



# Arrhythmias 341

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KSU / KCUH

# Objectives (tachyarrhythmias)

- ▶ General approach to arrhythmias
- ▶ Specific types and chronic management:
  - ▶ Atrial Fibrillation (AF)
  - ▶ Atrial Flutter (AFL)
  - ▶ Supraventricular tachycardia (SVT)
  - ▶ Wolf-Parkinson-White syndrome (WPW)
  - ▶ Ventricular tachycardia (VT)
  - ▶ Ventricular fibrillation (VF)
- ▶ Acute management

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# General approach

## ▶ History:

### ▶ HPI:

- ▶ Palpitation, Dizziness, syncope, fatigue, chest pain and SOB, Stroke (AF)

### ▶ Family history

### ▶ Social history: Ethol, illicit drug use

### ▶ PMH:

- ▶ Underlying heart disease
- ▶ Past medical and surgical history

## ▶ Work-up:

- ▶ ECG (baseline and during episodes), Holter, Echo
- ▶ R/out secondary causes: electrolytes, TSH, sleep study,

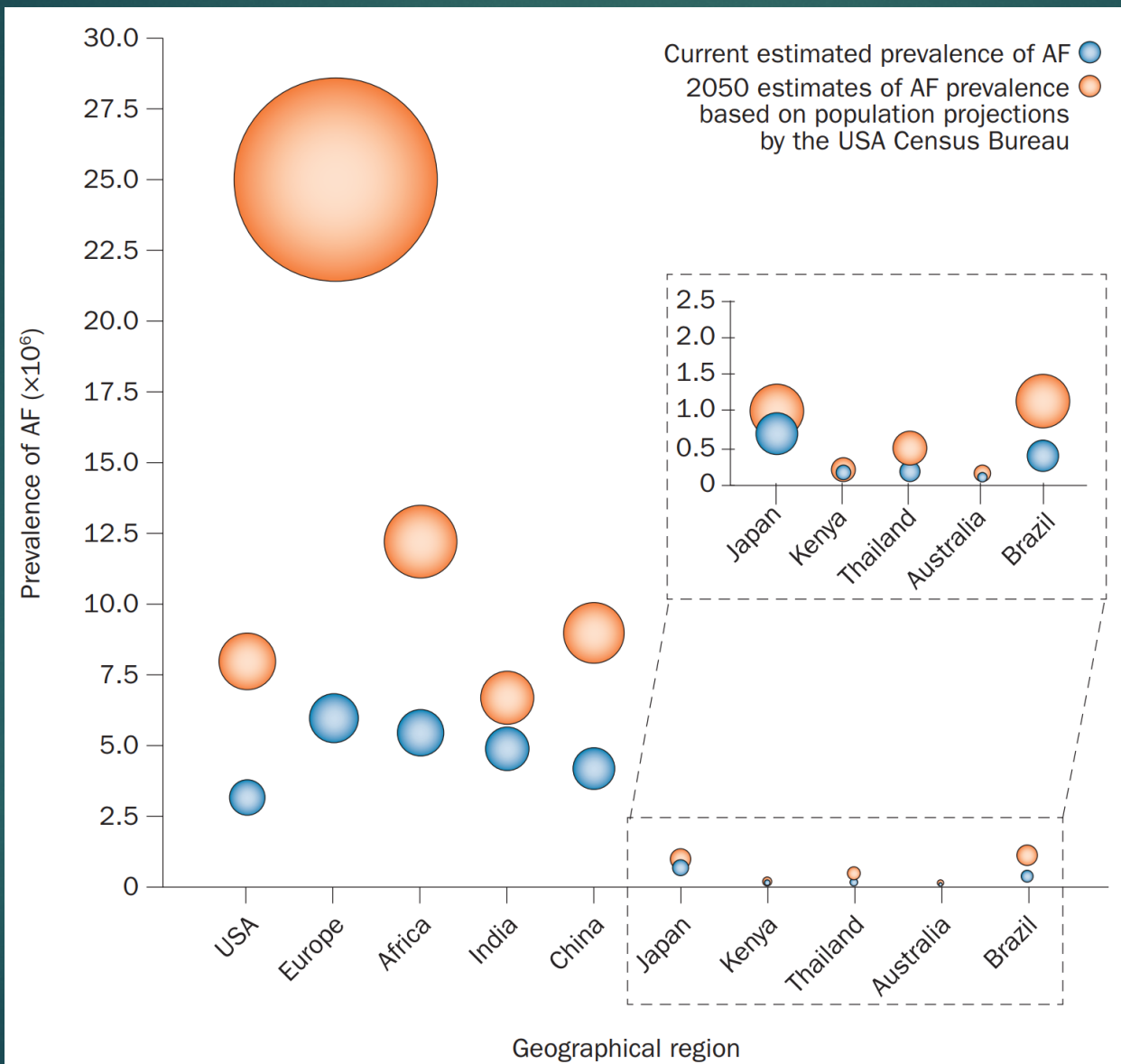
## ▶ Management:

- ▶ Wait and see Vs medical therapy Vs ablation

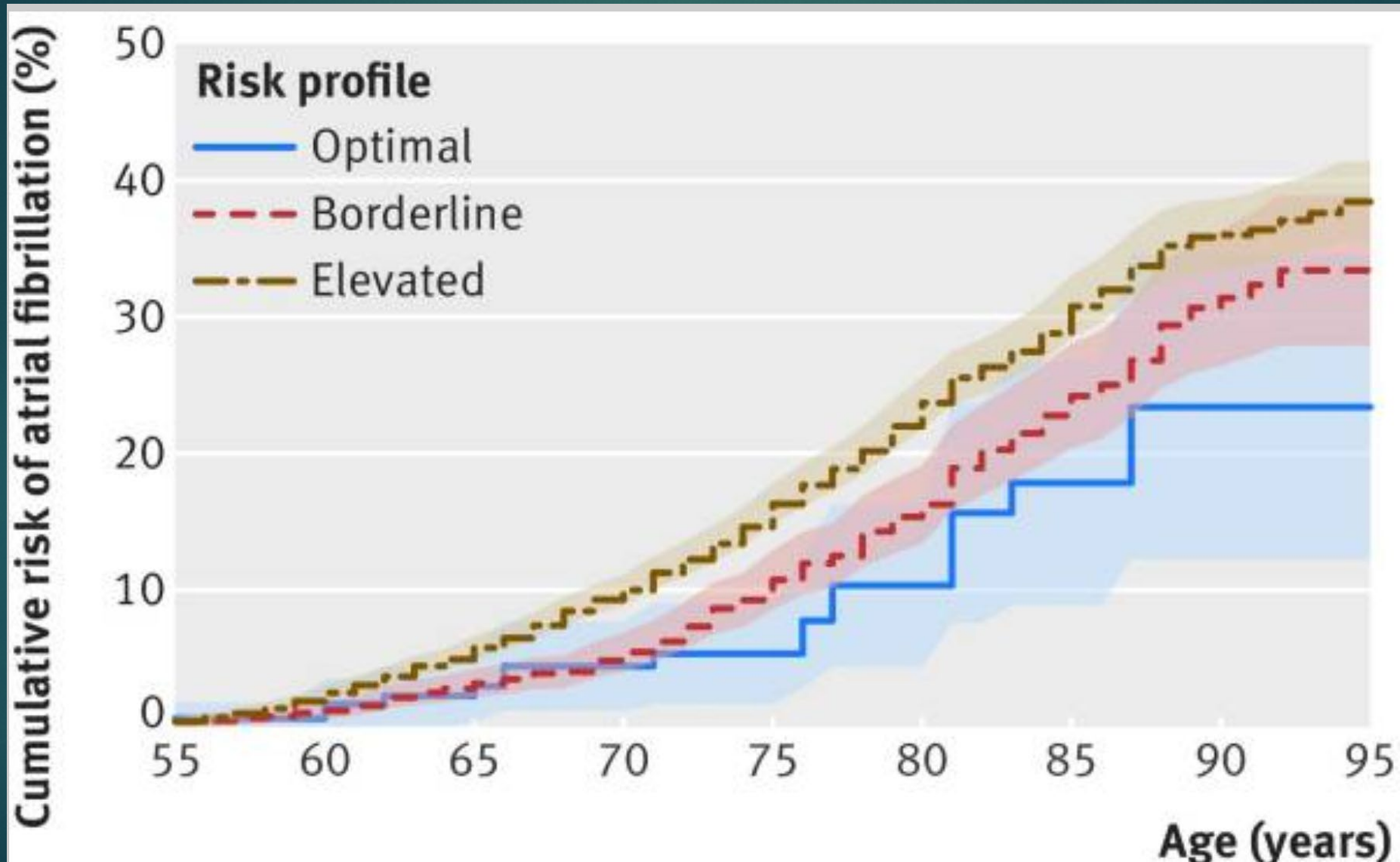
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# Atrial Fibrillation (AF)



