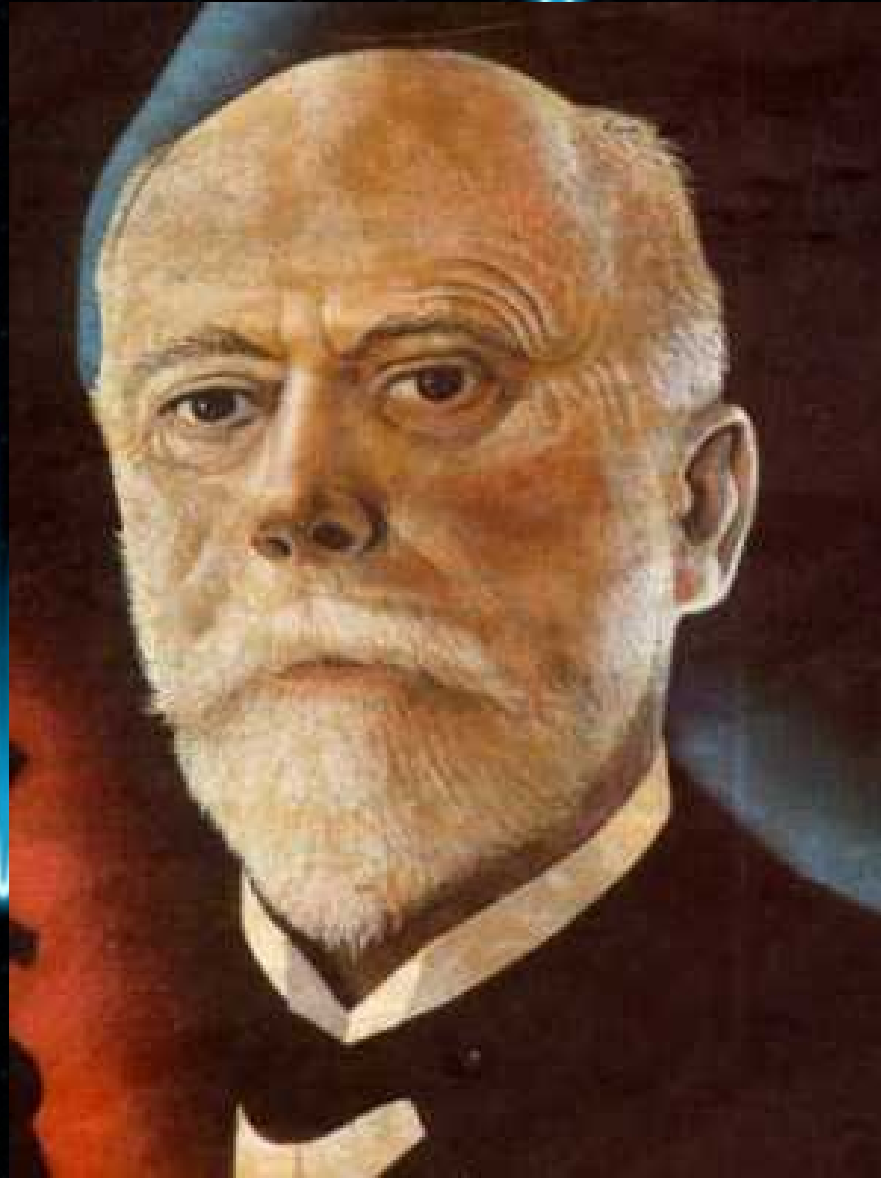
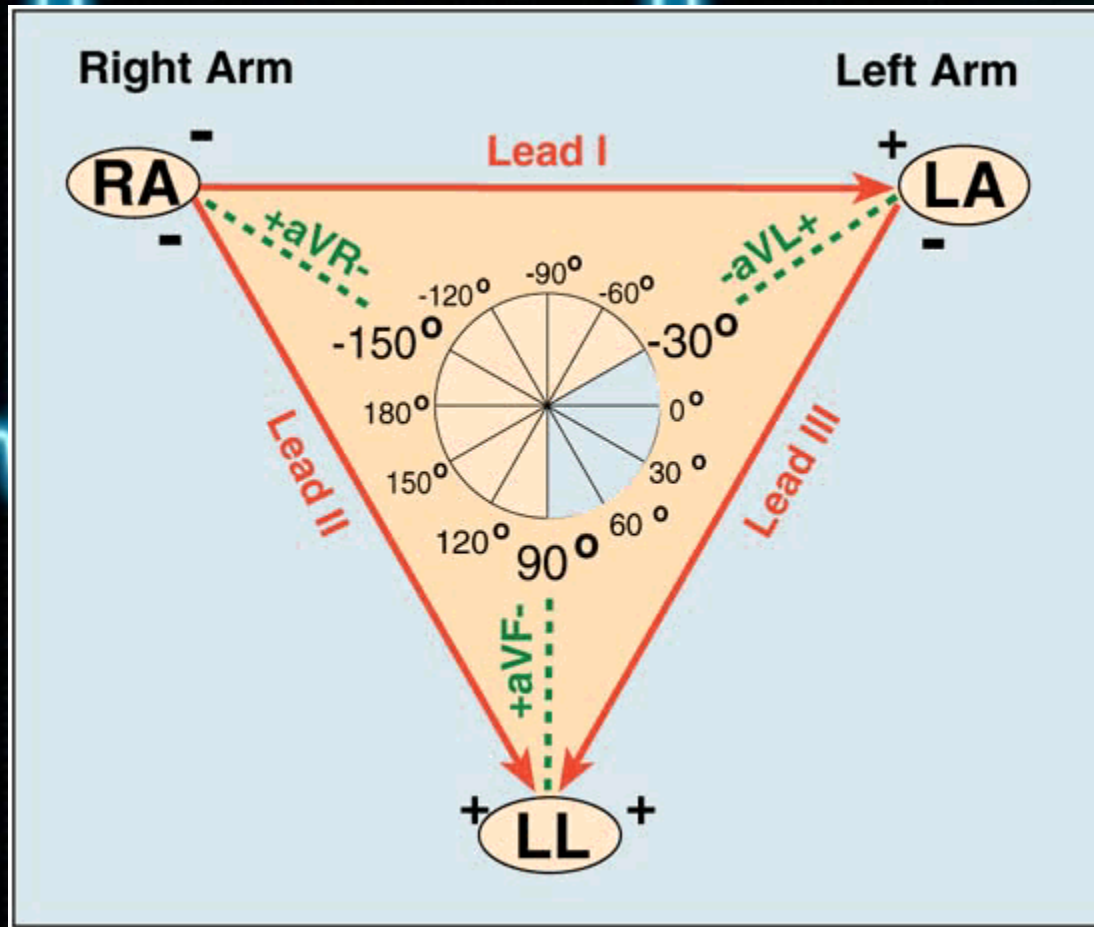


