IS ATRIAL FIBRILLATION THE NEXT TYPE 2 DIABETES?

ROBERT M PEPPER, DO, FAAFP

ASSISTANT DEAN

PREDOCTORAL CLINICAL EDUCATION

WEST VIRGINIA SCHOOL OF OSTEOPATHIC MEDICINE

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WEST VIRGINIA SCHOOL OF OSTEOPATHIC MEDICINE

K. Bergslien Christiania 1919

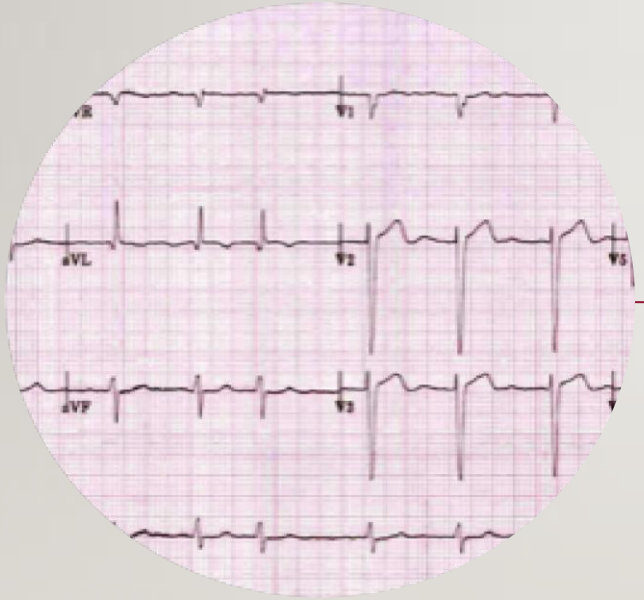
Birkebeinerrennet

Mean age 58

18% incidence

5X age matched controls

Grimsmo et al.
European Journal of Cardiovascular Prevention and Rehabilitation, 2010



