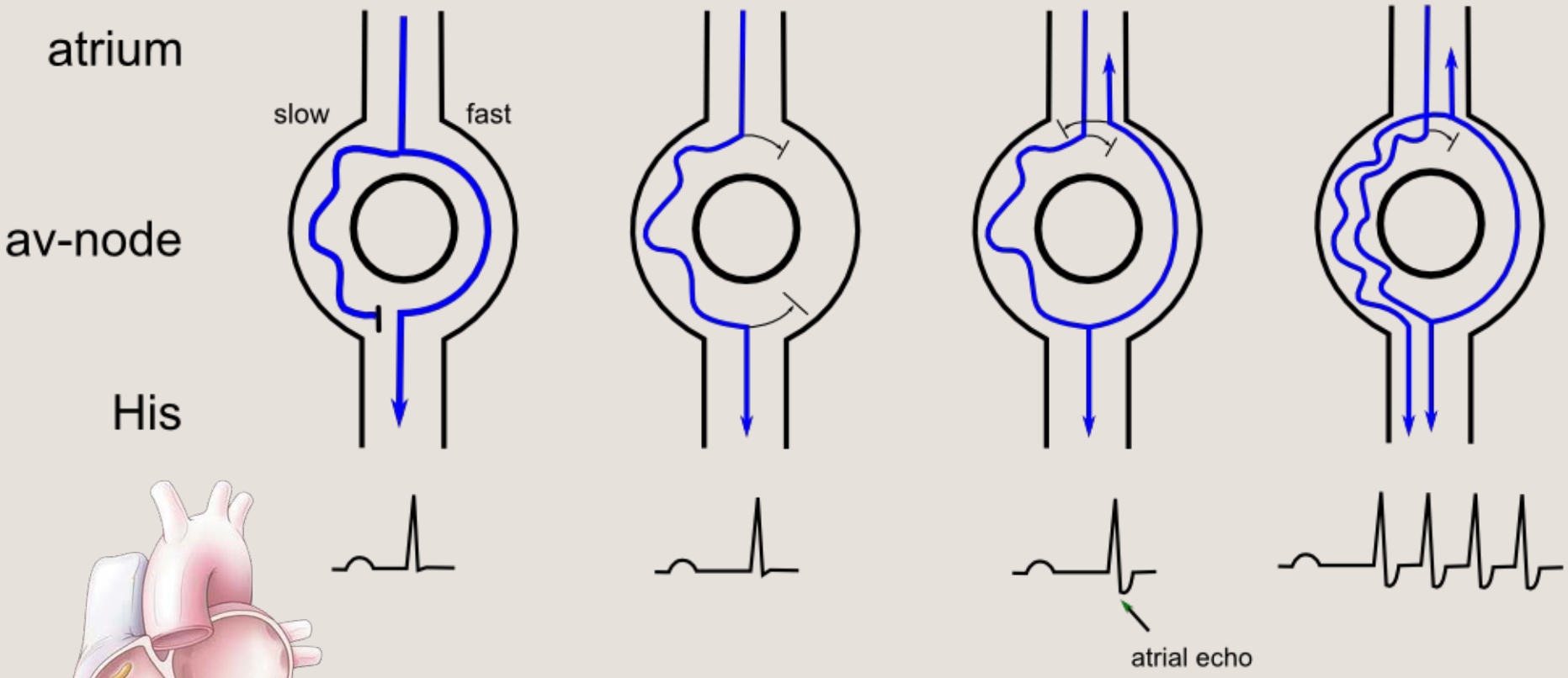
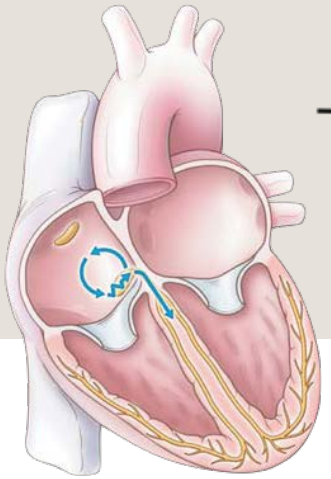
AVNRT