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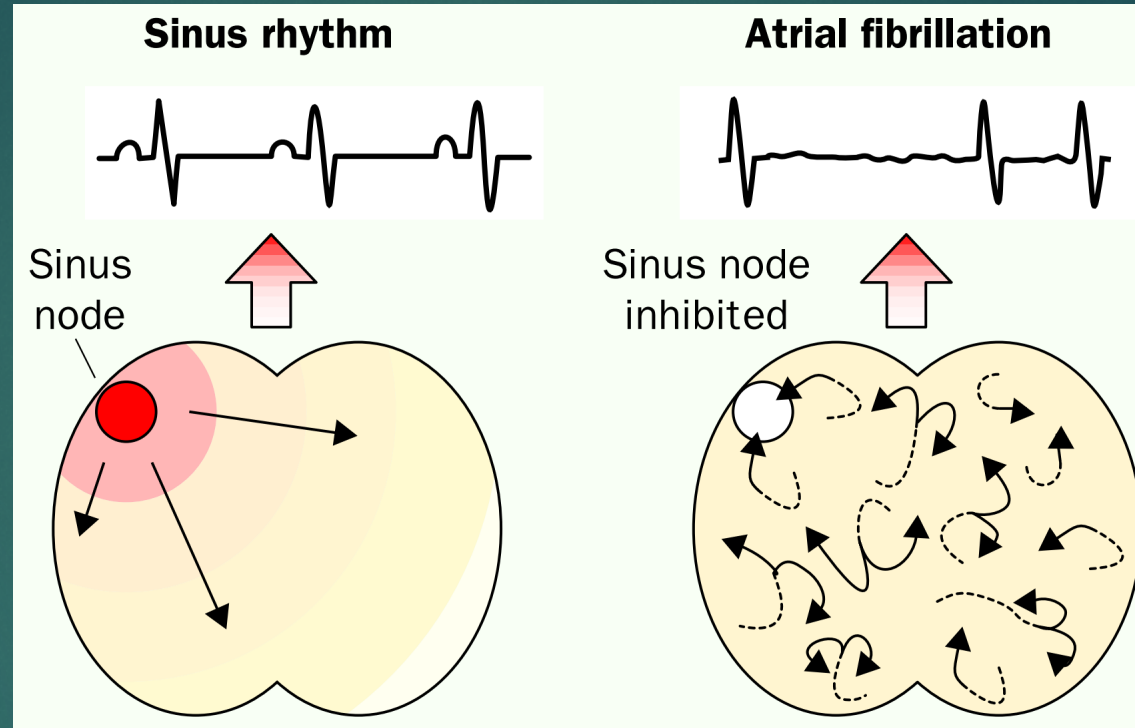


# Atrial Fibrillation (AF)

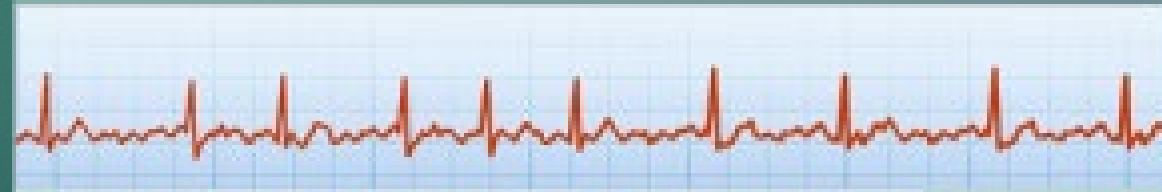




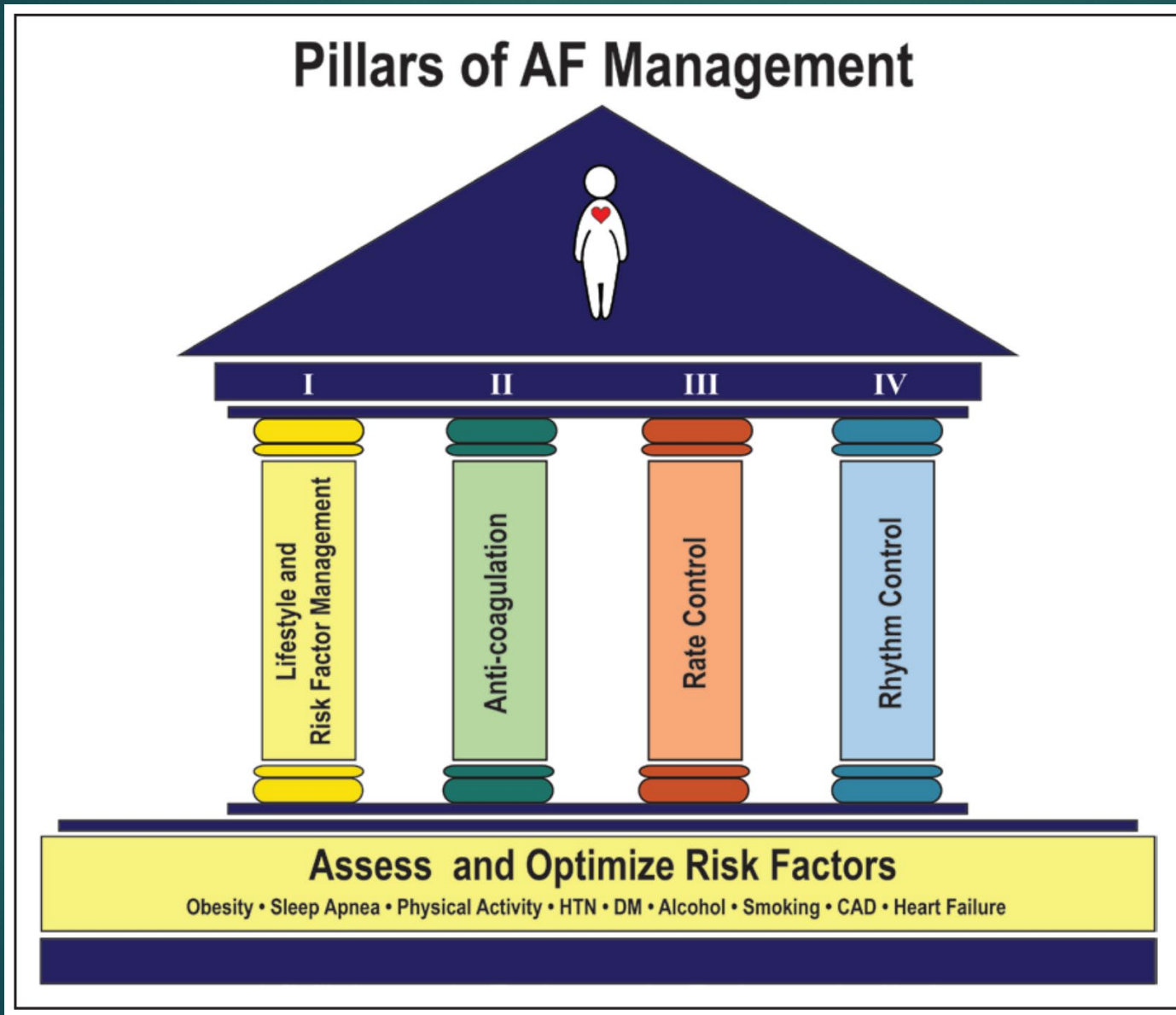
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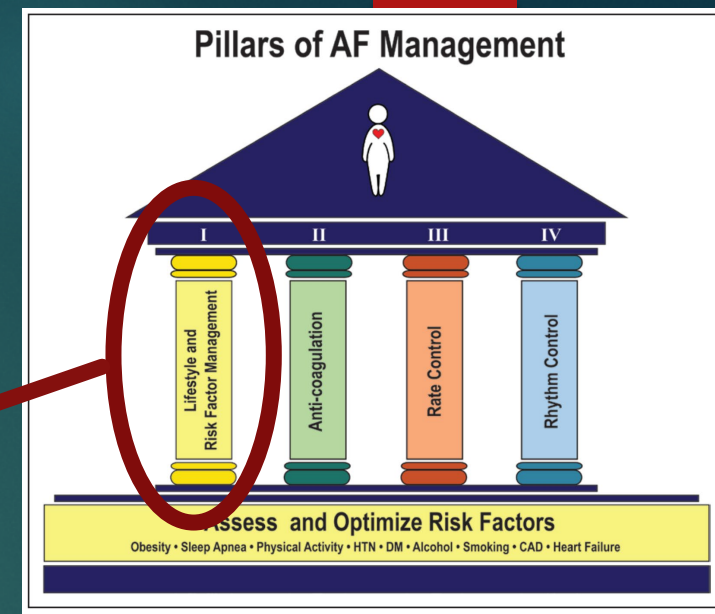
**VS**