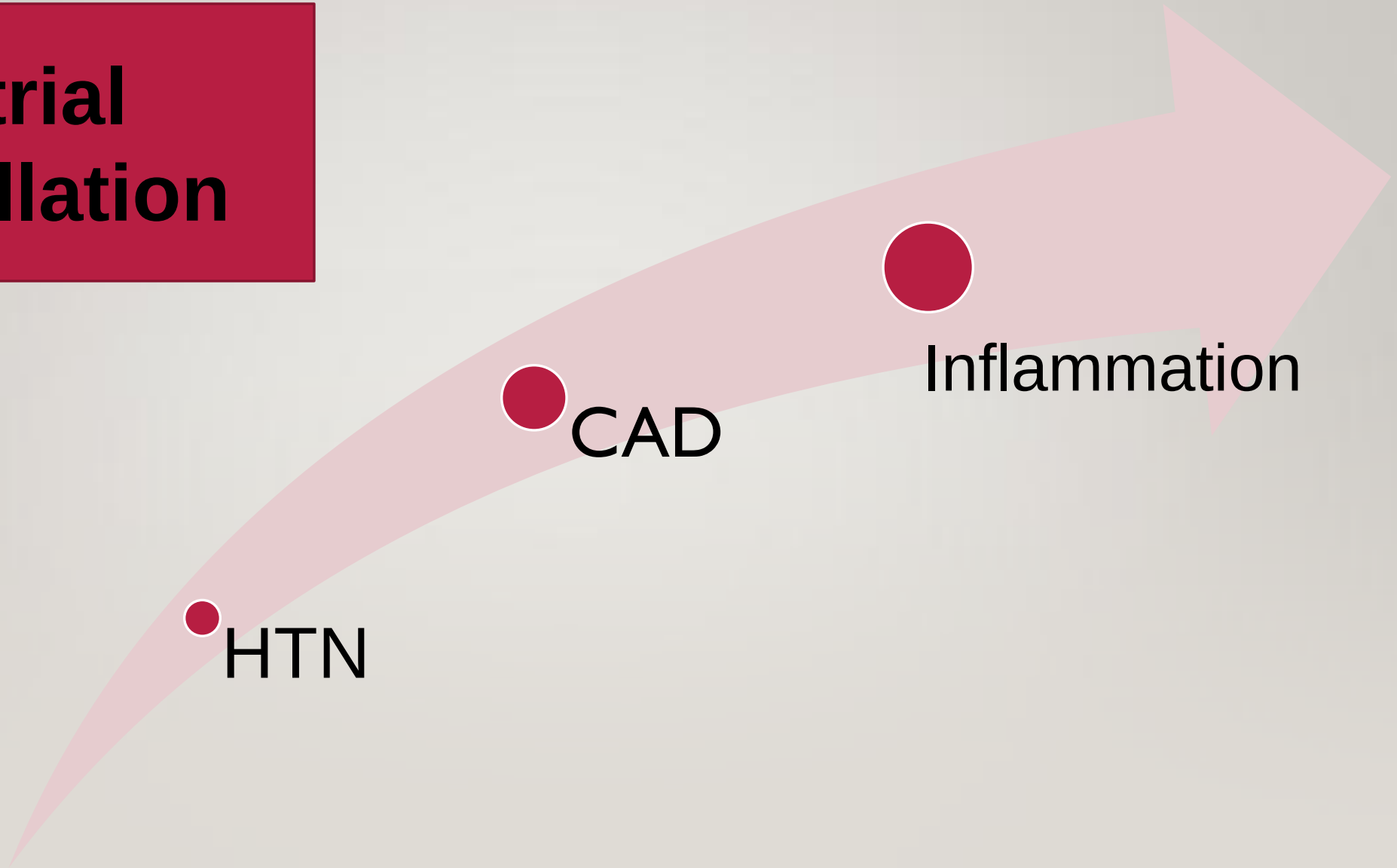
AF

Remodeling

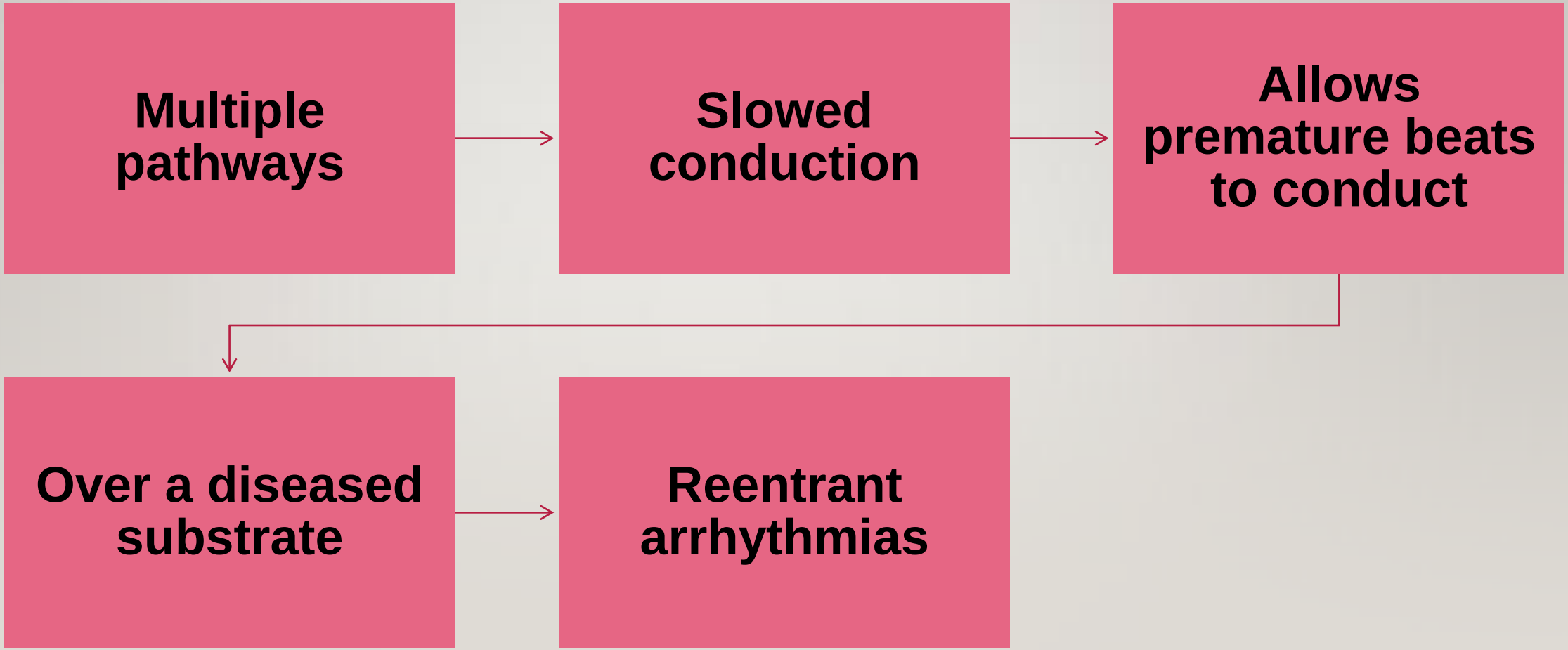
Fibrosis

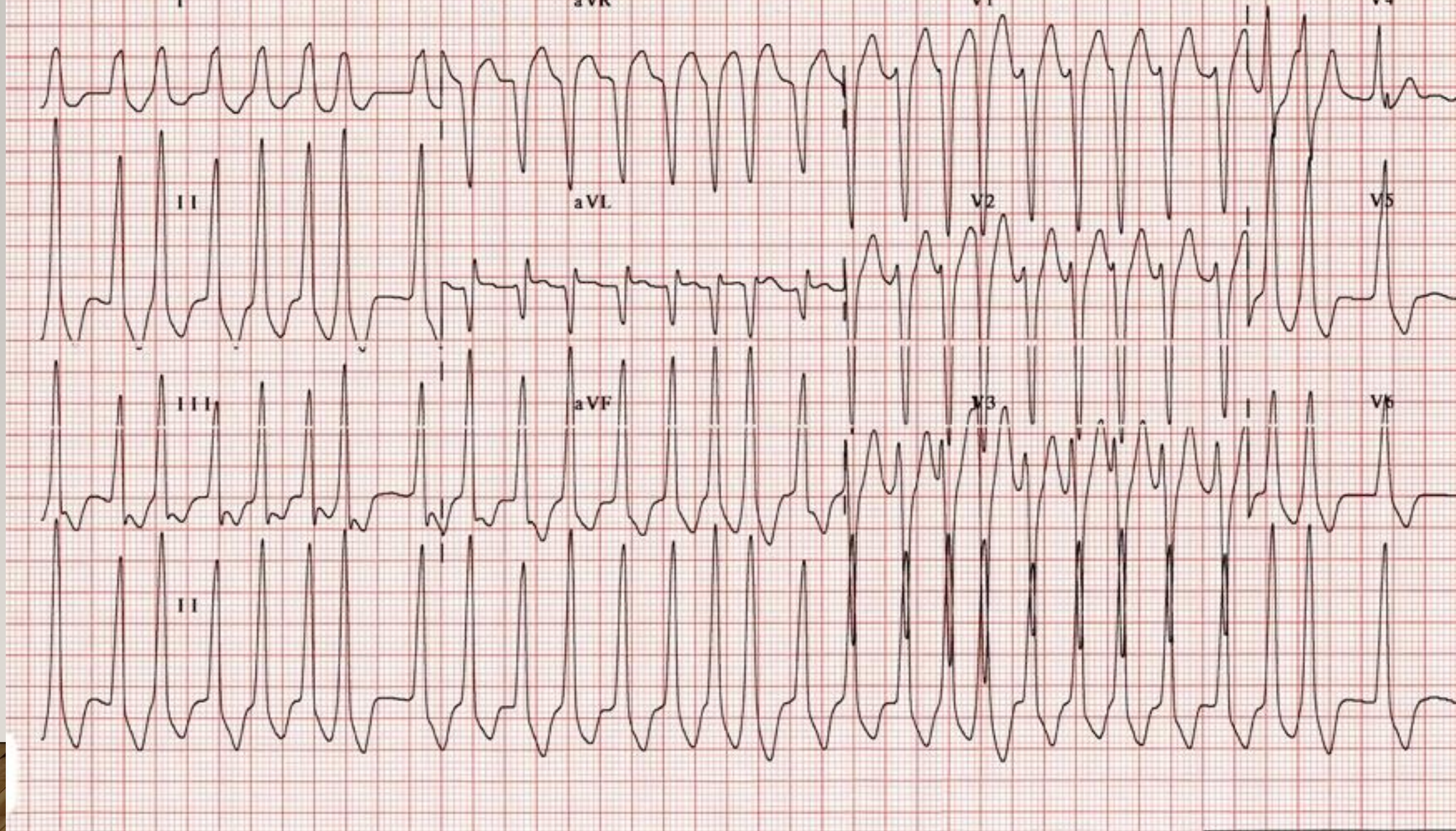
Inflammation

Atrial Fibrillation

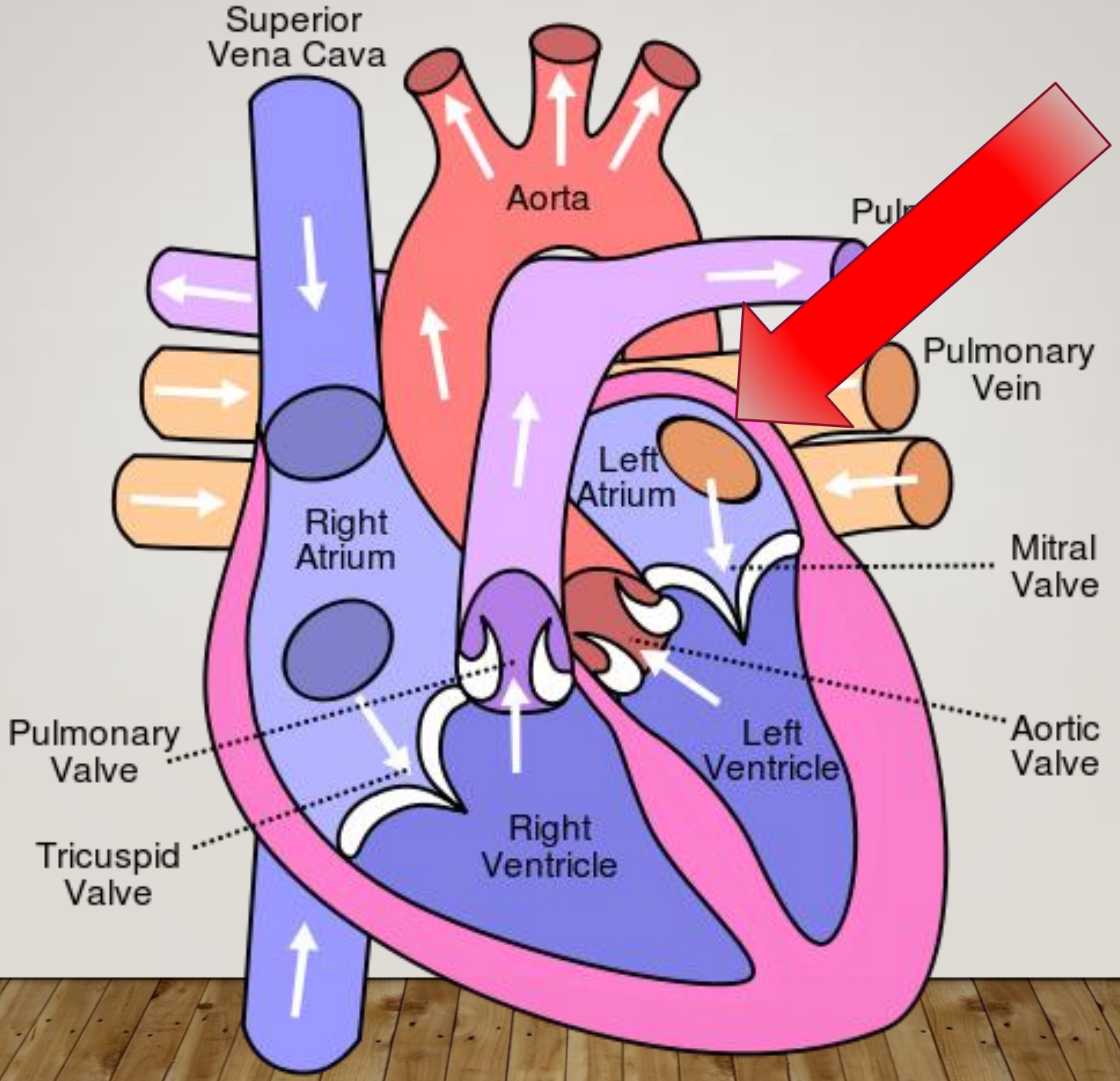


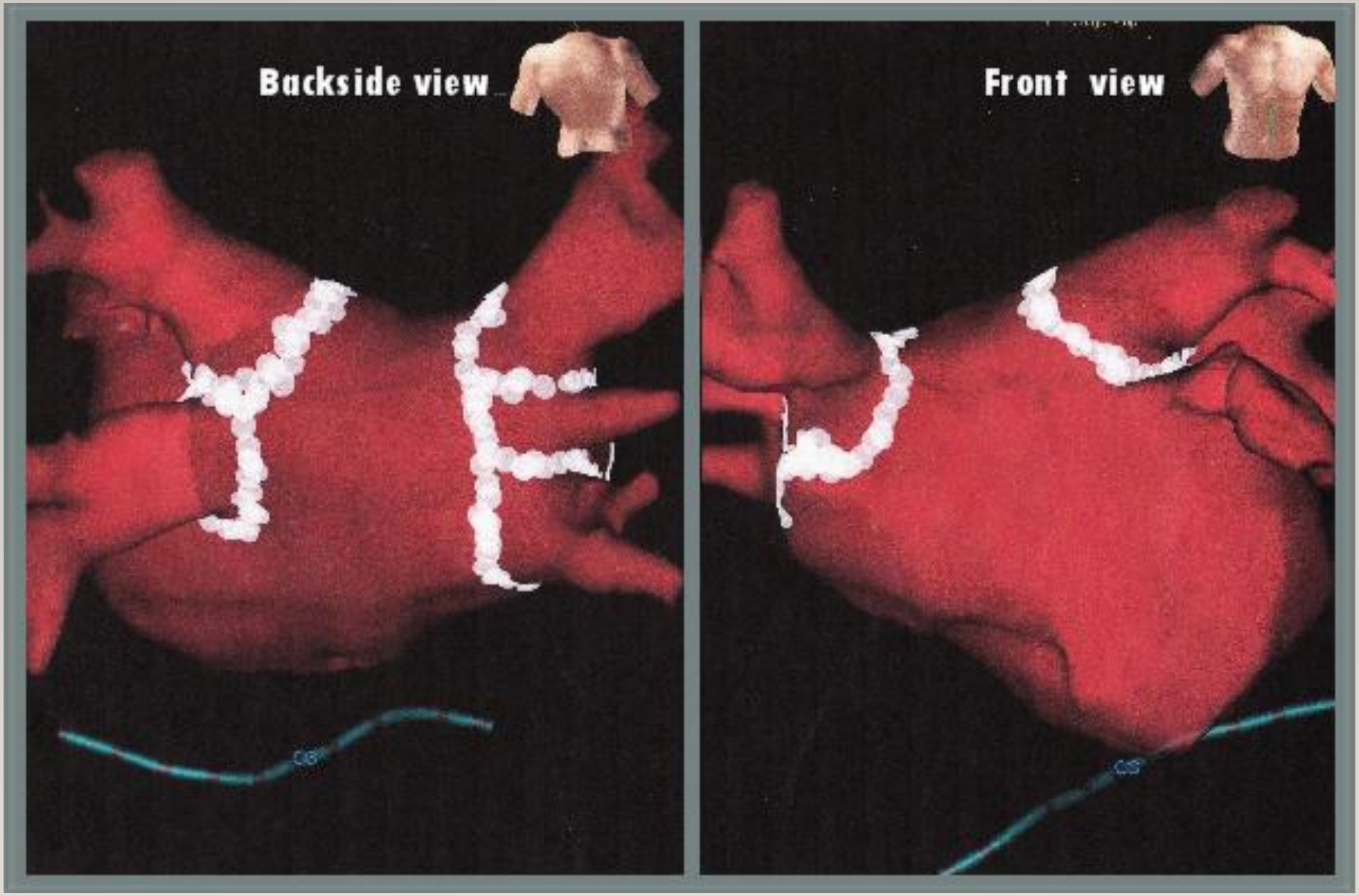
SCARRING AND FIBROSIS

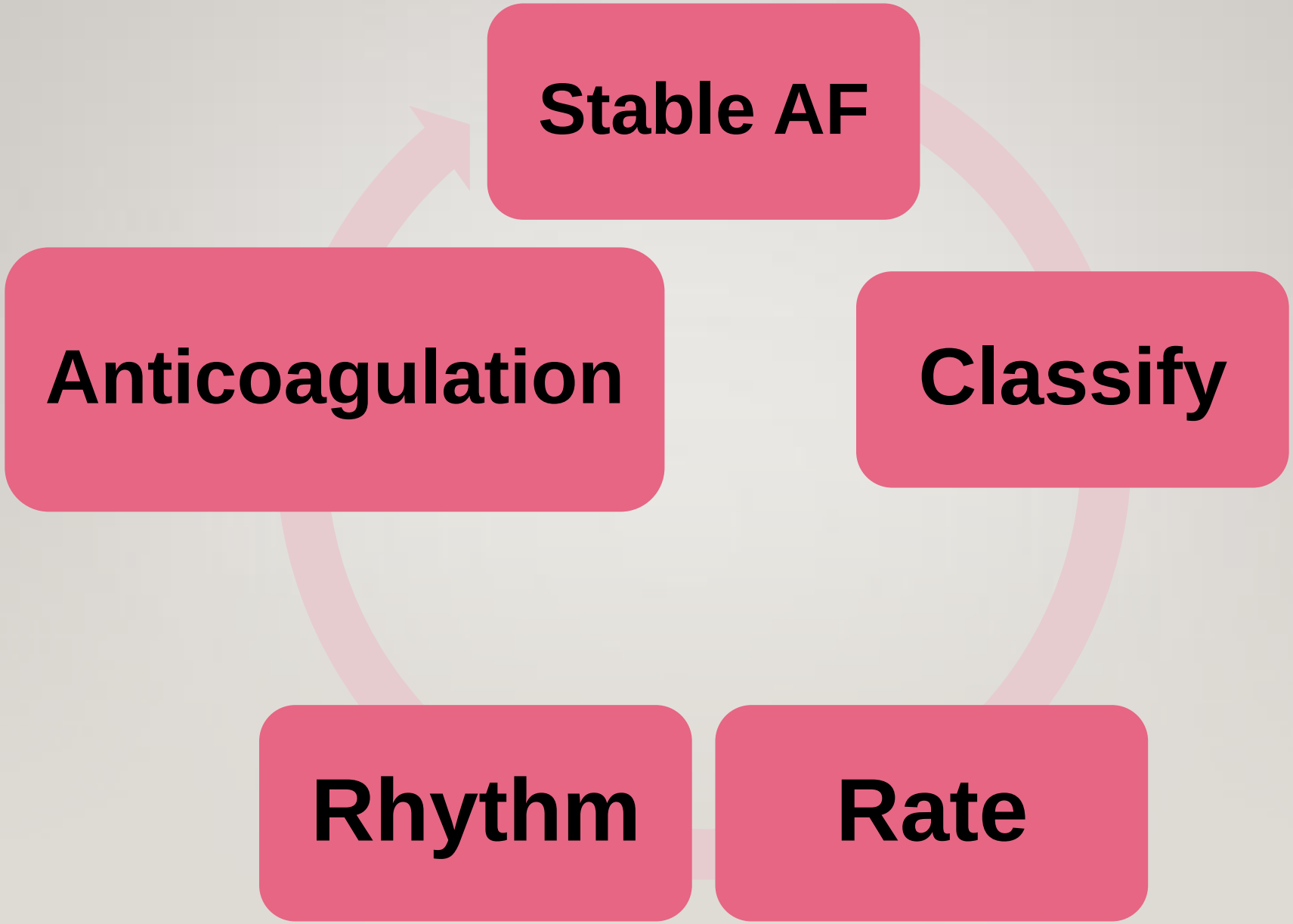

Multiple pathways
Slowed conduction
Allows premature beats to conduct
Over a diseased substrate
Reentrant arrhythmias


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

THIS IS TALLADEGA


Superior
Vena Cava
Aorta
Pulmonary
Vein
Left
Atrium
Right
Atrium
Mitral
Valve
Pulmonary
Valve
Aortic
Valve
Left
Ventricle
Tricuspid
Valve
Right
Ventricle


Backside view
Front view


Stable AF
Classify
Rate
Rhythm
Anticoagulation

KNOW YOUR STROKE RISK

CHA2DS2-VASc Risk	Score	CHA2DS2-VASc Score	Adjusted stroke rate (% / year)
		0	0
CHF or LVEF <40%	1	1	1.3
Hypertension	1	2	2.2
Age > 75	2	3	3.2
Diabetes	1	4	4
Stroke / TIA / Thromboembolism	2	5	6.7
Vascular Disease	1	6	9.8
Age 65-74	1	7	9.6
Female	1	8	6.7
		9	15.2

CHF = congestive heart failure; TIA - transient ischemic attack; LVEF = left ventricular ejection fraction.