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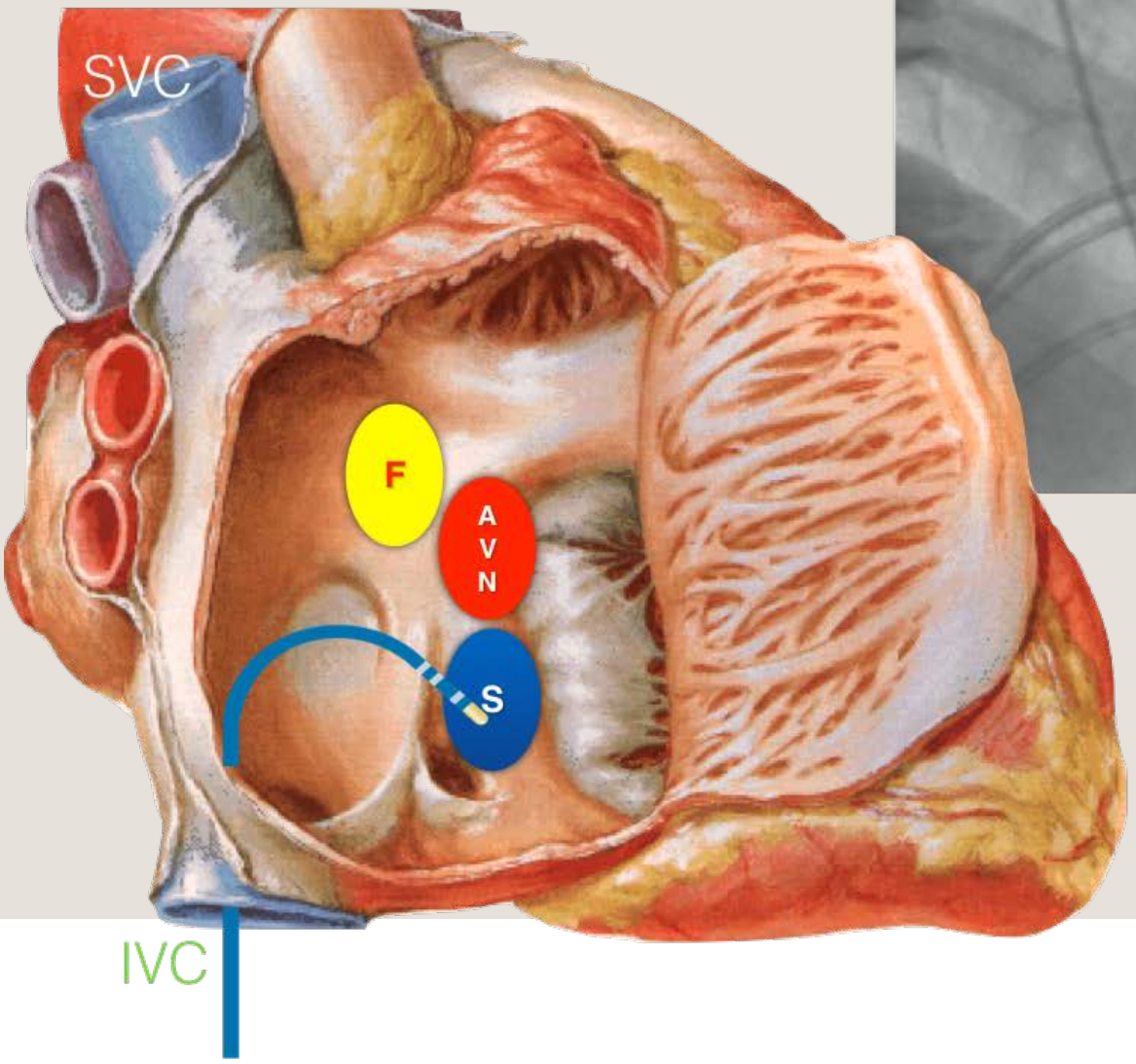
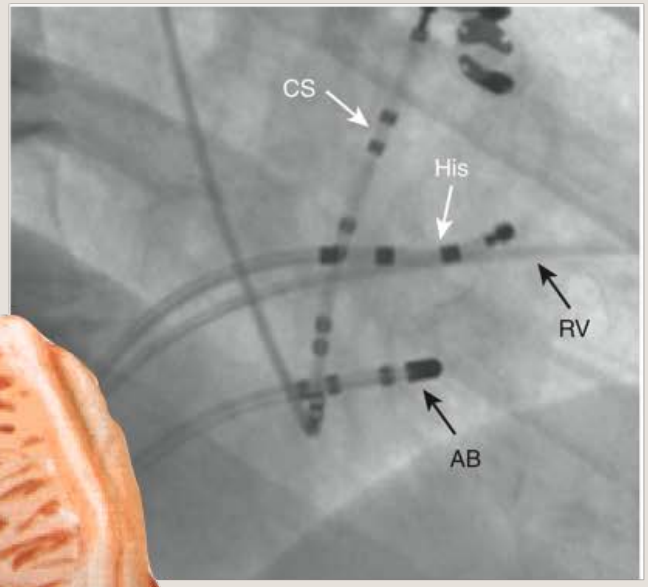
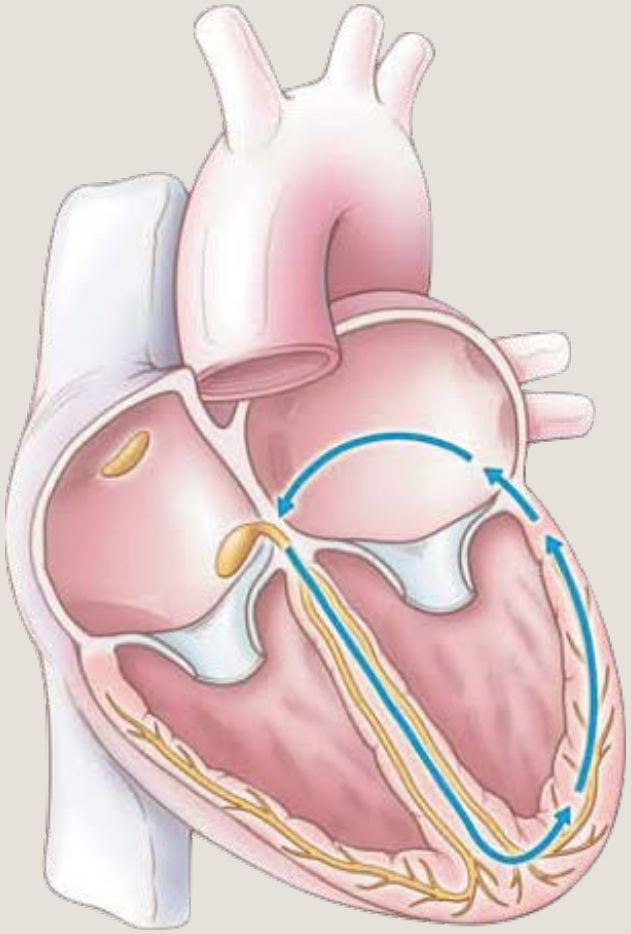
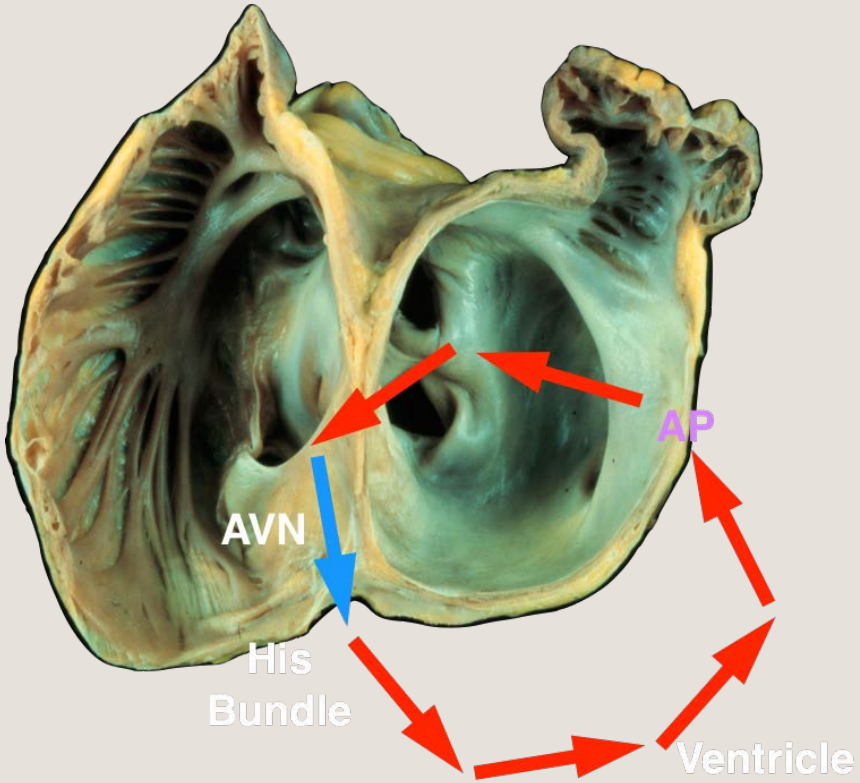
AVNRT