Willem Einthoven

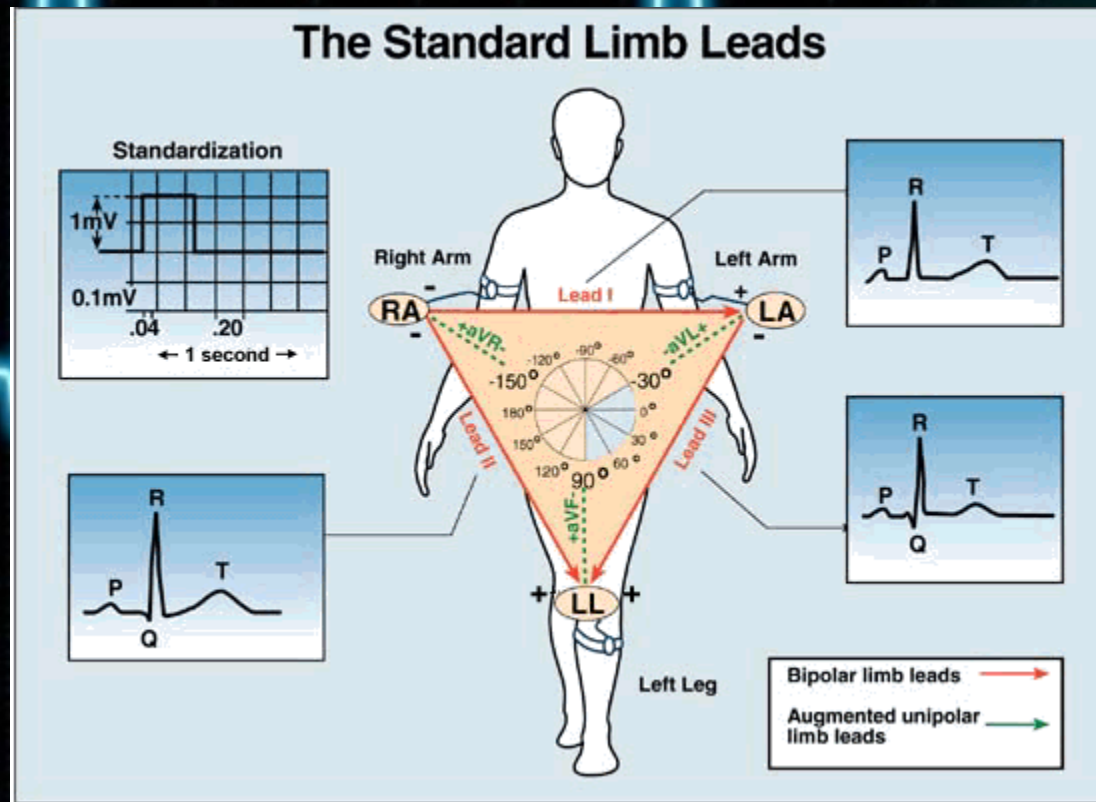


Einthoven's Triangle



Simply:

EKGs measure the direction of electrical flow through the heart.



A Little Physiology



- Action Potential

- In neurophysiology, the action potential is a self-regenerating wave of electrochemical activity that allows nerve cells to carry a signal over a distance.
- These which end at muscles cause the muscle to contract in a similar fashion.

- Ions (-) vs Cations (+)

- Na⁺, K⁺, Ca⁺⁺
- Cl⁻

Why a little physiology is good for you.

(7) 5 H's

- HYPOVOLEMIA
- HYPOXIA
- HYDROGEN IONS
- HYPOKALEMIA
- HYPERKALEMIA
- HYPOGLYCEMIA
- HYPOTHERMIA

(6) 5 T's

- TOXINS & TABLETS
- TAMPONADE, CARDIAC
- TENSION PNEUMOTHORAX
- THROMBOSIS, CORONARY
- THROMBOSIS, PULMONARY
- TRAUMA

A glowing blue ECG line is centered on a dark blue grid background. The line shows a regular rhythm with two prominent peaks and two deep troughs. The text 'Reading Rhythms 101' is overlaid on the line.

Reading Rhythms 101

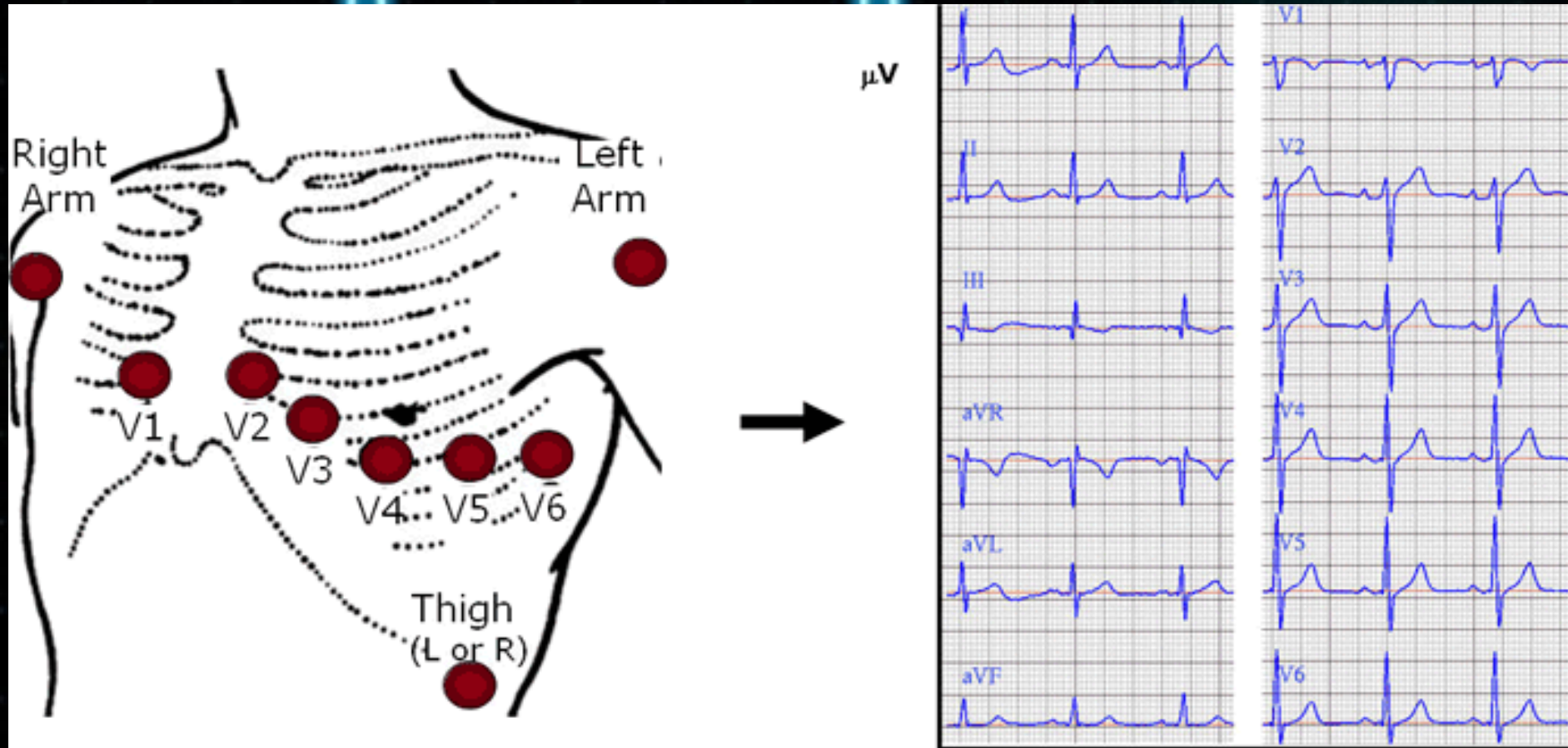
Rule 1: Live and conscious people
don't enjoy 200 Joules

The Leads

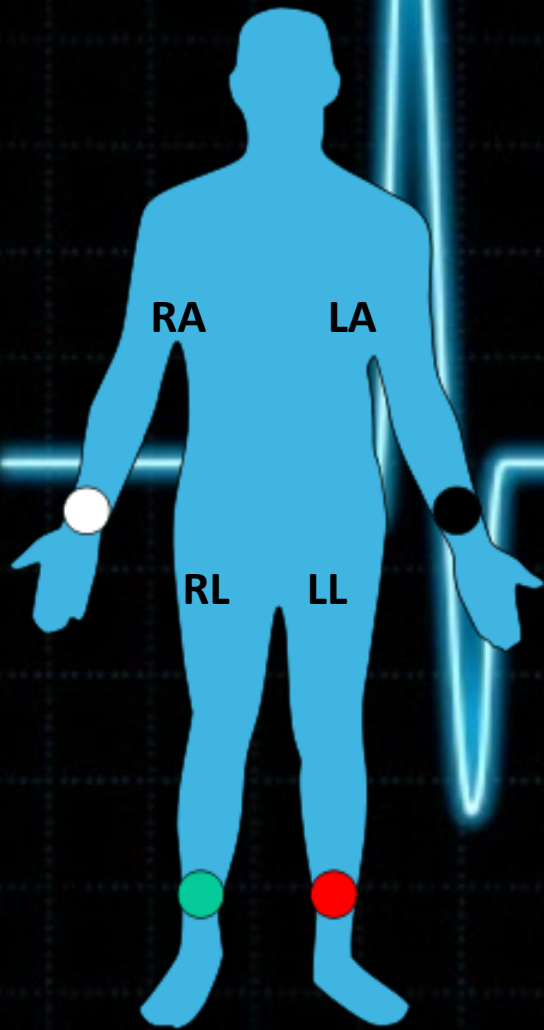
- 12 – lead
- 3 or 4 – lead
- Defibrillation Pads
- Emergency Paddles