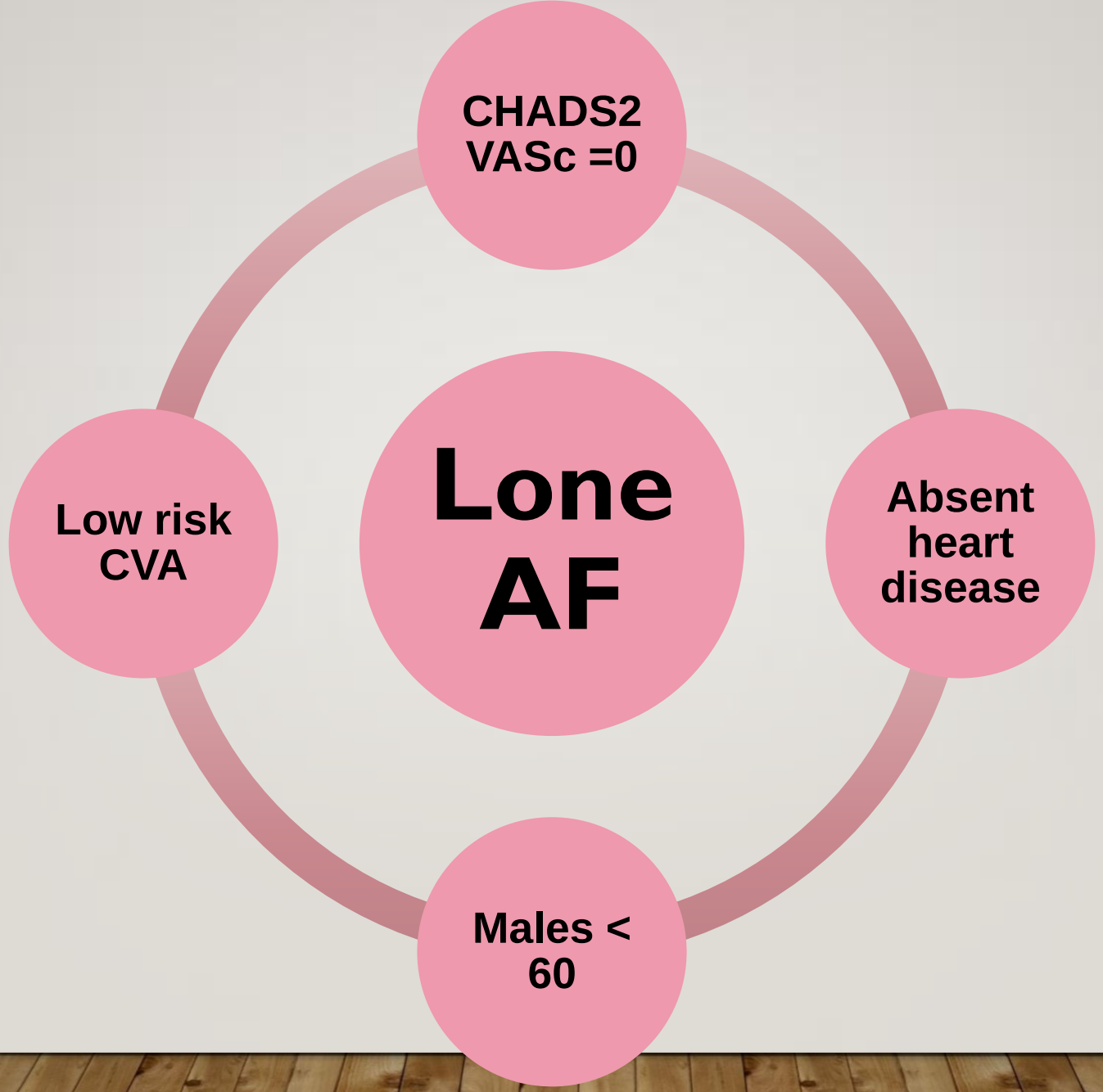
AF: Classification

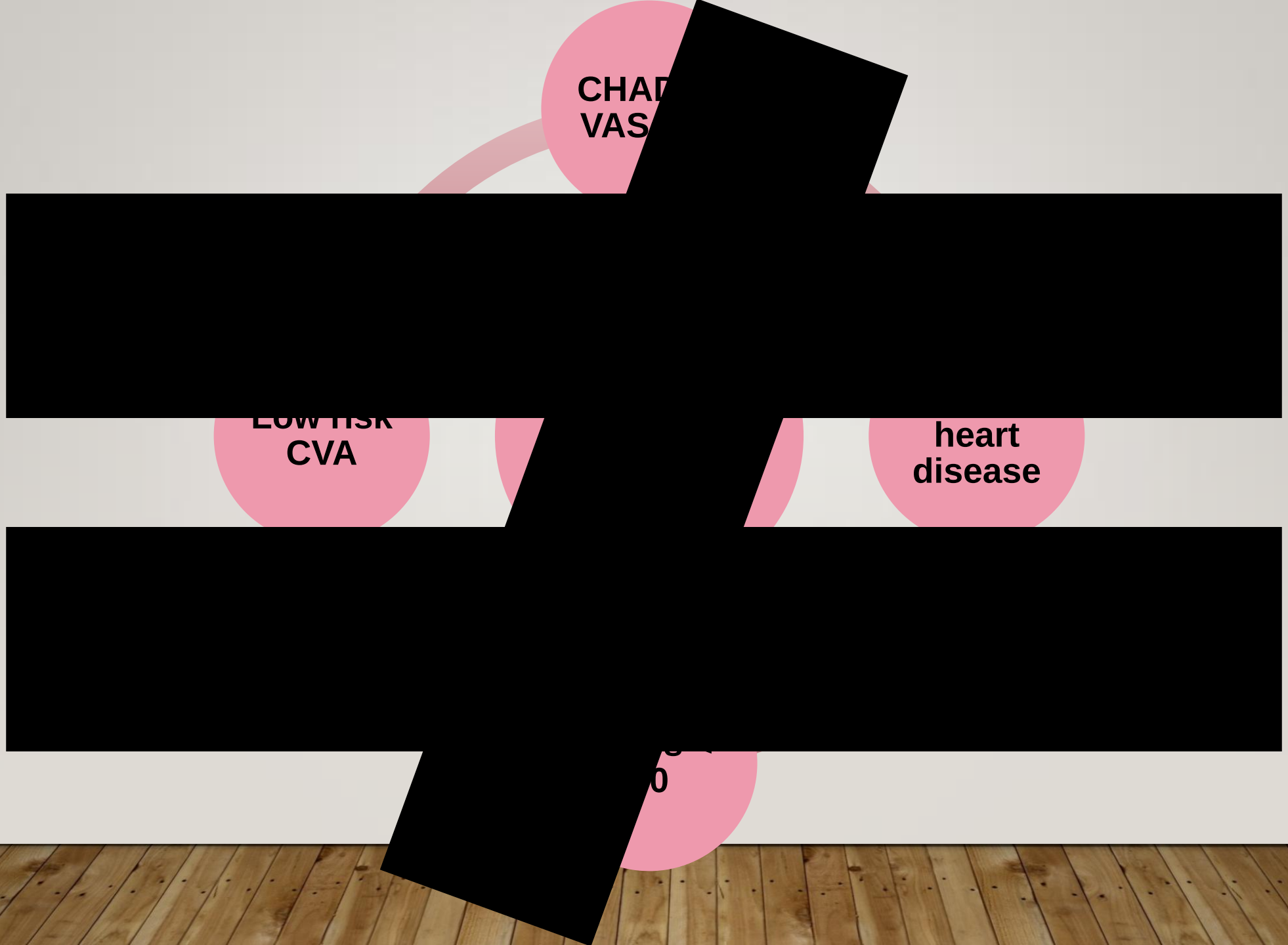
Lone

Persistent

Paroxysmal

(<7 days)


CHADS2
VASc =0
Low risk
CVA
Lone
AF
Absent
heart
disease
Males <
60


CHAD
VAS
Low risk
CVA
heart
disease
0

Heterogeneous

Fibrosis

Progression

ATRIAL FIBROTIC CARDIOMYOPATHY

genetic

obesity

sleep apnea

hypertension

heart failure

Chronically inflammed?