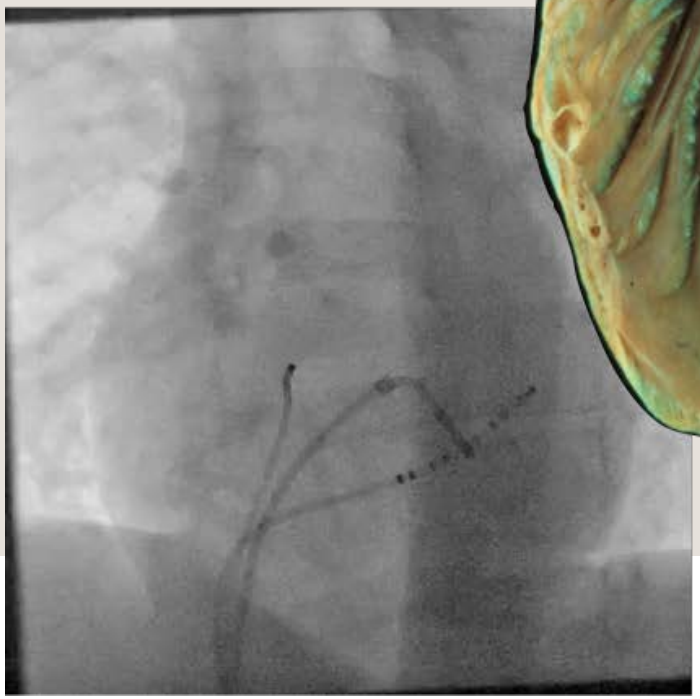
AVRT (WPW)