12 - lead

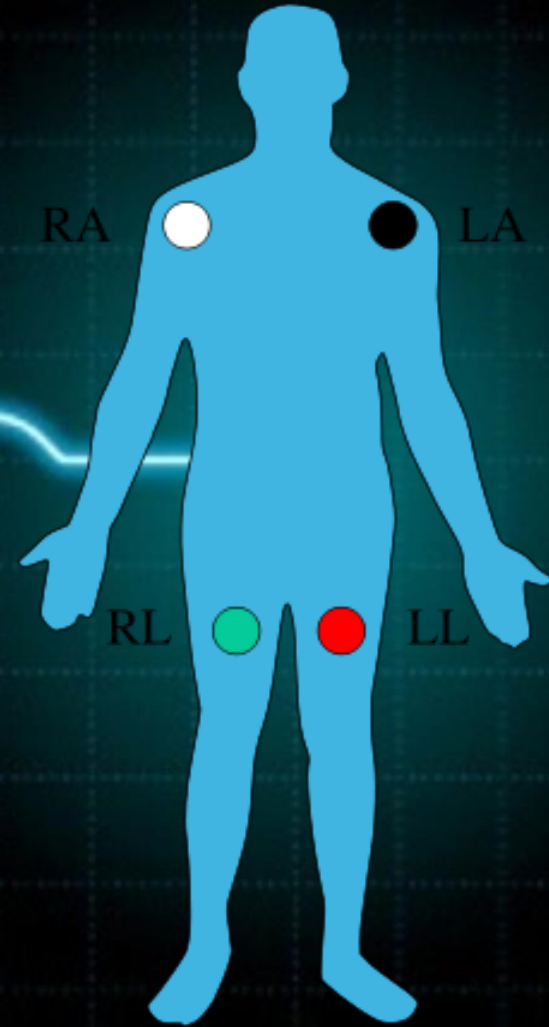


3 or 4 - lead

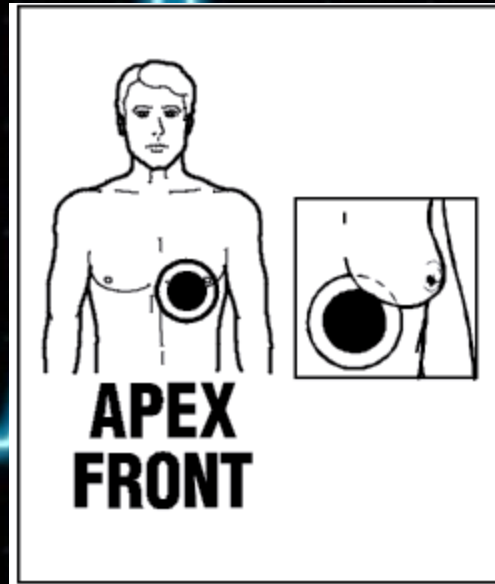
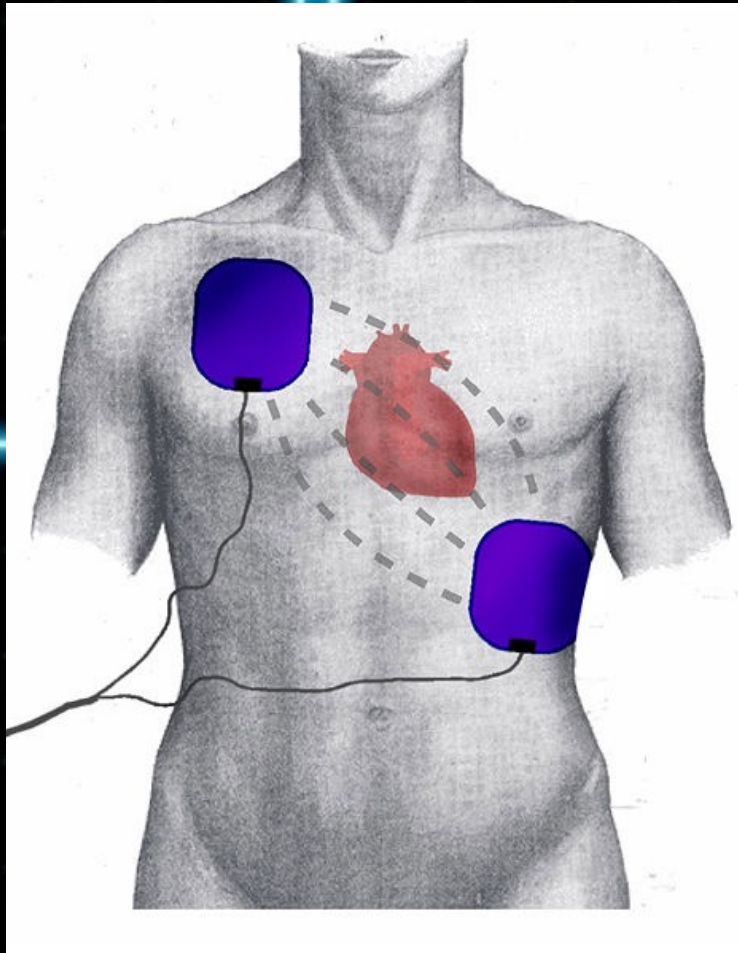


RA = Right Arm
LA = Left Arm
RL = Right Leg
LL = Left Leg

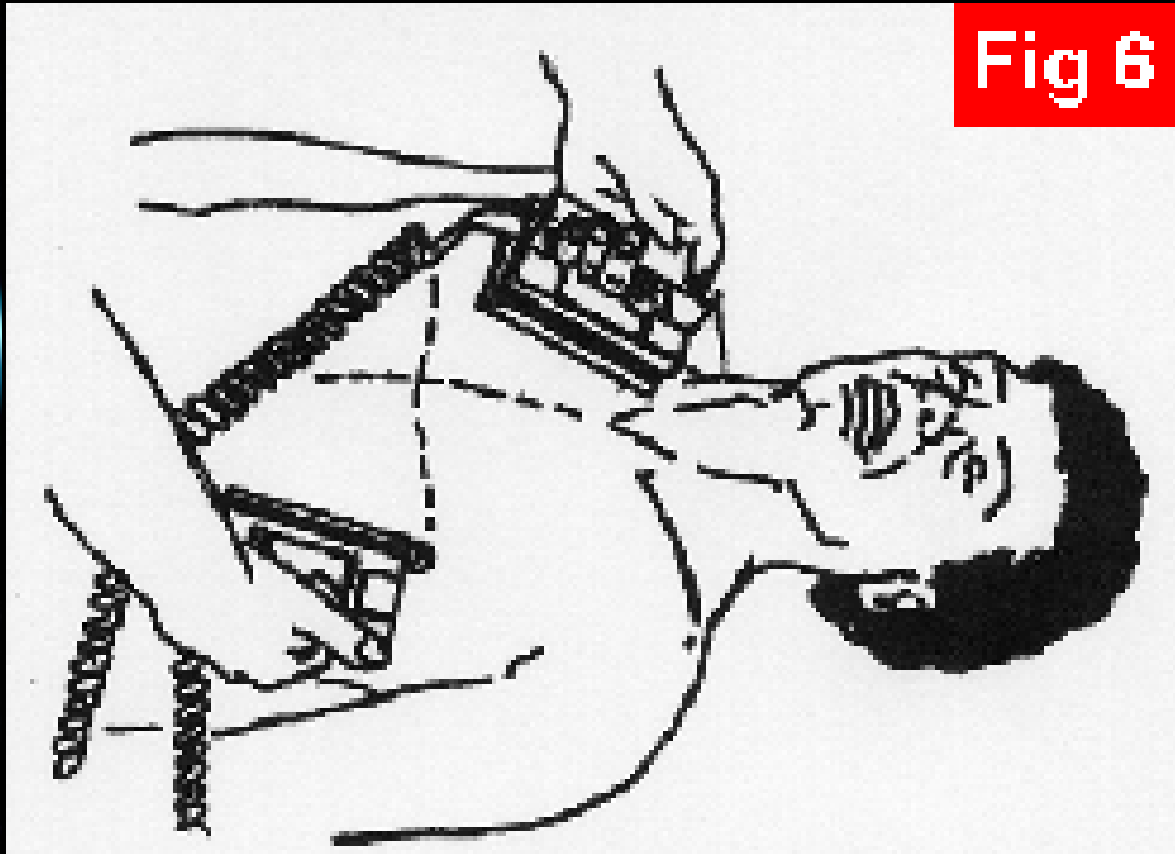
RA - White
LA - Black
RL - Green
LL - Red