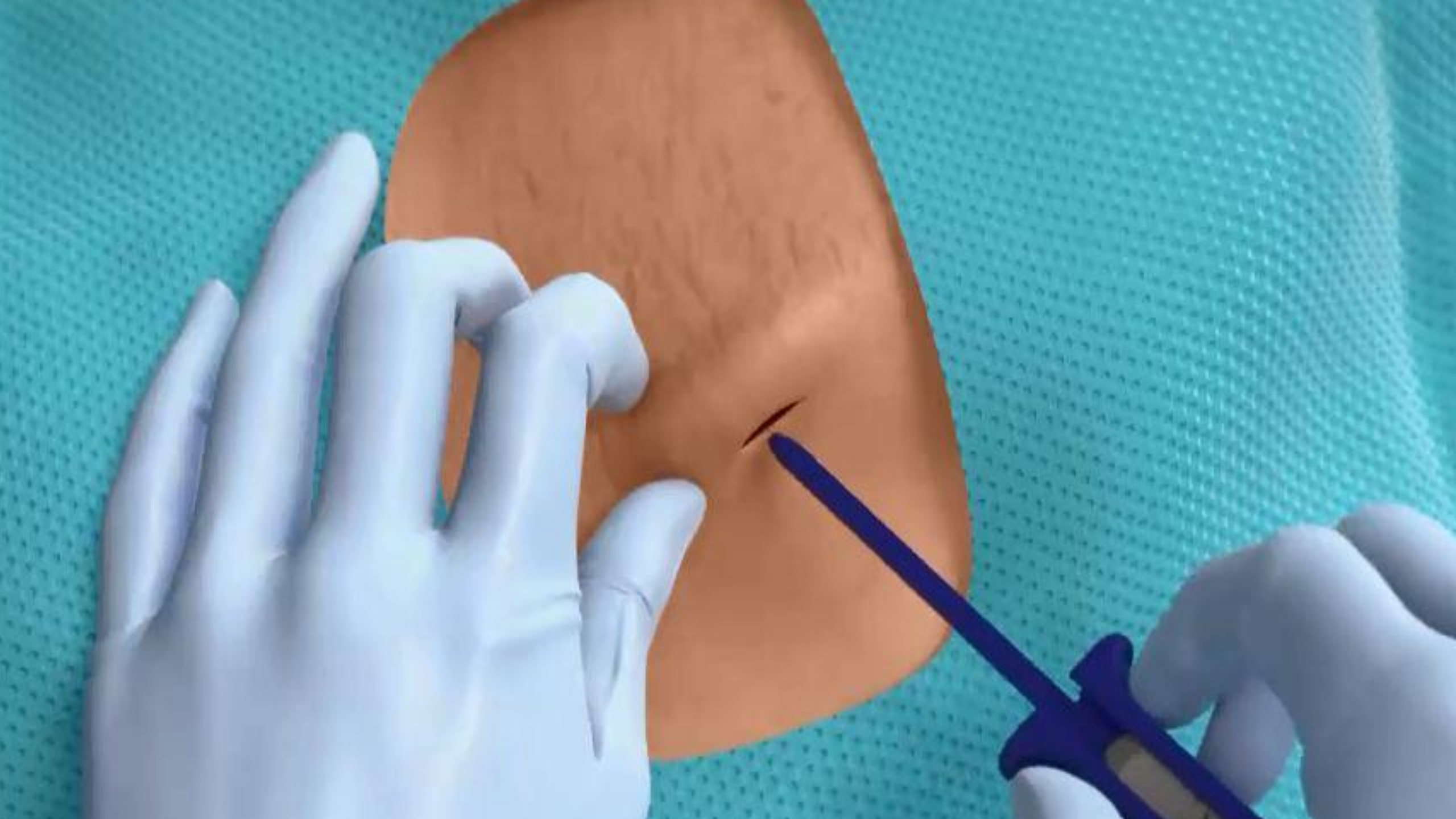
SUMMARY: ATRIAL FIBRILLATION

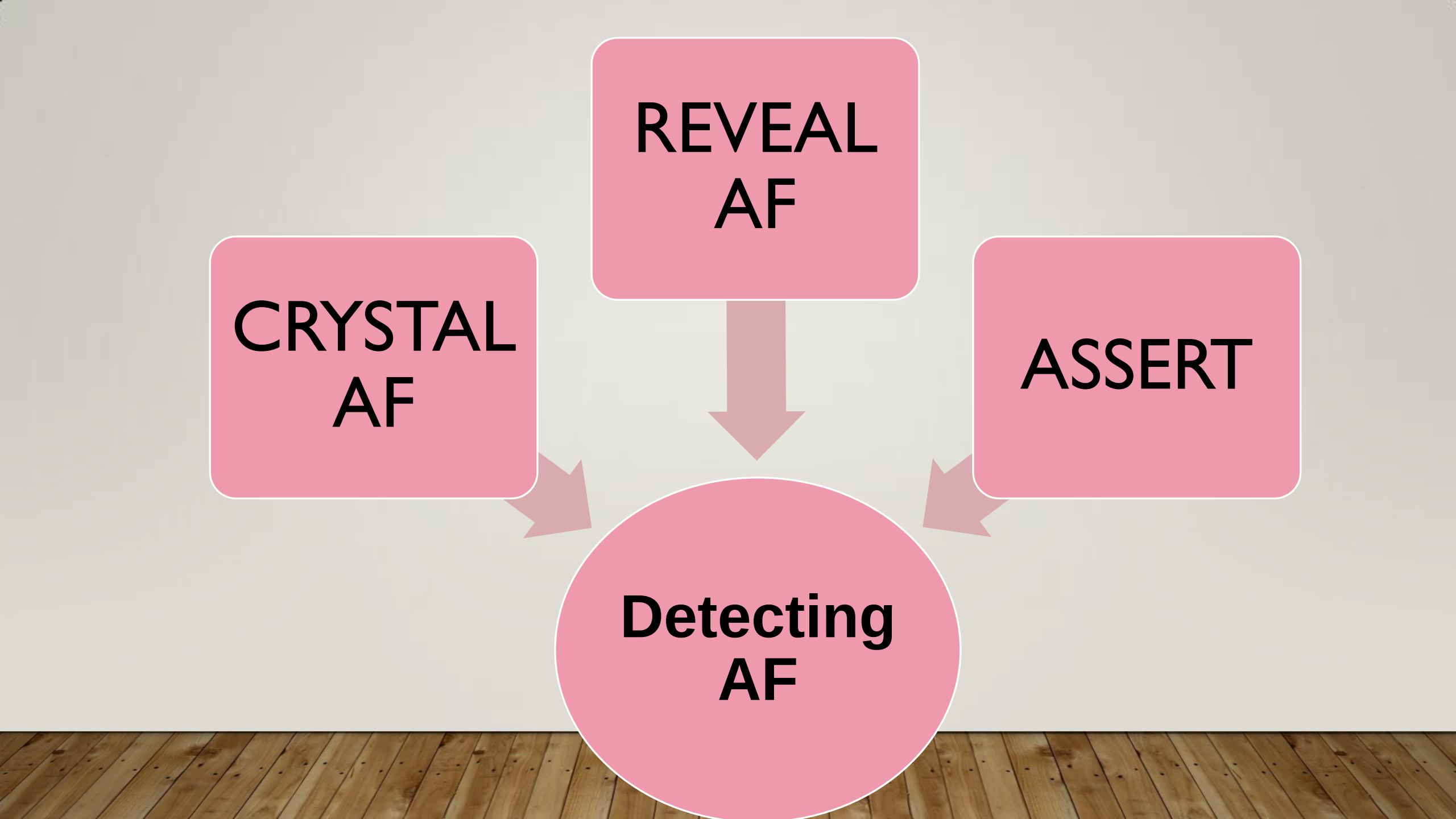
- chaos from the PV
- scarring=badness
- usual culprits play large role

Close
Record Standard EKG
Strong Signal
5
Speed: 25 mm / s
Gain: 10 mm / mV
Filter: Enhanced
72 BPM
How are you feeling?
For example, say "Dizzy".
Kardia

AliveCor
10:09
Today at 10:09 AM
64 BPM
Normal

Reveal LINQ™
+ | AAA
ALKALINE BATTERY




REVEAL AF
CRYSTAL AF
ASSERT
Detecting AF

CRYSTAL AF

ICM S/P
Cryptogenic CVA
AF runs ≥ 30 seconds
36 months: 30%

Detecting AF

Tommaso
N Engl J Med 2014;
June 26.2014

AF runs ≥ 6 min
No Hx AF/CVA
CHADS2 VASc
4.4
18 months: 29%
30 months: 40%

REVEAL AF

Detecting AF

2017 Heart Rhythm Society Scientific Sessions

ASSERT

AF > 24 hours ↑ risk of CVA

Detecting AF

Van Gelder IC, Healey
Eur Heart J 2017; 35:508-516

ICM AND AF: 2017 UNRESOLVED

Asymptomatic AF is common!

When to treat?

CHADS2VASc?

Duration?

ICM AND AF: 2017
NOW WHAT?

Currently No Evidence

treating short-duration AF ↓ CVA risk

Can we?

Prevent → **Mitigate burden** → **↑ Response to Tx**

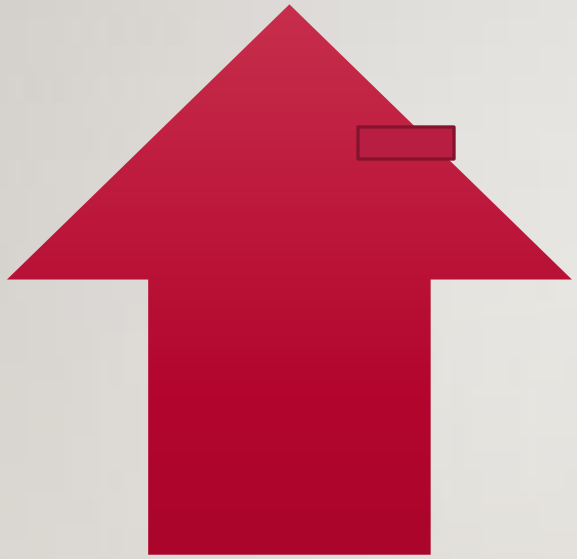
VERSION 1.0:
OBESITY AND NO AF (YET)

The Impact of Bariatric Surgery on Incidence of Atrial Fibrillation

Heart Rhythm Society 2014 Scientific Sessions

Yuan, et al, Mayo Clinic

438 BMI > 40 x 7 years



112 medical
12.5% AF

326 surgery
3.1% AF

VERSION 2.0
OVERWEIGHT + AF

150 pts x 15 months

Outcomes: Afib severity

JAMA. 2013;310(19):2050-2060.