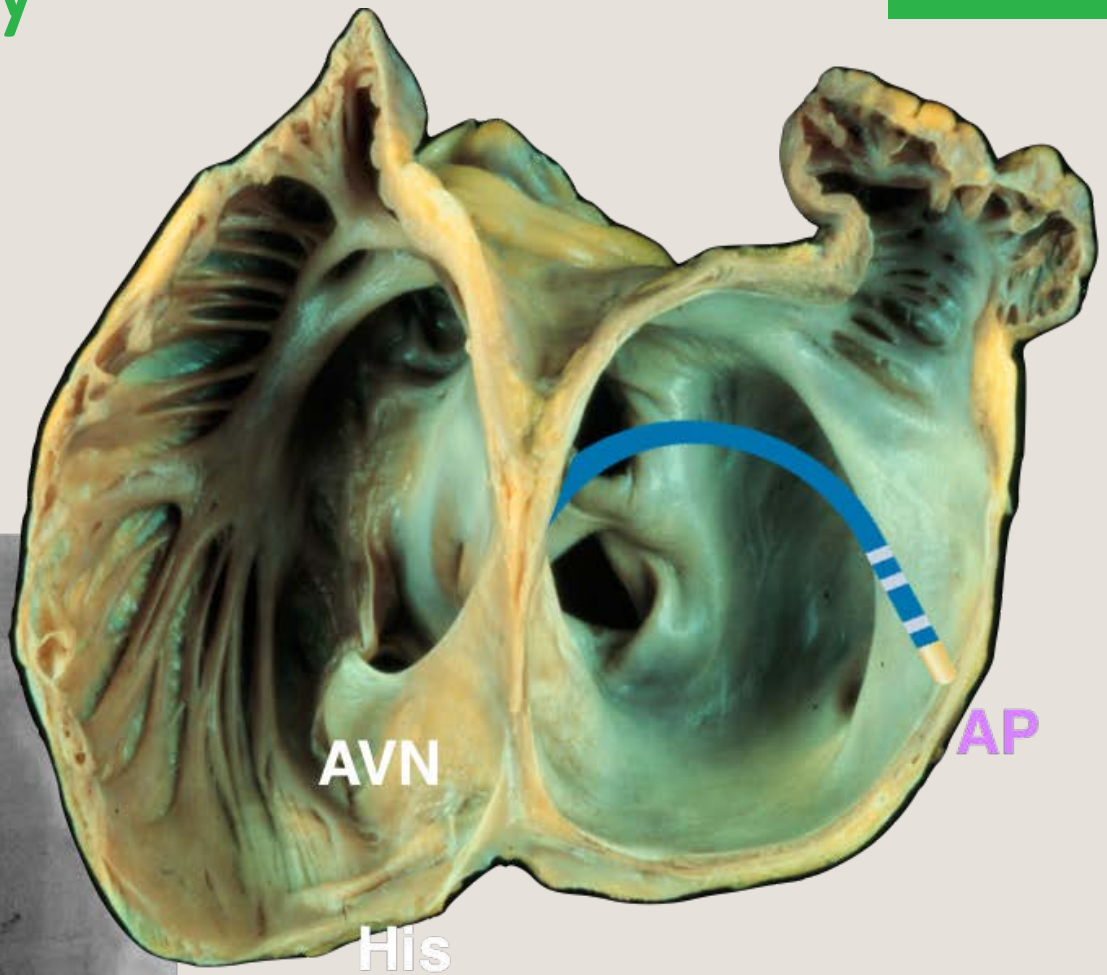




EXETER HEART
TOTAL CARDIAC CARE

Left Pathway





EXETER HEART
TOTAL CARDIAC CARE

The End

- Any Questions?
- Or Ask in arrythmia breakout sessions later

Nuffield Health

EXETER HEART
TOTAL CARDIAC CARE