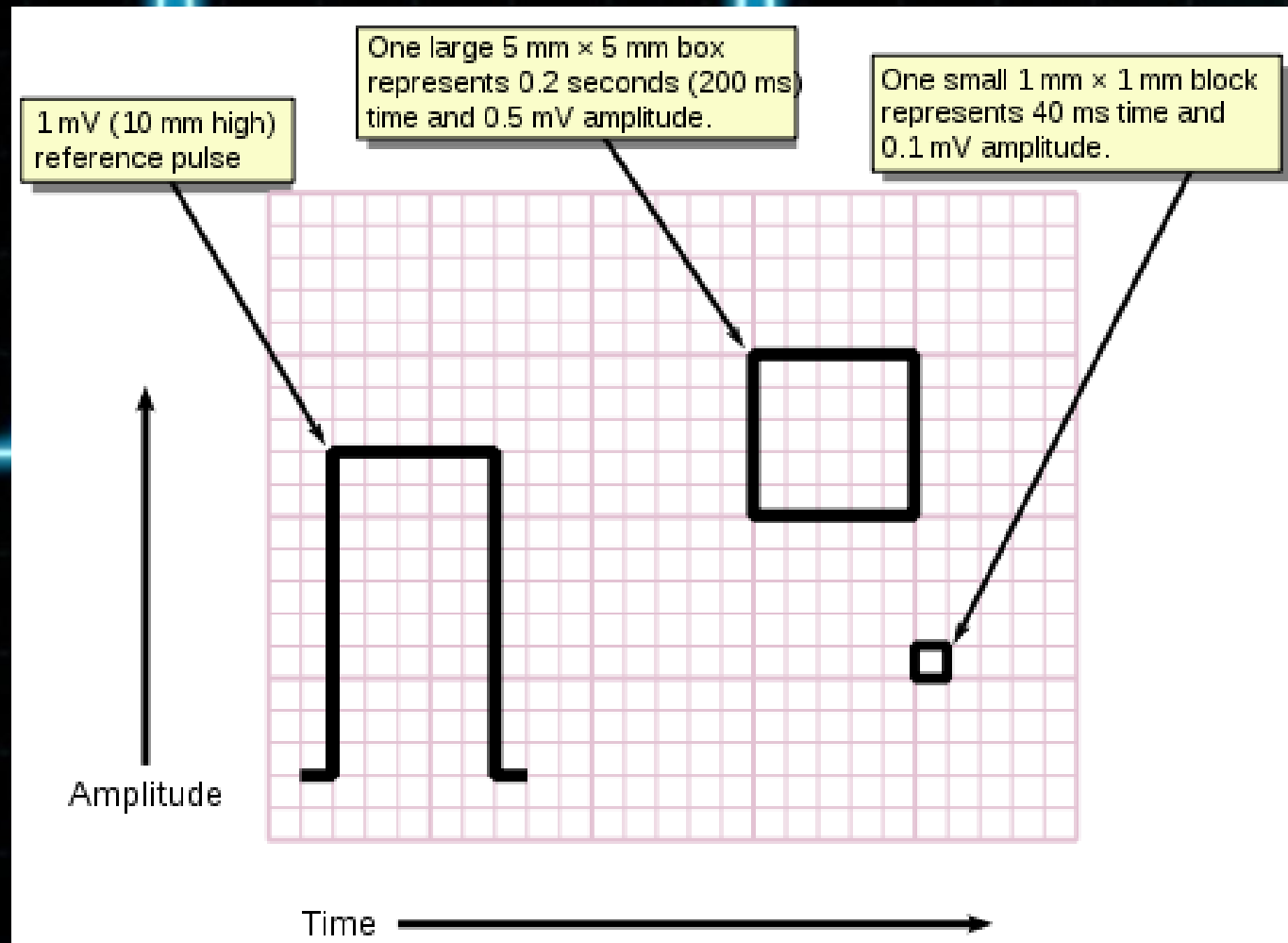
Defibrillation Pads



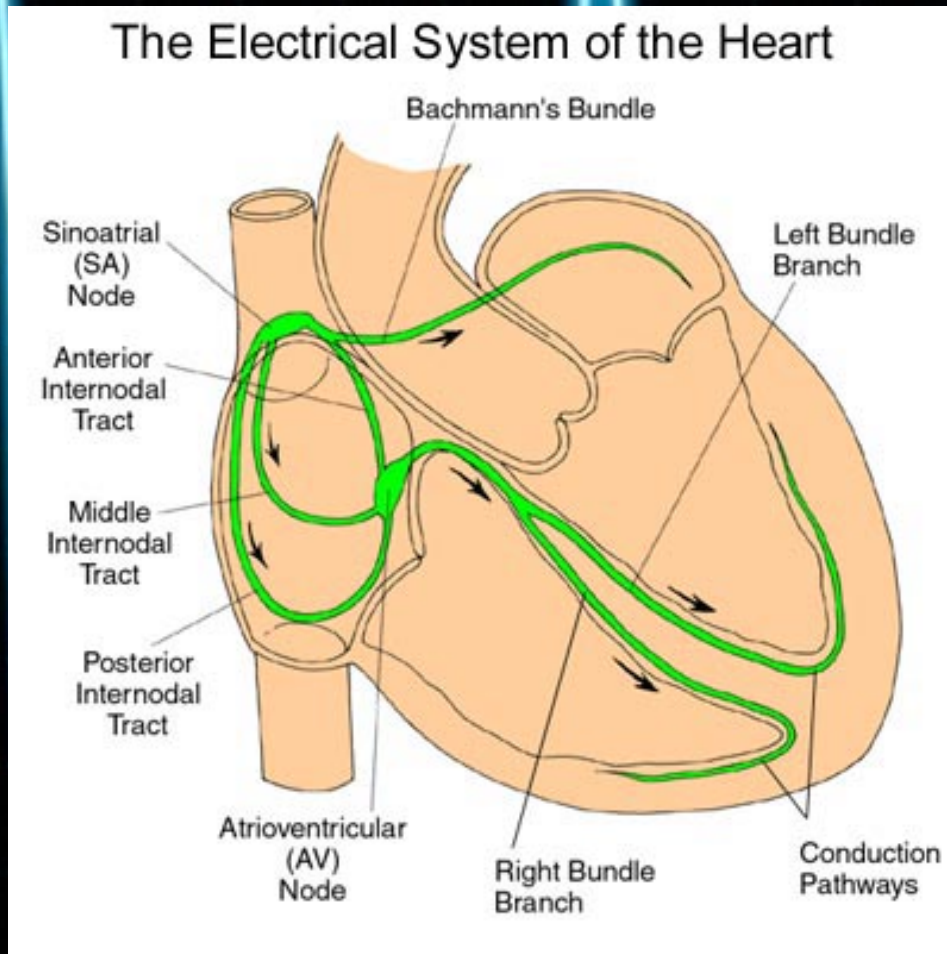
Emergency Paddles



The Paper



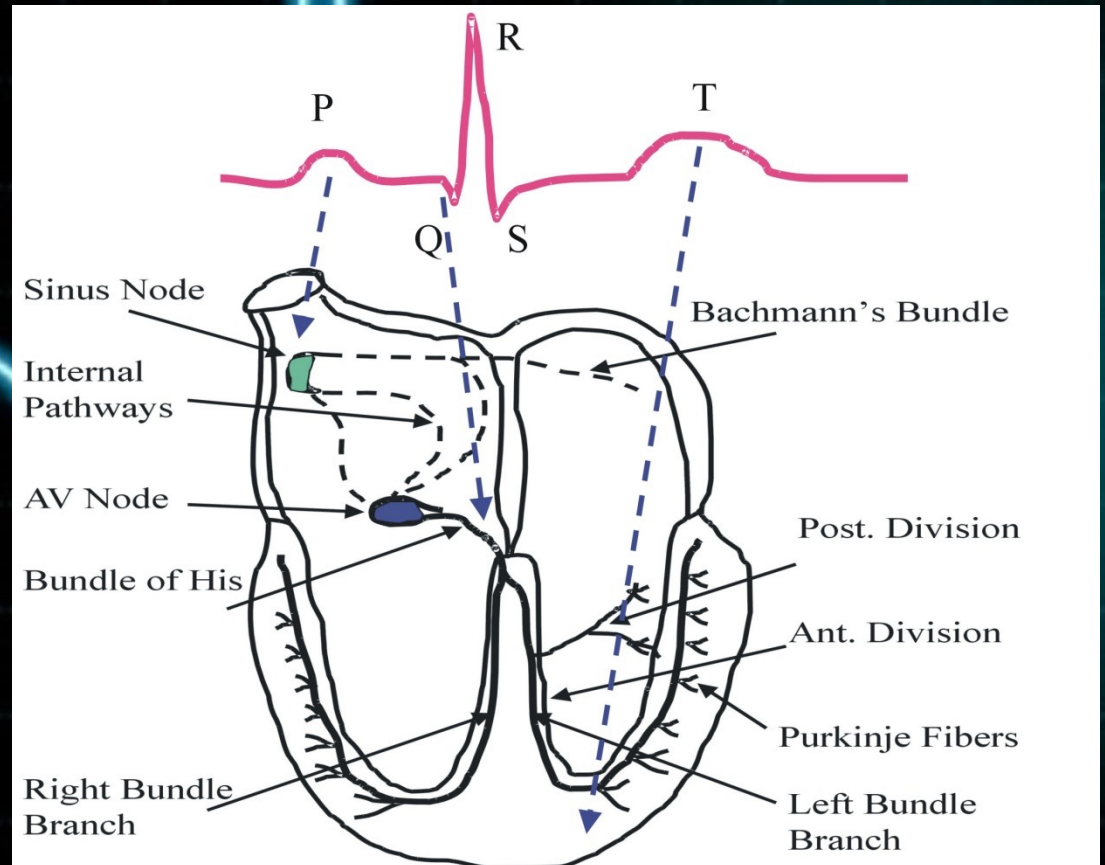
Anatomy



The Breakdown

5 keys to unlock any rhythm

1. Rate
 - 60 – 100 bpm
2. Rhythm
 - Reg. / Reg.
3. PR interval
 - .12 - .20 sec.
 - 1:1 ratio
4. QRS Complex
 - .08 - .10 sec.
5. ST Segment
 - .12 - .20 sec.
 - Elev. / Dep.



4 Origins