VERSION 2.0: OBESE + AF

Intensive weight loss

- Lipids, HTN, OSA, Tobacco, ETOH
- Computerized weight loss protocol

Lifestyle advice

- Lipids, HTN, OSA, Tobacco, ETOH
- Handouts and counseling

Weight loss	Lifestyle advice
14.3 kg	3.5 kg
	More severity
Less duration	More symptom burden
Beneficial LA remodeling	More episodes

VERSION 3.0
AF+ ABLATION

ARREST AF Trial

aggressive weight management and lifestyle intervention

Pathak, RK et al

JACC 2014 Dec 2;64(21):2222-31

Primary Outcomes[3]

	Risk factor modification group (n = 61)	Control group (n = 88)	*P* value
AF-free survival after single ablation procedure	62%	26%	< .001
AF-free survival after multiple ablation procedures	87%	48%	< .001

Ablation Success Rate 2.5X↑

VERSION 4.0: WEIGHT LOSS AND DURABILITY

LEGACY Trial:

5 year follow-up

Long-Term Effect of Goal-Directed Weight Management in an Atrial Fibrillation Cohort Pathak, et al

JACC, 2015-05-26, Volume 65, Issue 20, Pages 2159-2169

10% weight loss 6X

AF Symptom Burden

Weight fluctuation >5% 2X

Atrial Fib Success

Primary prevention

(Mayo Bariatric)

Post ablation

ARREST AF/LEGACY

No rhythm intervention

(Sheeple)

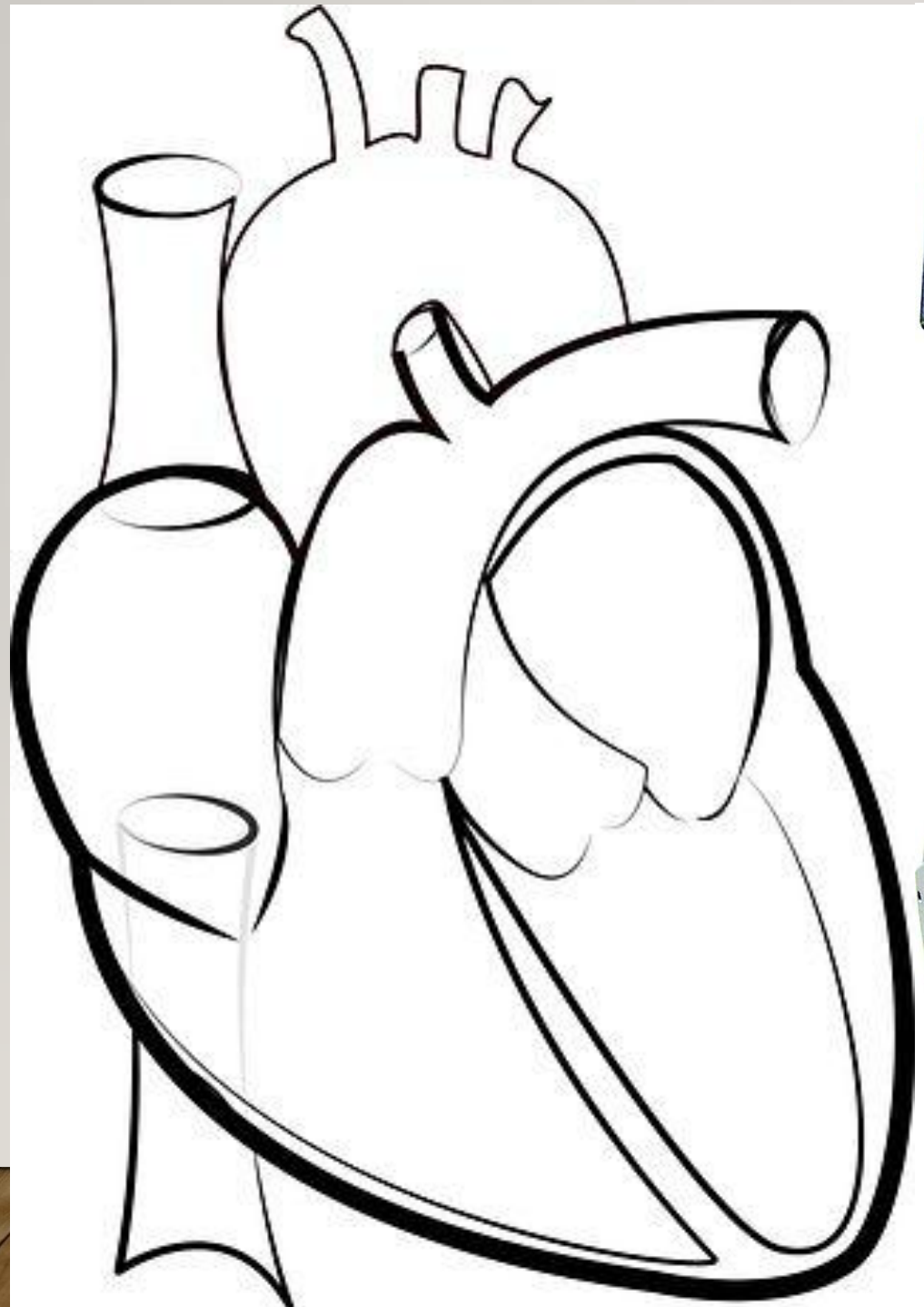
Fewer AADs

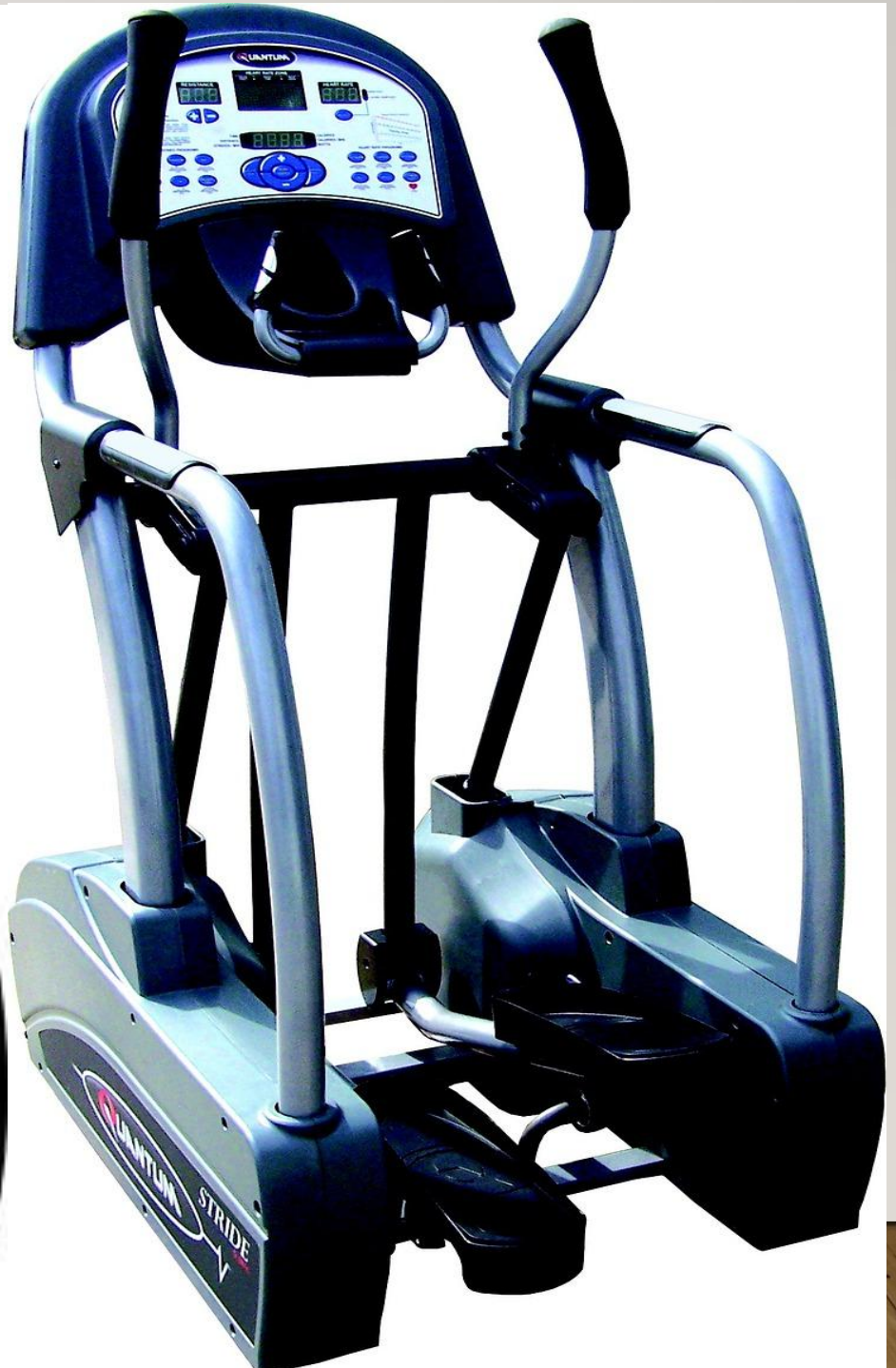
ARREST AF/LEGACY

CARDIORESPIRATORY FITNESS

Older I get,

faster I was




QUANTUM
QUANTUM STRIDE V

CRF: HOW DO I KNOW?