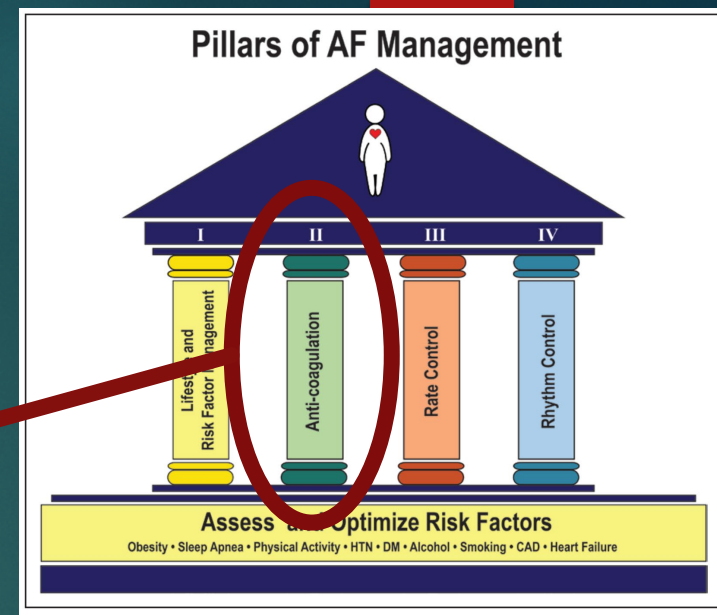
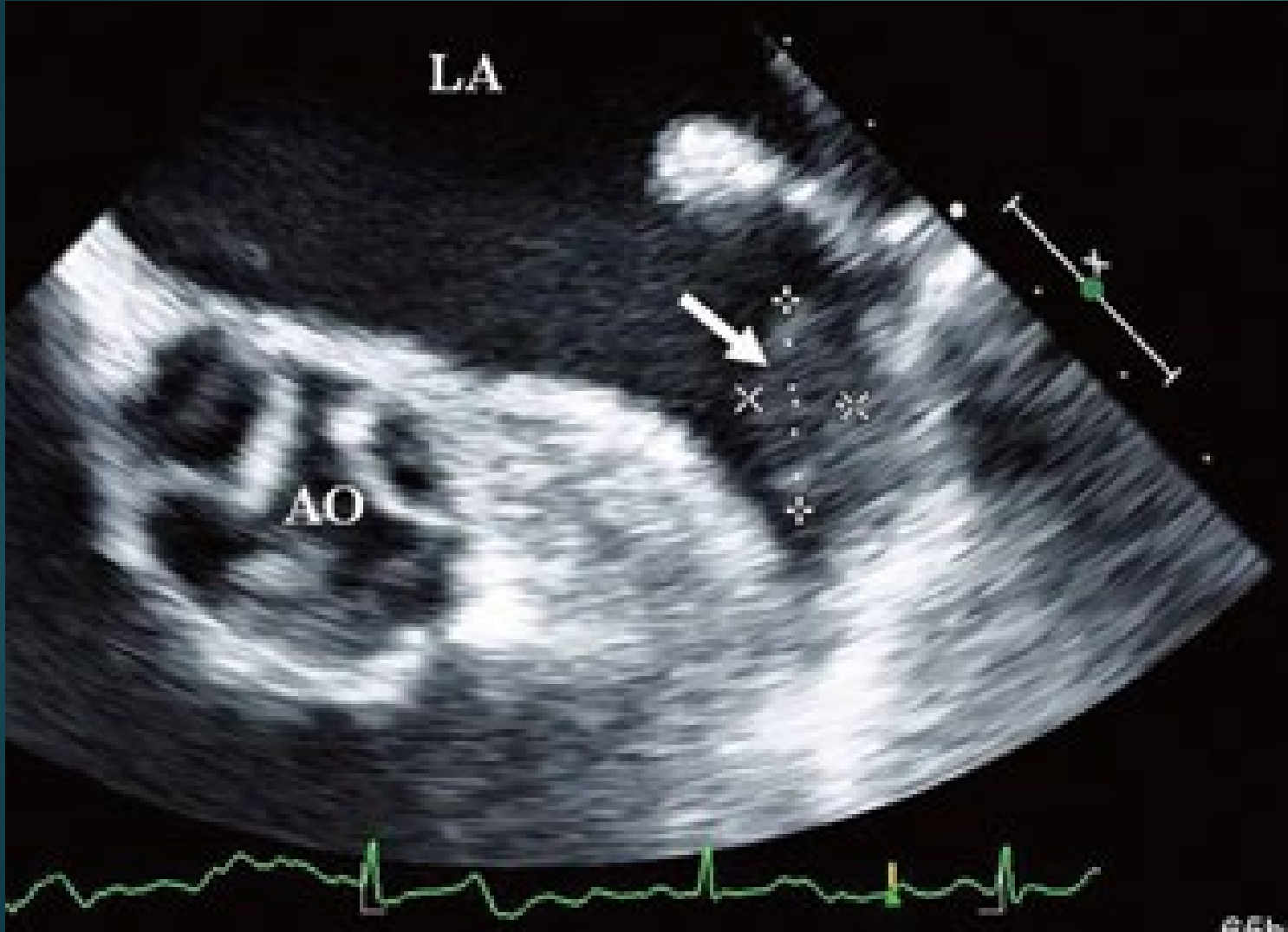
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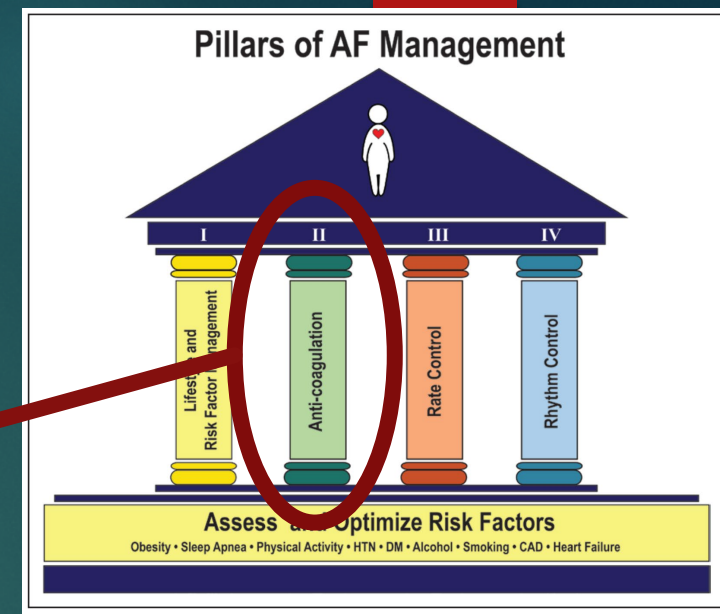


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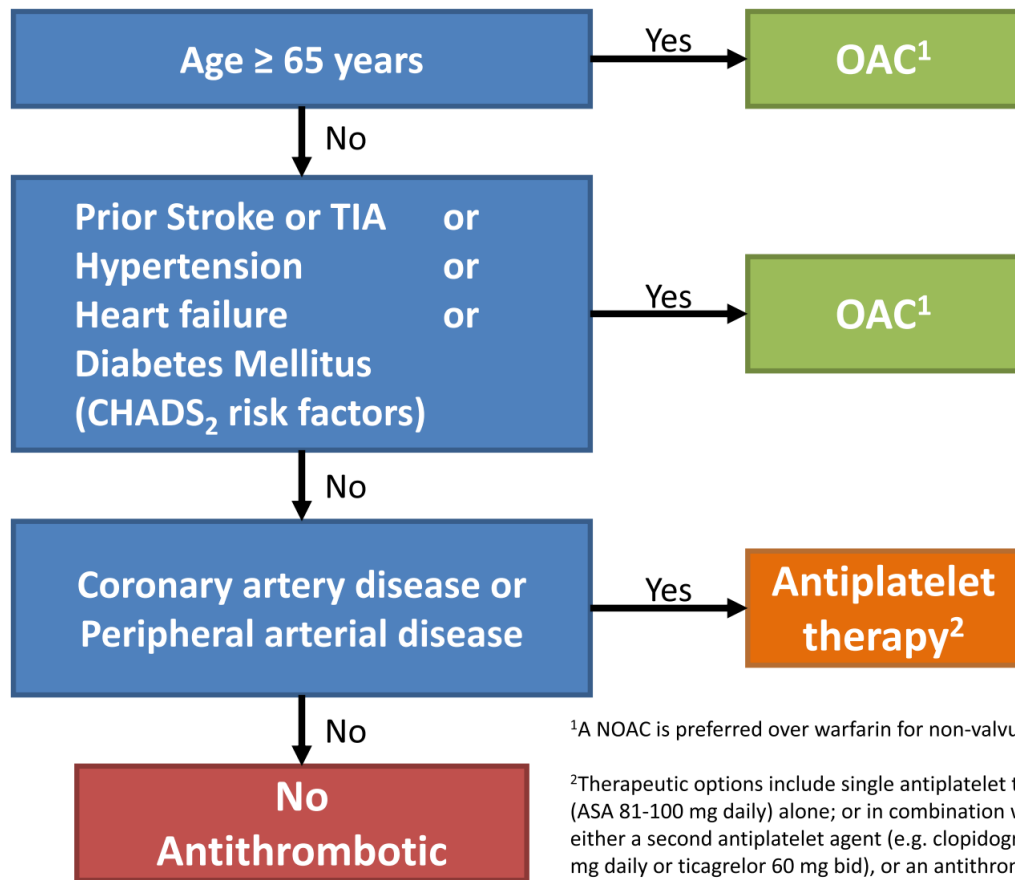
CHA <sub>2</sub> DS <sub>2</sub> -VASc	Score
Congestive heart failure/LV dysfunction	1
Hypertension	1
Age ≥ 75 years	2
Diabetes mellitus	1
Stroke/TIA/TE	2
Vascular disease [prior MI, PAD, or aortic plaque]	1
Age 65-74 years	1
Sex category (female)	1