1. SA Node

– 60-100 bpm

2. Atria

– 60-100 bpm

3. AV Junction

– 40-60 bpm

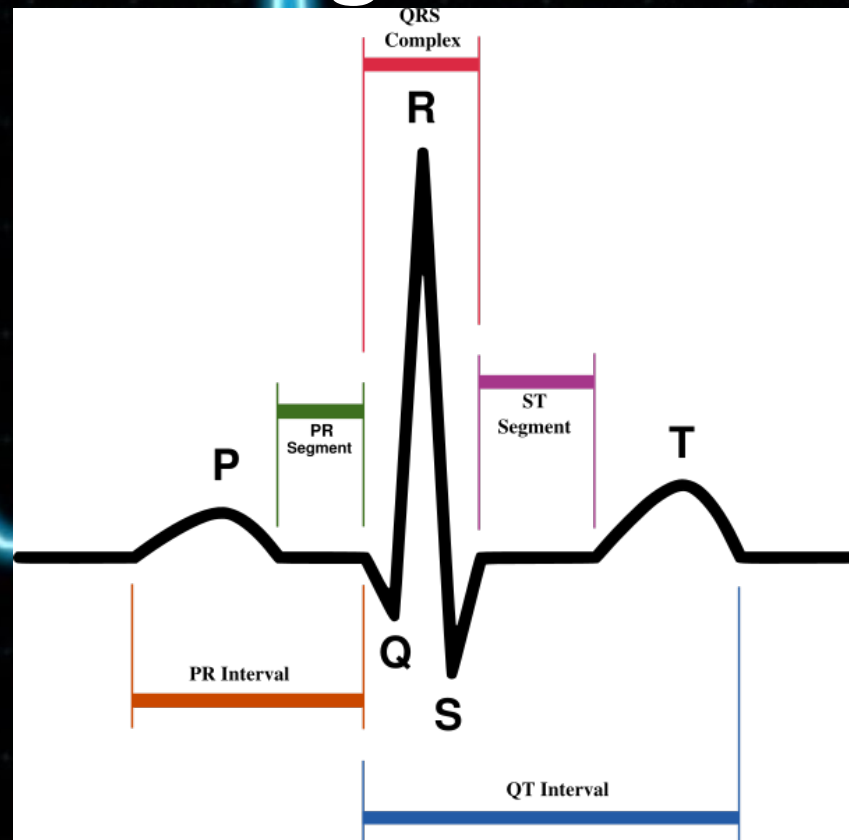
4. Ventricles

– 20-40 bpm



Waves and Segments

1. Rate
 - 60 – 100 bpm
2. Rhythm
 - Reg. / Reg.
3. PR interval
 - .12 - .20 sec.
 - 1:1 ratio
4. QRS Complex
 - .08 - .10 sec.
5. ST Segment
 - .12 - .20 sec.
 - Elev. / Dep.

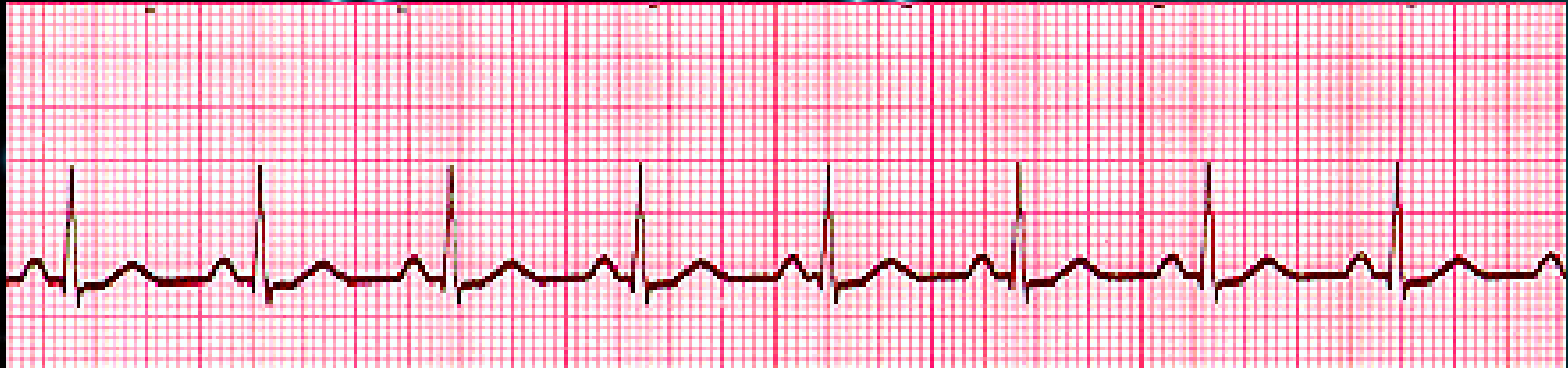


Sinus Rhythms (SA Node)