- Duke Activity Status Index (DASI)
  mdcalc.com
- CERG Fitness Calculator
  ntnu.edu/cerg/vo2max

CARDIO-FIT: 5 YEARS WITH AND WITHOUT RHYTHM CONTROL

Impact of Cardiorespiratory Fitness on Arrhythmia Recurrence in Obese Individuals With Atrial Fibrillation

Pathak, et al

JACC 2015-09-01, Volume 66, Issue 9, Pages 985-996

Cardiorespiratory Fitness

- Dose dependent
- 1 MET↓20%
- Additive to weight loss +12%

CONCLUSIONS: CARDIOFIT

- ↑CRF is >weight loss alone
- No weight loss, low fitness, and DM are ***independent predictors*** of AF recurrence

SUMMARY: PREPONDERANCE OF THE EVIDENCE

Aggressive RFM mitigates:

Long term burden

and

Severity of Atrial Fibrillation

HTN

OSA

Lipids

T2DM

AF: Primary care

SUMMARY: PREPONDERANCE OF THE EVIDENCE

Weight loss is an effective ***antiarrhythmic***

ACTIONABLE NOW:

Even 3% makes a difference, 10% huge payoff.

Bariatric surgery: BMI 35

SUMMARY: PREPONDERANCE OF THE EVIDENCE

Increased Cardiorespiratory Fitness is additive

SUMMARY: PREPONDERANCE OF THE EVIDENCE

Ablation ***is not*** a panacea

- difficult procedure, $$$, recurrence
- Not a cure: Damaged substrate marches onward
- Anticoagulation still needed for many (CHADS2Vasc)

ACTIONABLE NOW:

Try RFM, wt. loss, bariatrics, exercise before referral for ablation

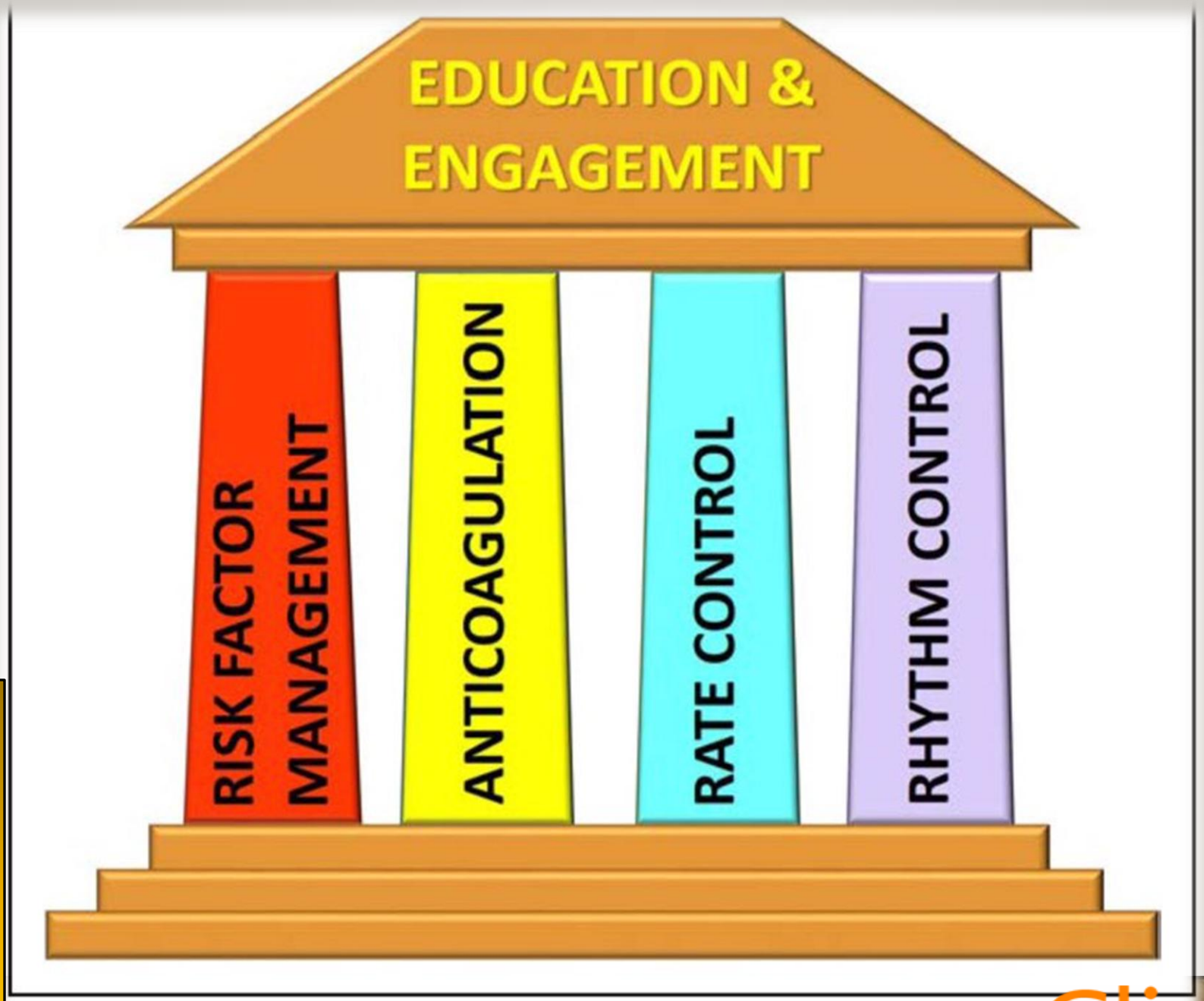


Figure 7. Fourth pillar of atrial fibrillation care.

Lau, Nattel, et al
Circulation.
2017;136:583-596

ClinicalKey®

OTHER CURRENT ISSUES IN AF

CHADS2VASc of 1

Evidence of ASA in CVA prevention is limited

Increased risk of GI bleed

Action Plan: RFM harder but likely more effective

"LONE" AF: MALES <60, CHADS2VASC ZERO

- Heterogeneous group
- Low risk of CVA, but not benign state
- Fibrosis/inflammation

Action Plan: RFM and frequent monitoring

IS IT PLAUSIBLE . .

Atrial fibrillation is a systemic, not just a cardiac condition?

PREVENTION ***AND*** TREATMENT

weight loss

exercise

stop nocturnal hypoxia

lower BP

controlling ***inflammation***

INCIDENCE

clinical or subclinical hyperthyroidism in atrial fibrillation?

≤5%

ATRIAL FIBRILLATION

a chronic, progressive, systemic disease..

predictably unpredictable