CHADS <sub>2</sub> score	Patients (n=1733)	Adjusted stroke rate (%/year) <sup>a</sup> (95% confidence interval)
0	120	1.9 (1.2–3.0)
1	463	2.8 (2.0–3.8)
2	523	4.0 (3.1–5.1)
3	337	5.9 (4.6–7.3)
4	220	8.5 (6.3–11.1)
5	65	12.5 (8.2–17.5)
6	5	18.2 (10.5–27.4)

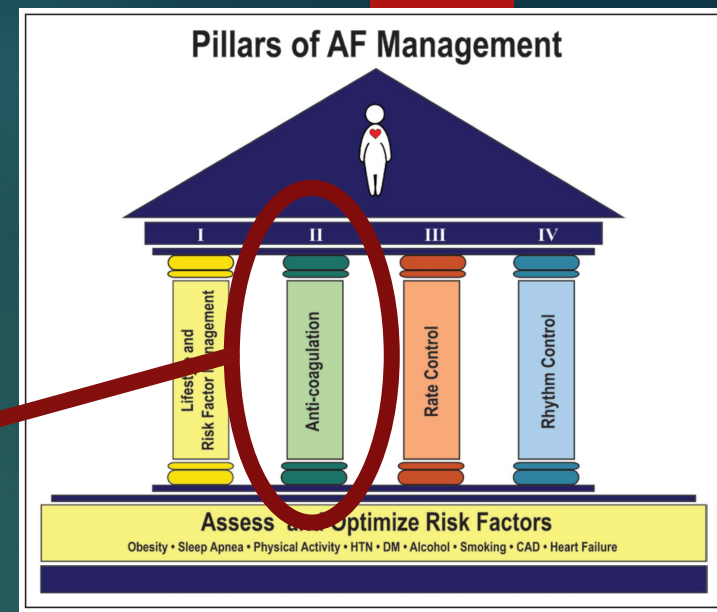
# Atrial Fibrillation (AF)

## The “CCS Algorithm” (“CHADS-65”) for OAC Therapy in AF



<sup>1</sup>A NOAC is preferred over warfarin for non-valvular AF

<sup>2</sup>Therapeutic options include single antiplatelet therapy (ASA 81-100 mg daily) alone; or in combination with either a second antiplatelet agent (e.g. clopidogrel 75 mg daily or ticagrelor 60 mg bid), or an antithrombotic agent (rivaroxaban 2.5 mg bid).



## OAC:

Warfarin  
Dabigatran  
Rivaroxaban  
Apixaban  
Edoxaban

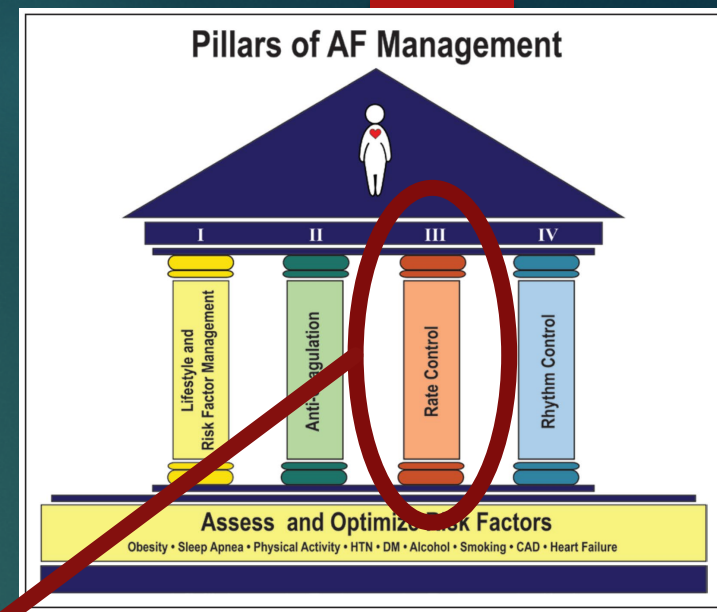
# Atrial Fibrillation (AF)

## Medications:

- 1- Beta-blocker
- 2- Calcium channel blockers
- 3- Digoxin

## Procedure:

- 1- Pace and ablate



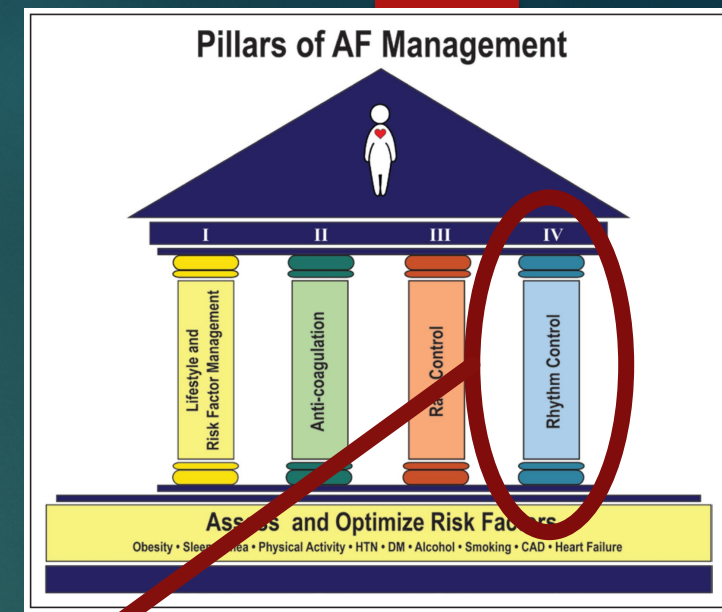
# Atrial Fibrillation (AF)

## Medications:

- 1- Amiodarone
- 2- Sotalol
- 3- Flecainide  
(PRN or maintenance)

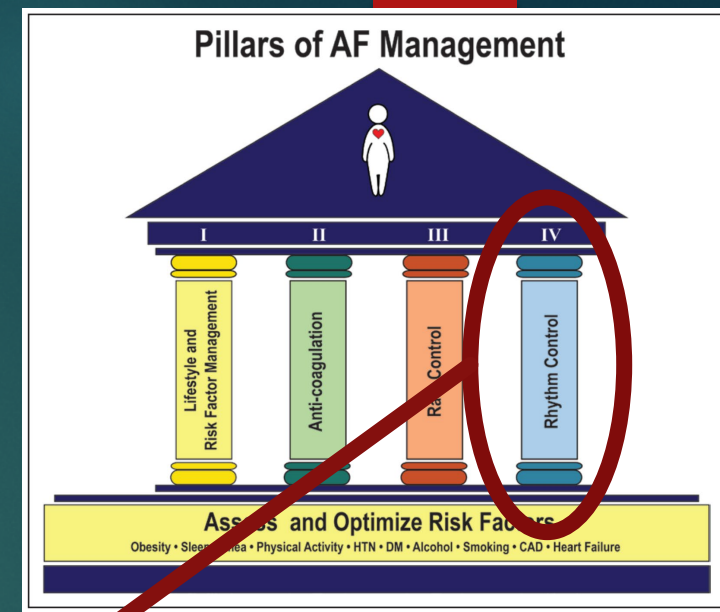
## Procedure:

- 1- AF ablation

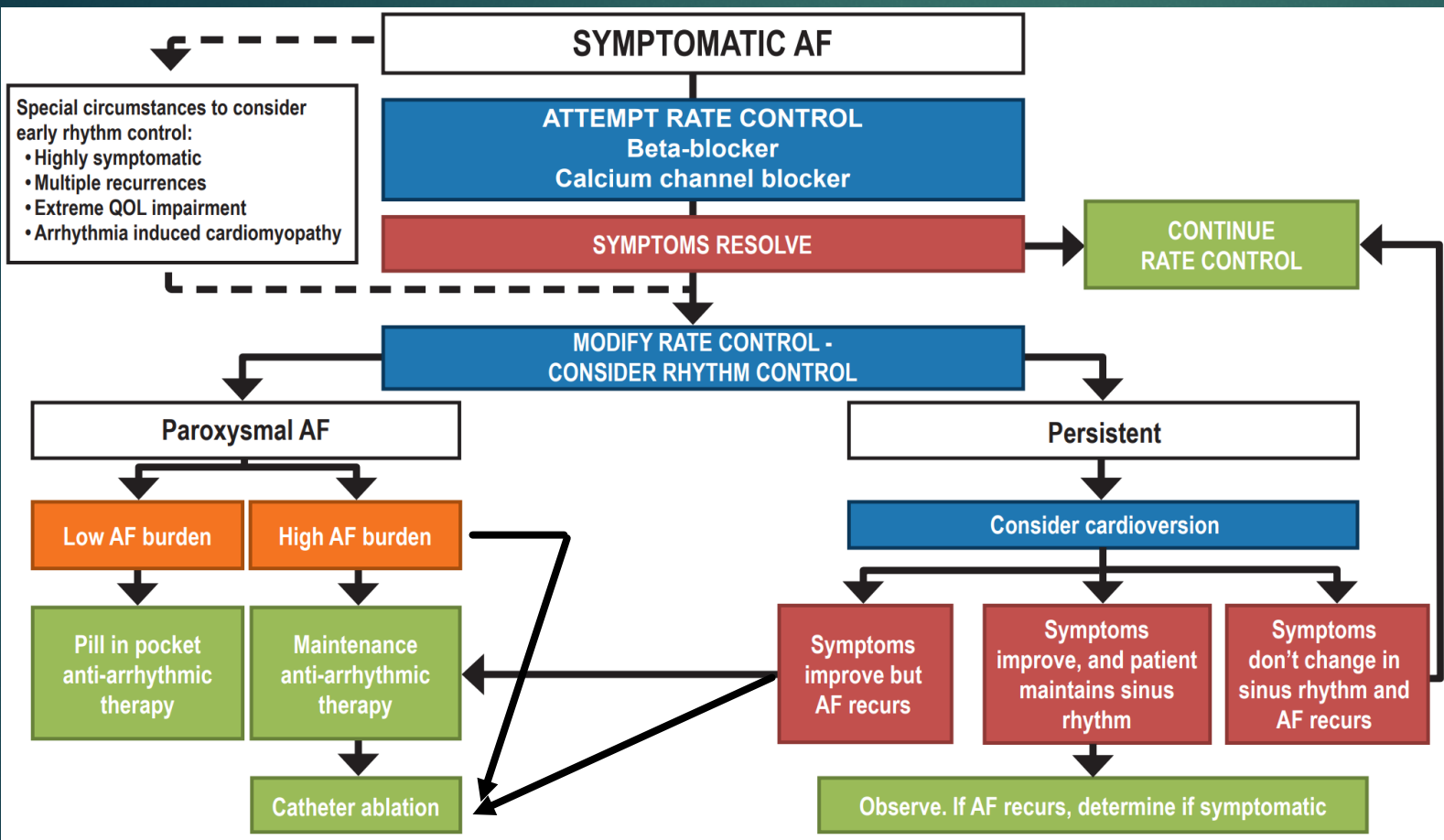




# Atrial Fibrillation (AF)



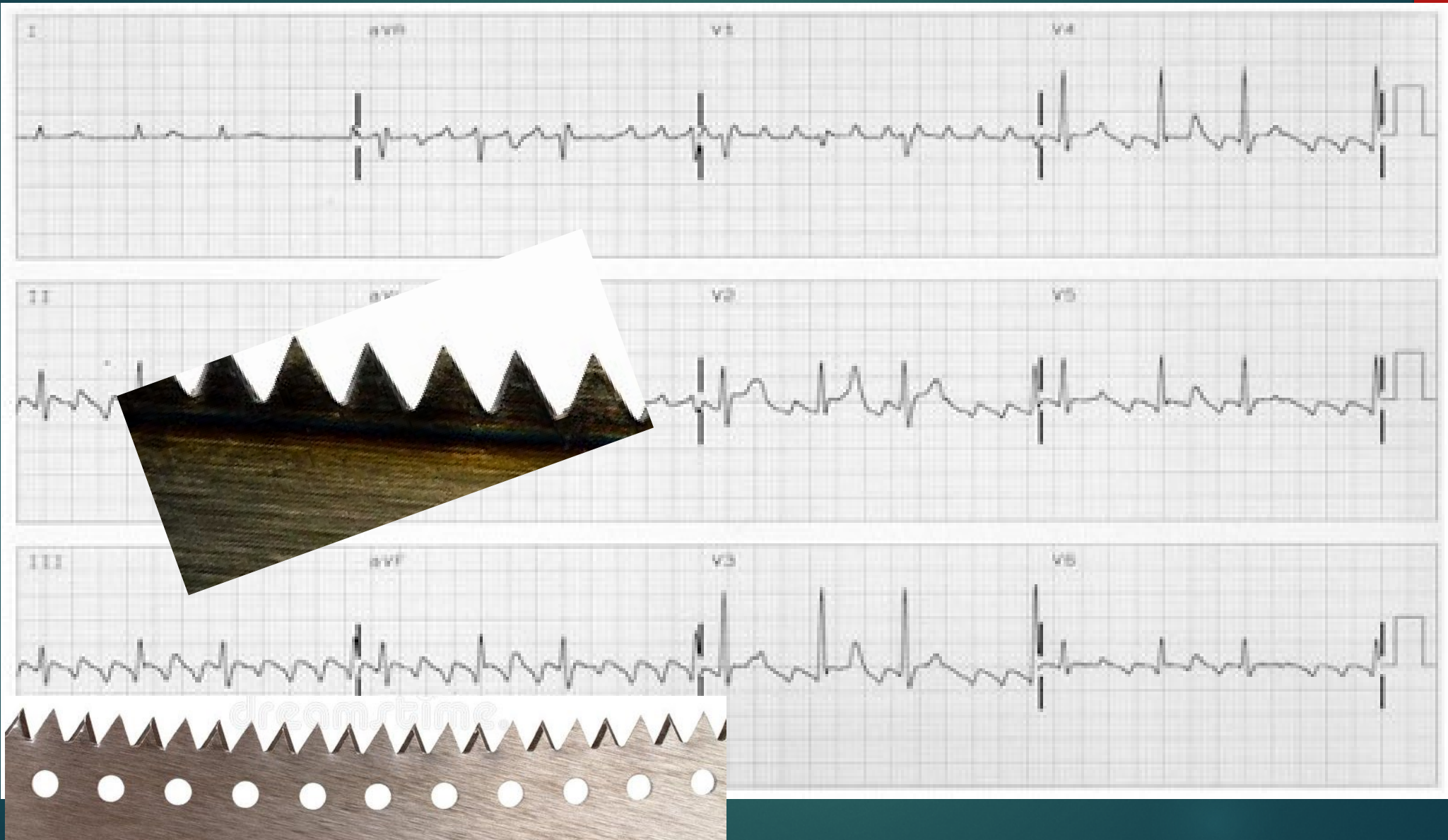
- Rate control is reasonable if asymptomatic
- Consider rhythm control for symptoms Rx
- Catheter ablation is a reasonable first line



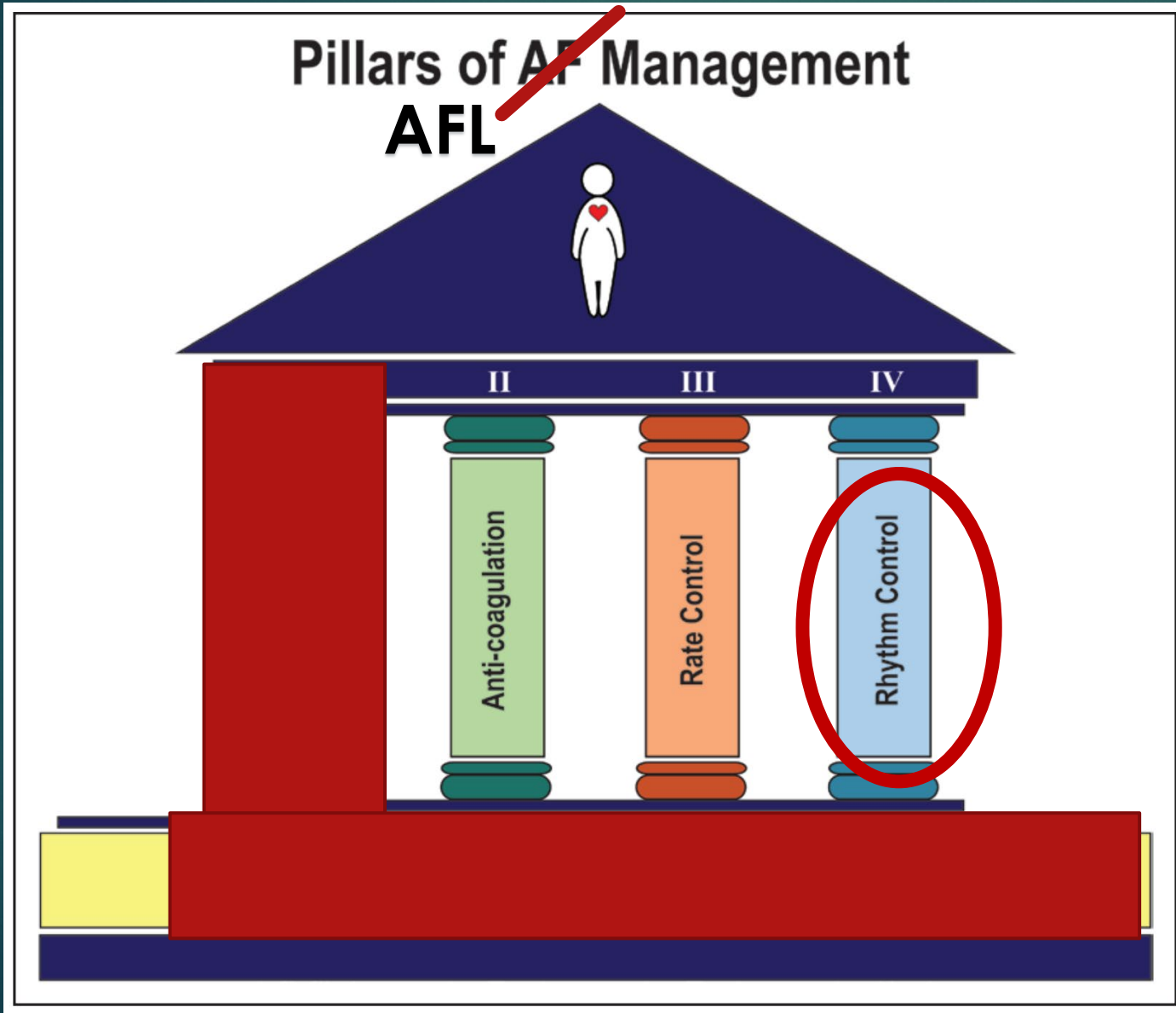
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# Atrial Flutter (AFL)