- Normal Sinus Rhythm
- Sinus Bradycardia
- Sinus Tachycardia
- Sinus Arrhythmia

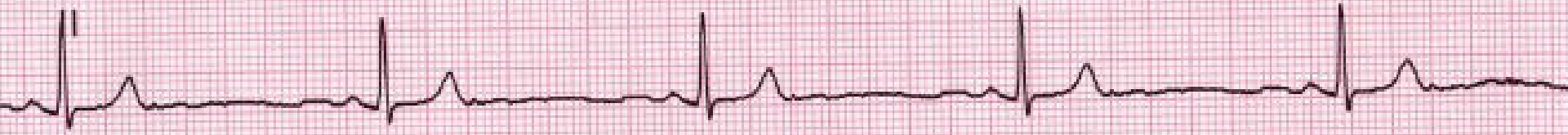


Normal Sinus Rhythm

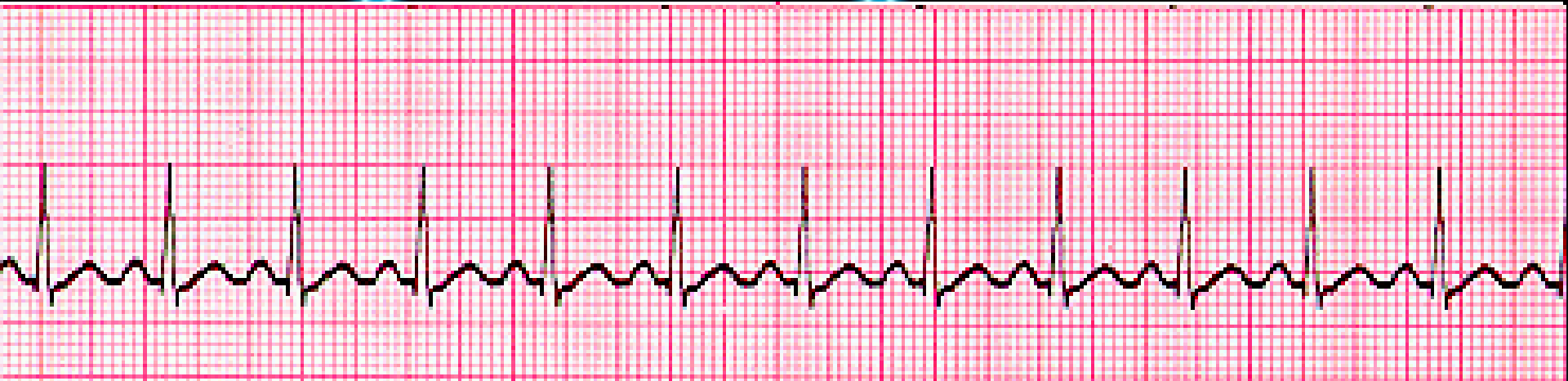


Sinus Bradycardia

ID#: 050107213625 1May07 21:42:52 HR:37

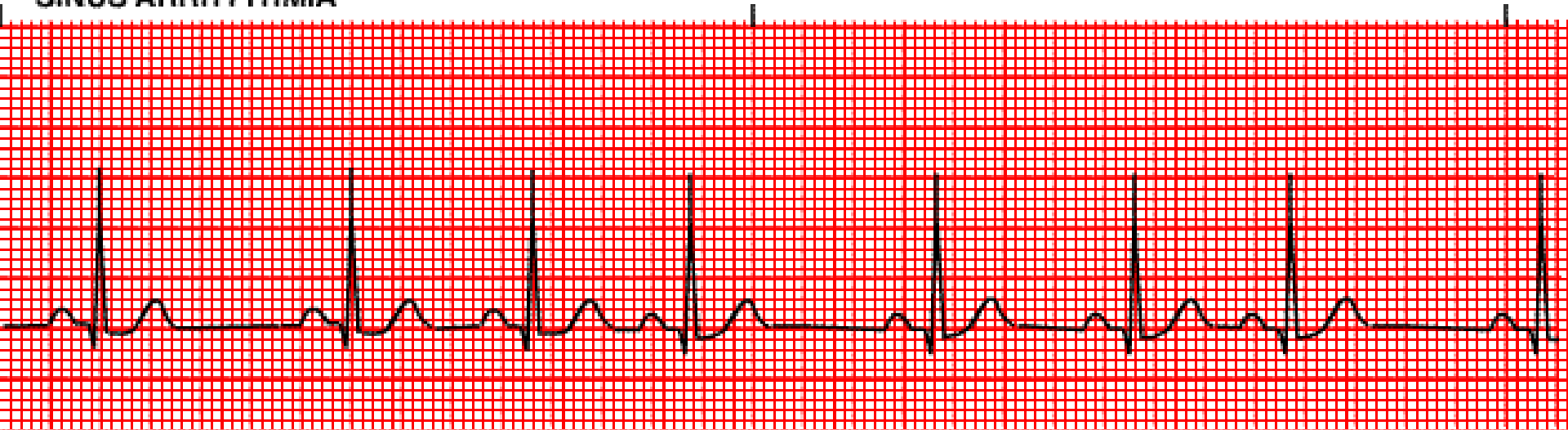


Sinus Tachycardia



Sinus Arrhythmia

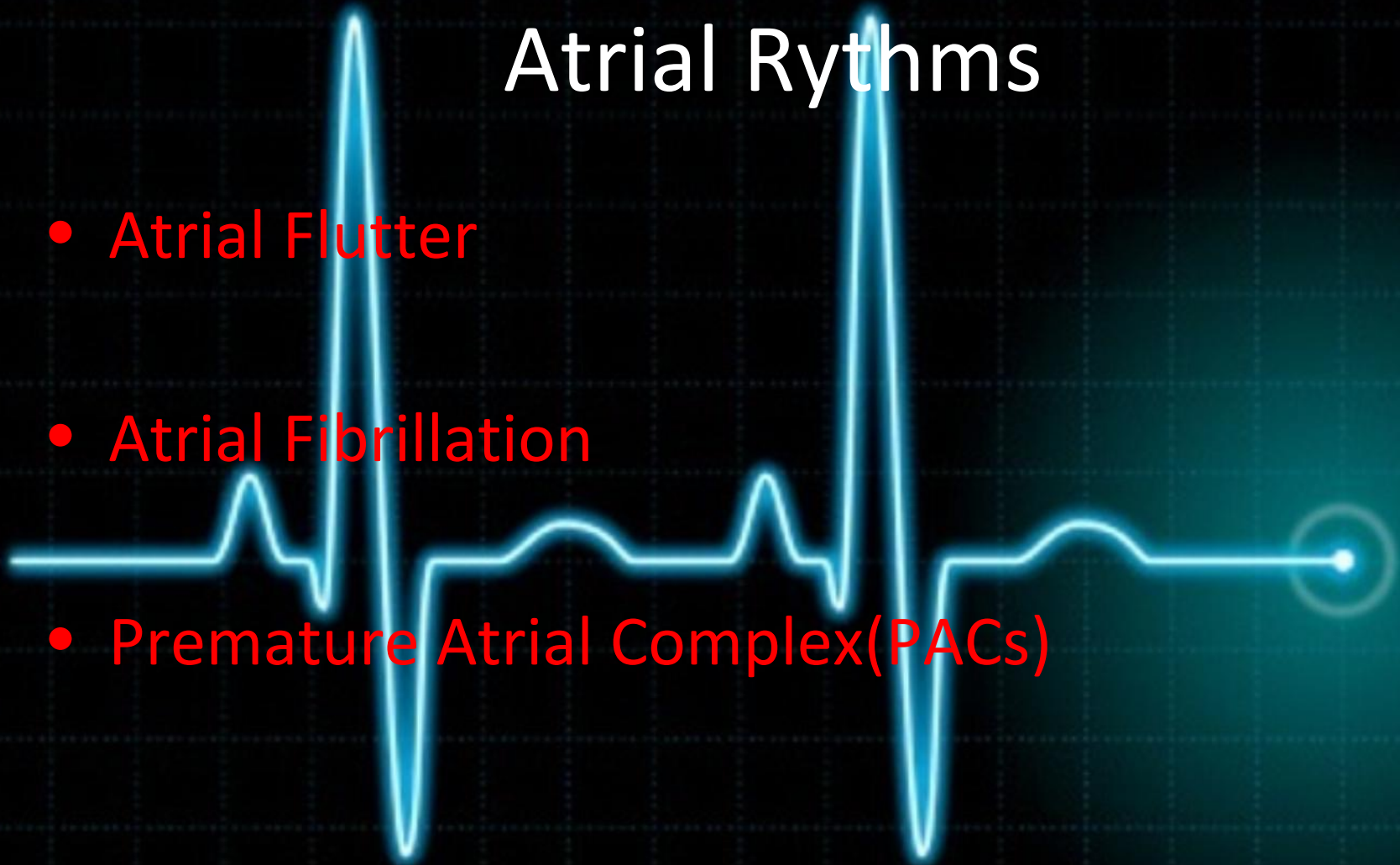
SINUS ARRHYTHMIA



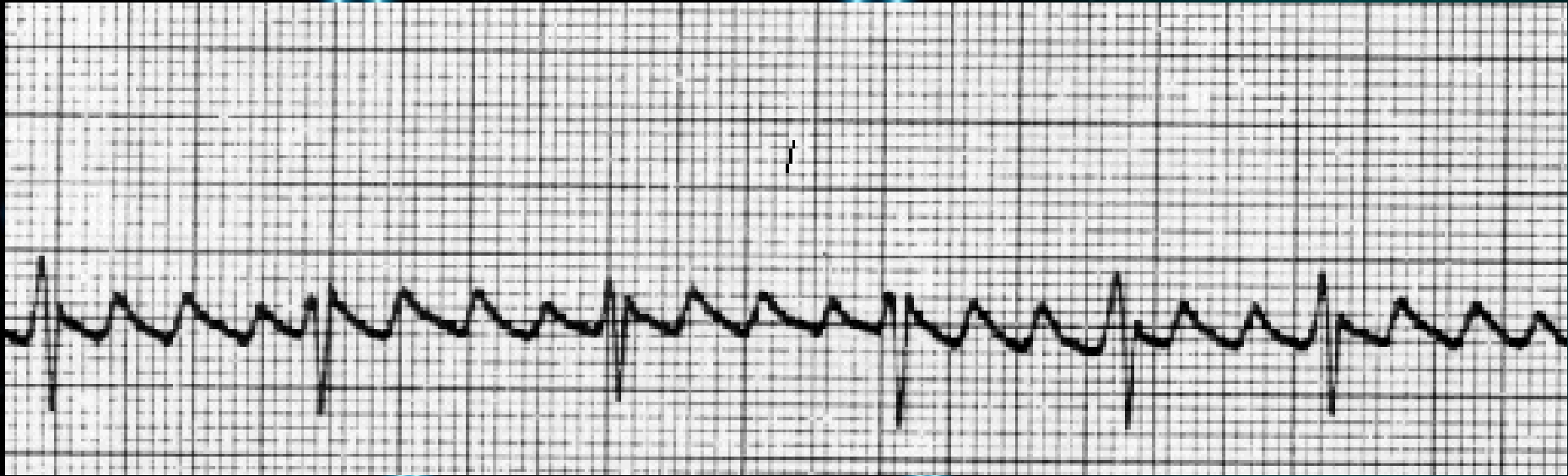
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Atrial Rythms

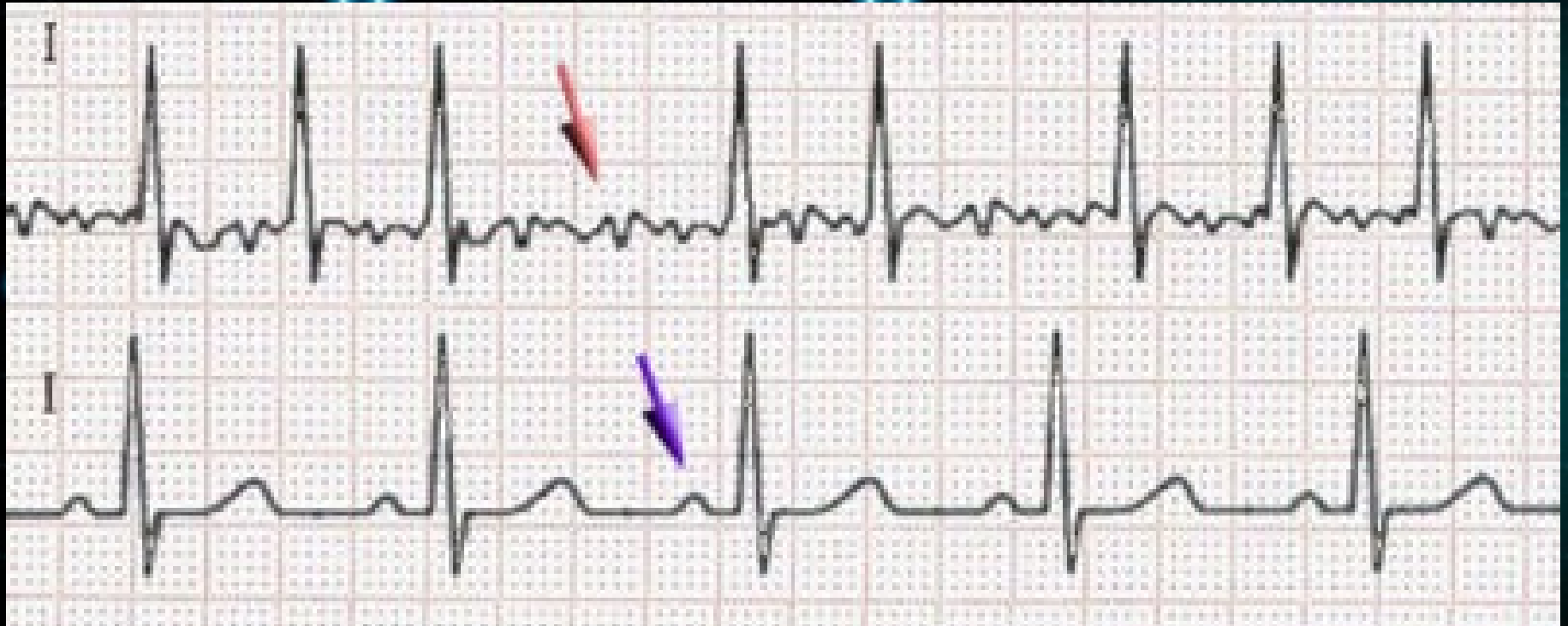
- Atrial Flutter
- Atrial Fibrillation
- Premature Atrial Complex(PACs)



Atrial Flutter



Atrial Fibrillation



Premature Atrial Complex(PAC)

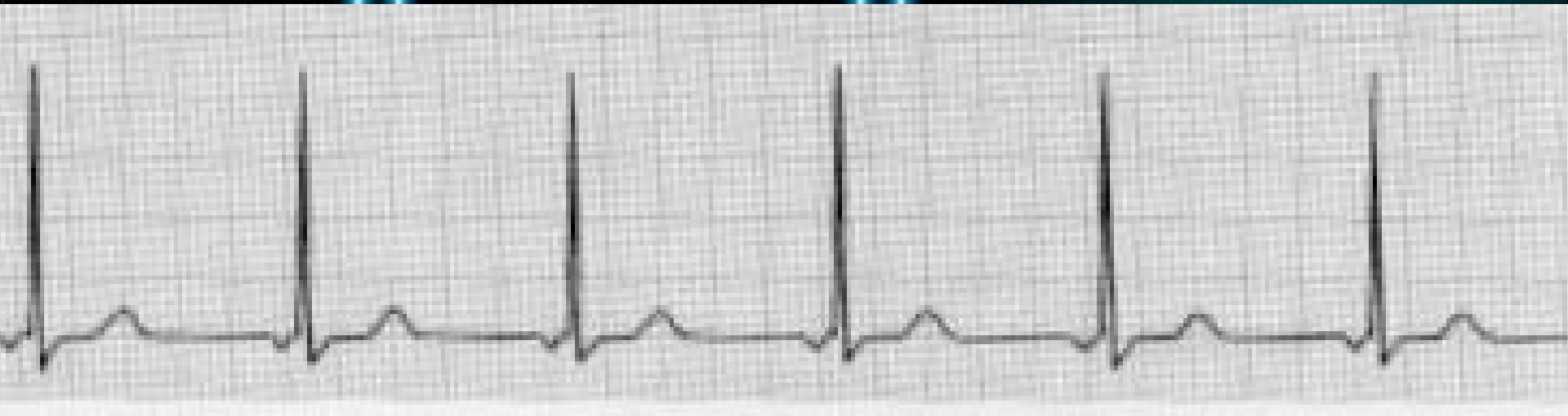


Junctional Rhythms (AV Junction)