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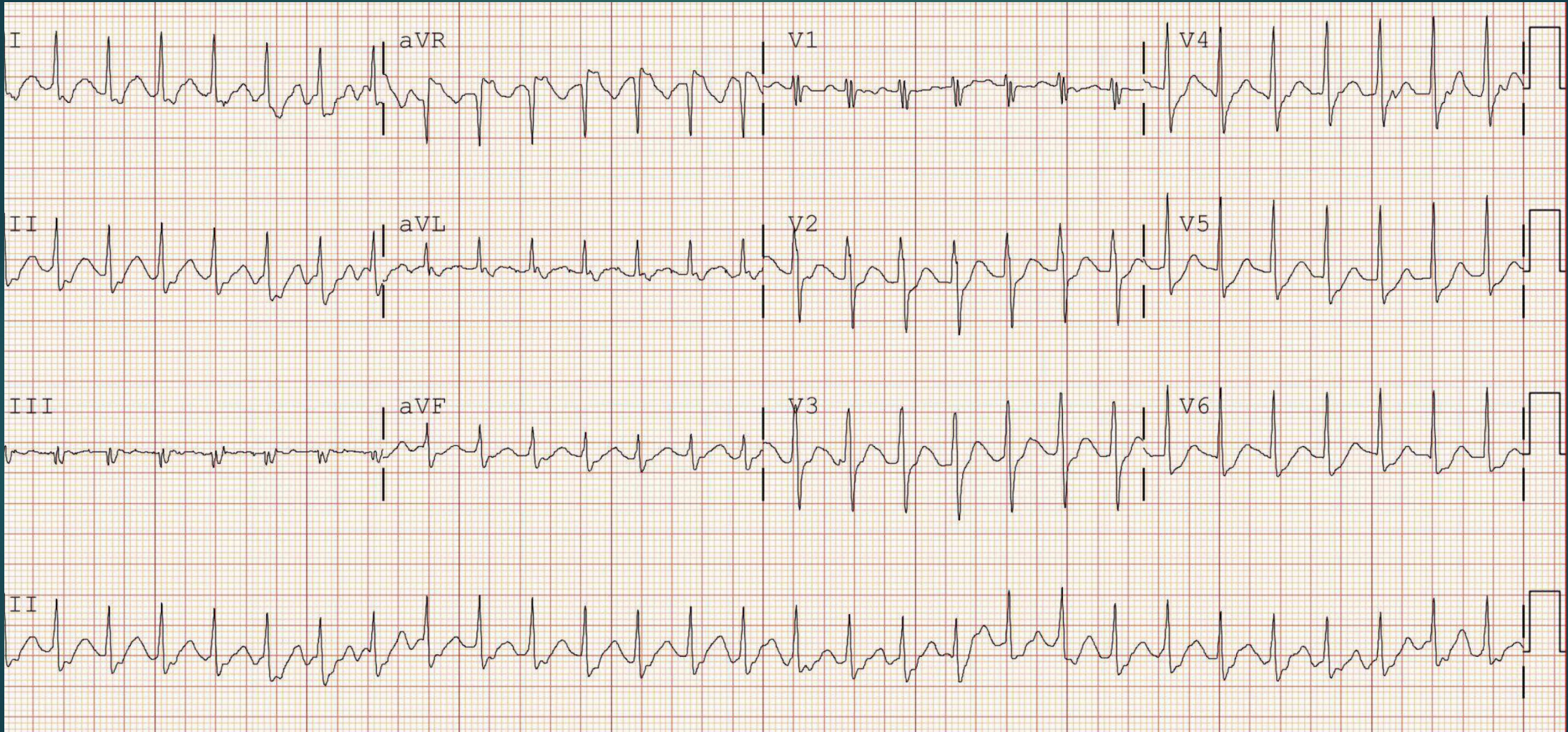


- Catheter ablation is first line !

# Objectives (tachyarrhythmias)

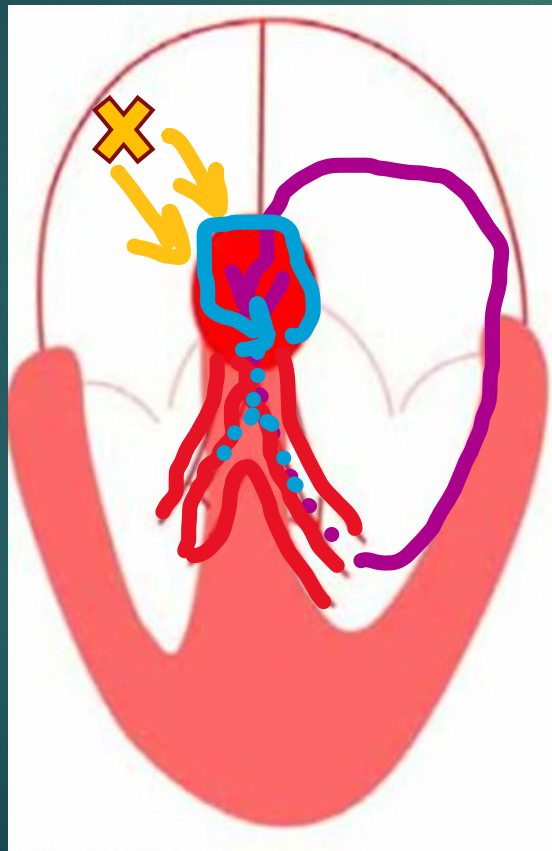
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# Supraventricular Tachy (SVT)





# Supraventricular Tachy (SVT)



AVNRT  
AVRT  
AT

# Supraventricular Tachy (SVT)

## *Acute Rx:*

Valsalva

Adenosine

## *Chronic Rx:*

**1- Catheter ablation**

2- Medical therapy

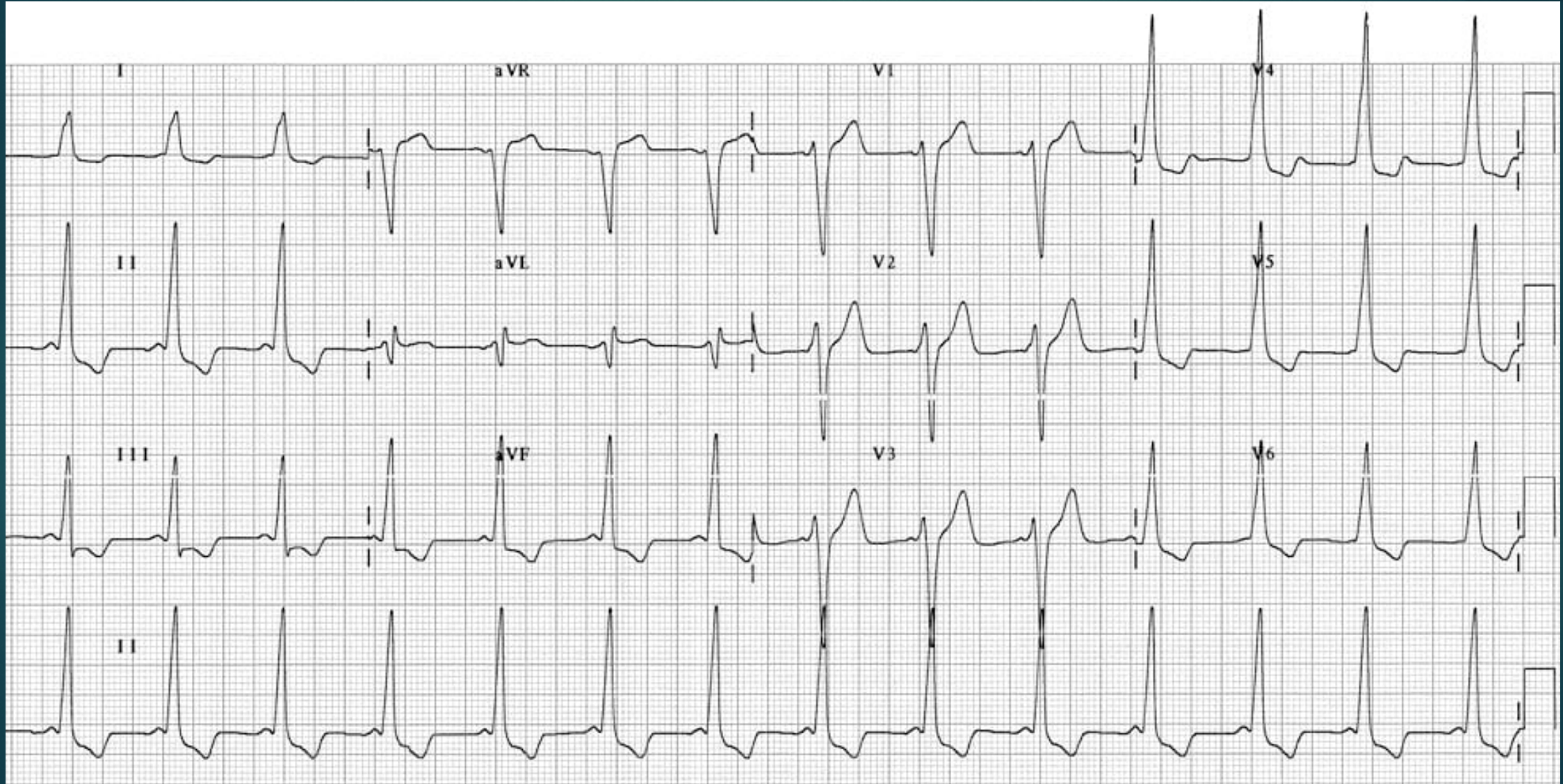
3- Watchful waiting



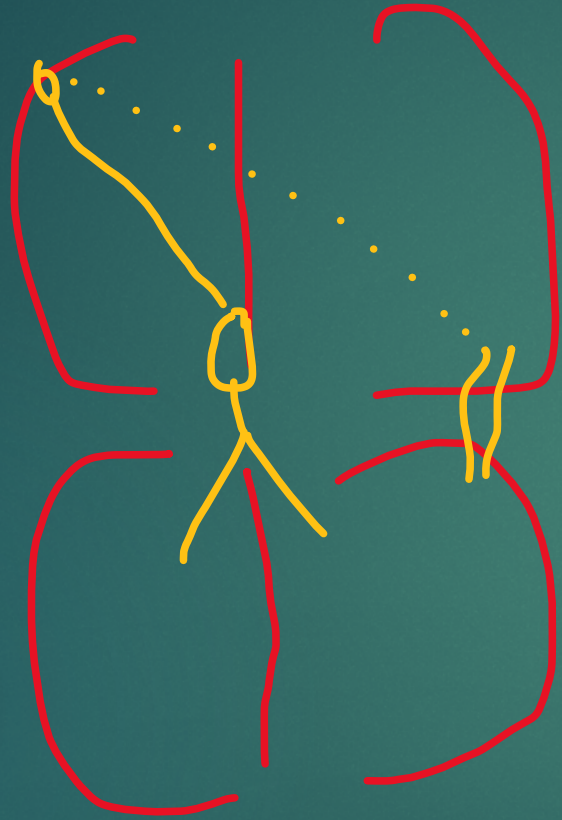
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# Wolf-Parkinson-White syndrome (WPW)



# Wolf-Parkinson-White syndrome (WPW)

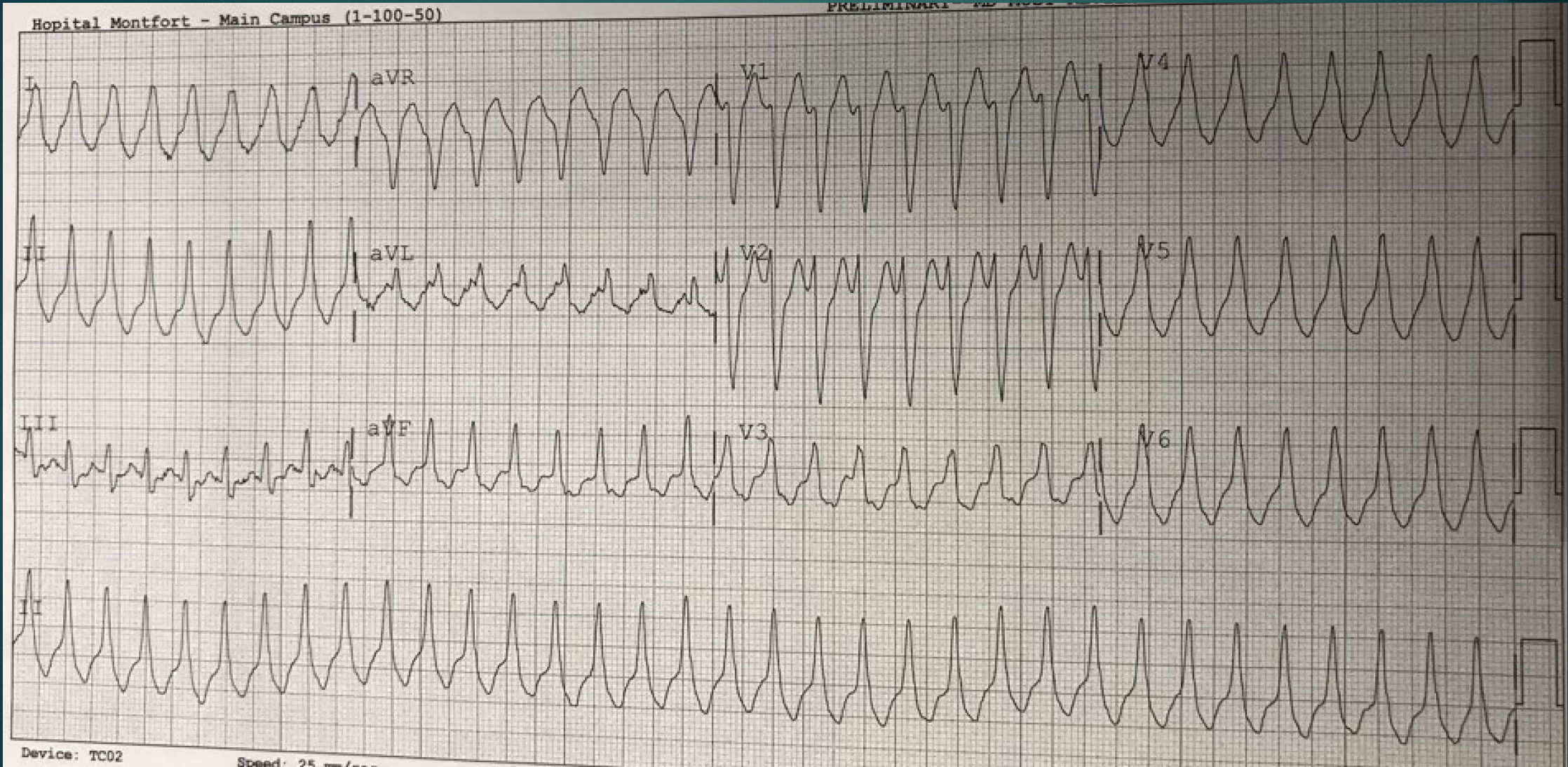


- Small risk of SCD from pre-excited AF
- Risk stratification (assess if the accessory pathway is capable of conducting rapid AF)

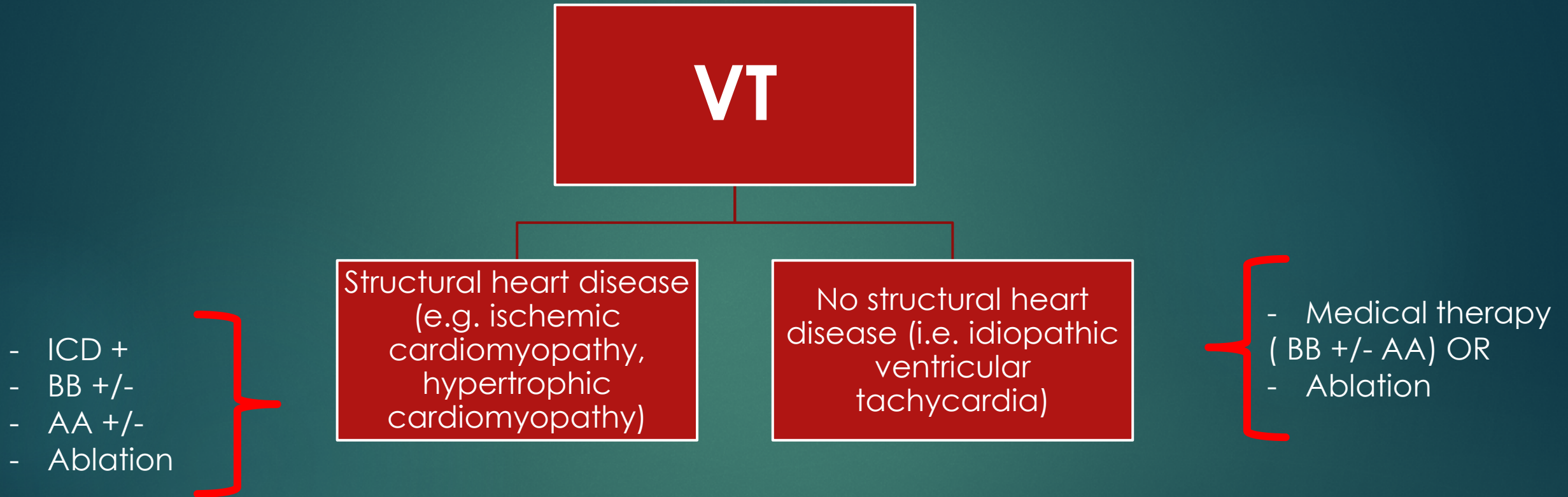
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# Ventricular tachycardia (VT)



# Ventricular tachycardia (VT)



# Objectives (tachyarrhythmias)

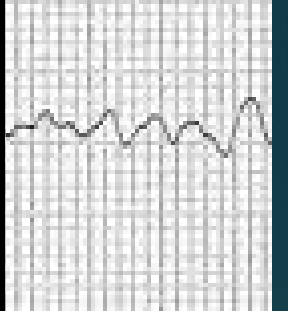
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  - ▶ **Ventricular fibrillation (VF)**
- ▶ Acute management

# Ventricular fibrillation (VF)

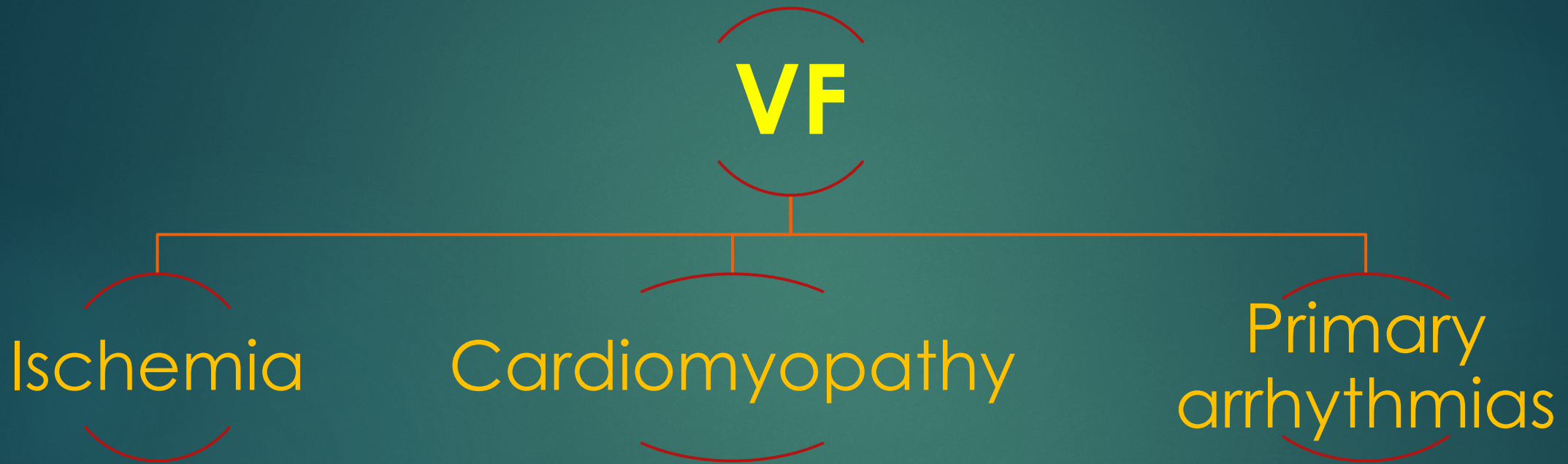




# Ventricular fibrillation (VF)



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- ▶ Acute management

# Acute management:

## Tachy Arrhythmias

Stable

AF/AFL

- 1 - R/out LAT
- 2- Cardioversion
- 3- Anti-arrhythmic

SVT

- 1 - Carotid massage
- 2- Adenosine
- 3- Cardioversion

VT

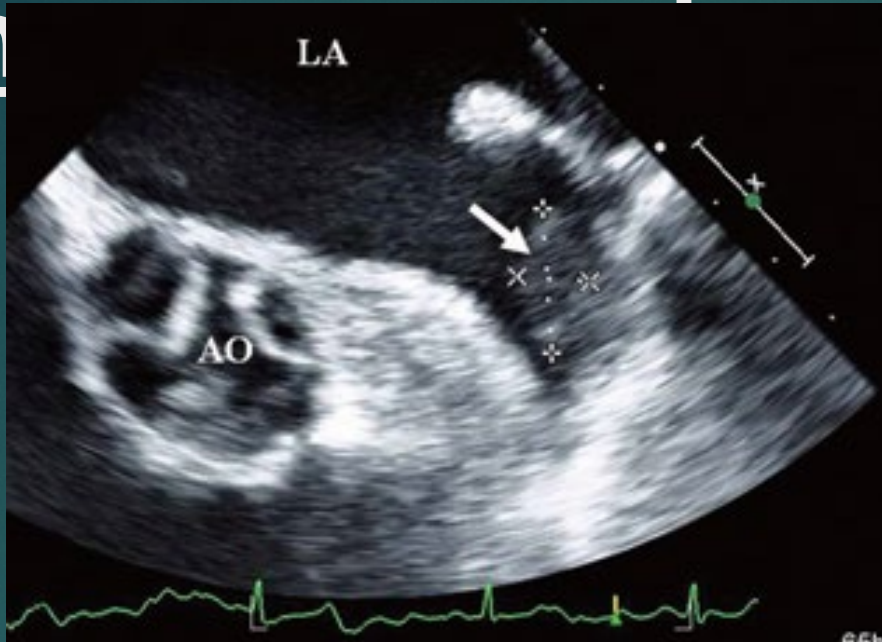
- 1 - Cardioversion
- 2- Anti-arrhythmic

Unstable

ACLS

# Acute m

## Tachy Arrhythmias



Stable

SVT

- 1 - R/out LAT
- 2- Cardioversion
- 3- Anti-arrhythmic

- 1 - Carotid massage
- 2- Adenosine
- 3- Cardioversion

Unstable

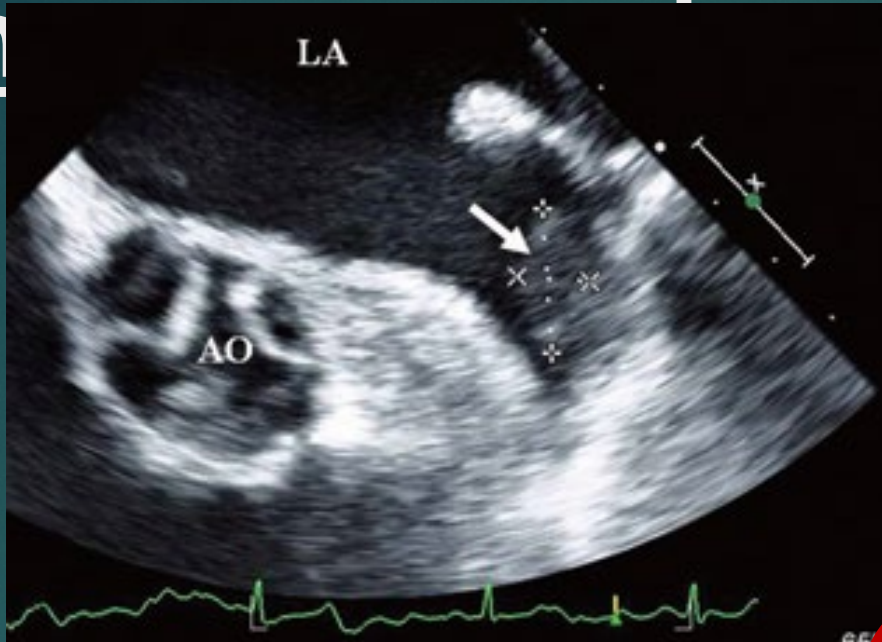
VT

- 1 - Cardioversion
- 2- Anti-arrhythmic

ACLS

# Acute m

## Tachy Arrhythmias



Stable

SVT

- 1 - R/out LAT
- 2- Cardioversion
- 3- Anti-arrhythmic

- 1 - Carotid massage
- 2- Adenosine
- 3- Cardioversion

Unstable

VT

- 1 - Cardioversion
- 2- Anti-arrhythmic

ACLS

# Objectives (bradyarrhythmias)

- ▶ Types of bradyarrhythmias
- ▶ Causes
- ▶ Treatment

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- ▶ Types of bradyarrhythmias
- ▶ Causes
- ▶ Treatment



# Types of bradyarrhythmias:

- ▶ **Sinus node disease**

- ▶ Sinus bradycardia
- ▶ Sinus arrest
- ▶ Others

- ▶ **Atroventricular disease**

- ▶ 1<sup>st</sup> degree
- ▶ 2<sup>nd</sup> degree
- ▶ 3<sup>rd</sup> degree

# Objectives (bradyarrhythmias)

- ▶ Types of bradyarrhythmias
- ▶ Causes
- ▶ Treatment

# Causes of bradyarrhythmias

- ▶ **Causes:**
  - ▶ **Congenital**
  - ▶ **Advanced age**
  - ▶ **Electrolytes / medications**
  - ▶ **(( obstructive sleep apnea: sinus node disease ))**
  - ▶ **(( cardiac sarcoidosis: AV block at young age ))**

# Objectives (bradyarrhythmias)

- ▶ Types of bradyarrhythmias
- ▶ Causes
- ▶ Treatment

# Treatment of bradyarrhythmias

- ▶ Treat reversible cause
- ▶ Pacemaker if symptomatic
- ▶ Pacemaker if 3<sup>rd</sup> degree AV block

# Take Home Messages:

- ▶ 3 acceptable approaches to manage tachy arrhythmias (watchful waiting / medical Rx / ablation)
- ▶ AF is the most common arrhythmia
- ▶ Use CHADS<sub>2</sub>-65 score to assess the need for OAC in AF
- ▶ Use Carotid massage/Adenosine for acute Rx of stable SVT
- ▶ VF/SCD can be caused by inherited arrhythmia syndromes
- ▶ Pacemaker implantation is indicated for symptomatic bradycardia