- Junctional Escape Rhythm (Bradycardia)
- Accelerated Junctional Rhythm
- Junctional Tachycardia
- Premature Junctional Complex



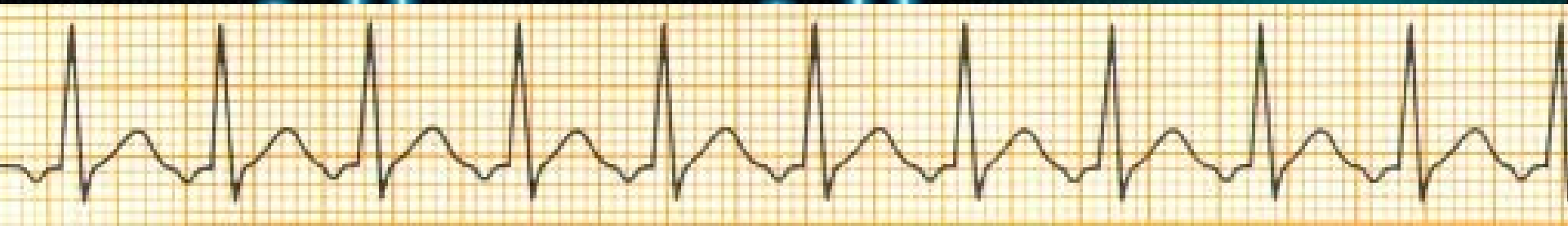
Junctional Escape Rhythm



Accelerated Junctional Rhythm



Junctional Tachycardia



Premature Junctional Complex

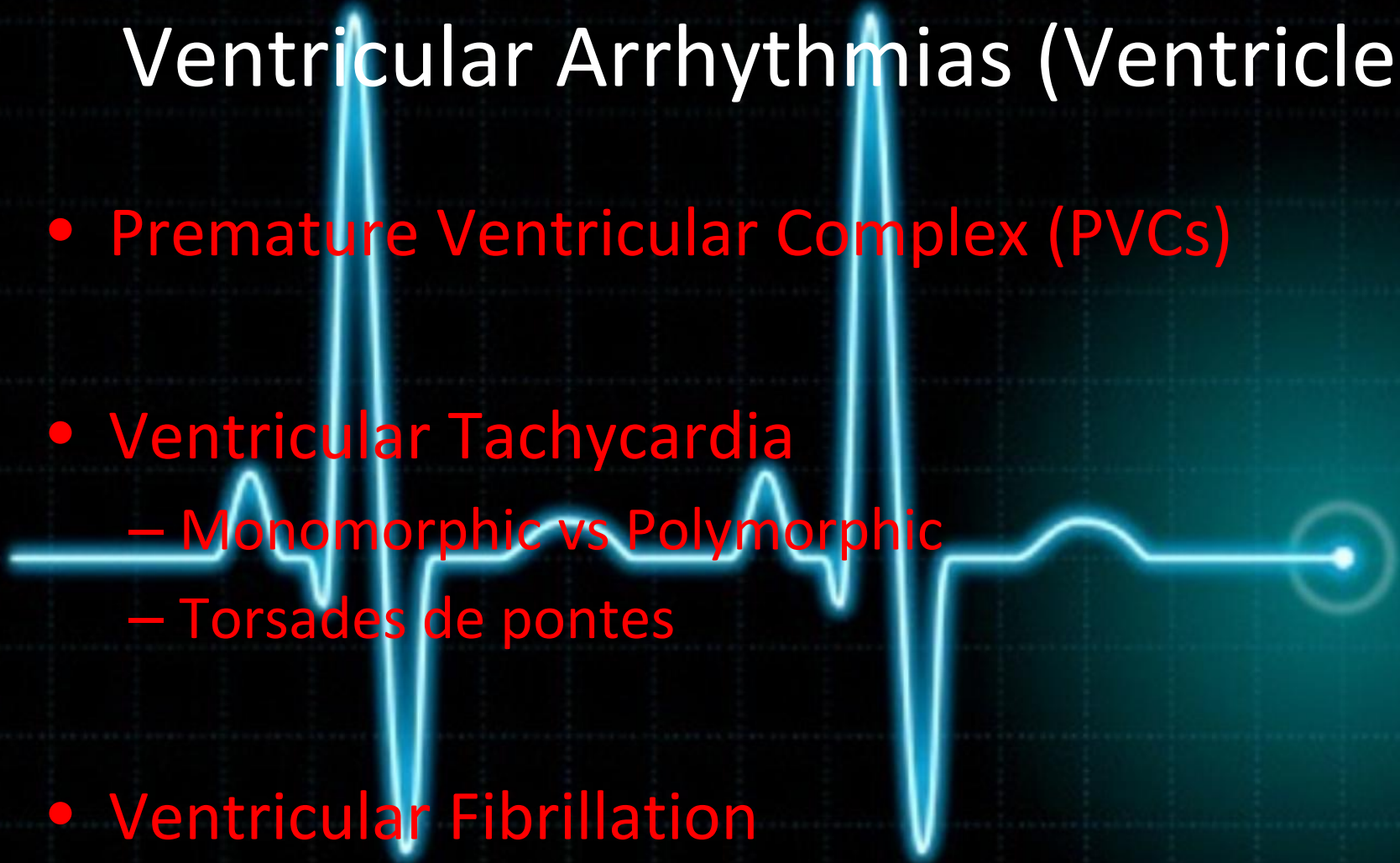
PREMATURE JUNCTIONAL CONTRACTION



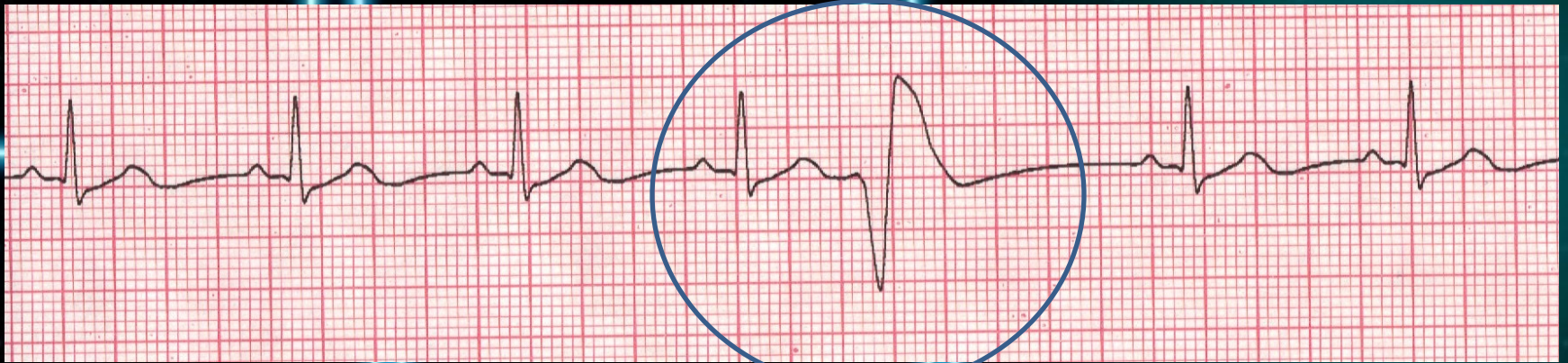
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Ventricular Arrhythmias (Ventricle)

- Premature Ventricular Complex (PVCs)
- Ventricular Tachycardia
 - Monomorphic vs Polymorphic
 - Torsades de pontes
- Ventricular Fibrillation
 - Coarse vs Fine



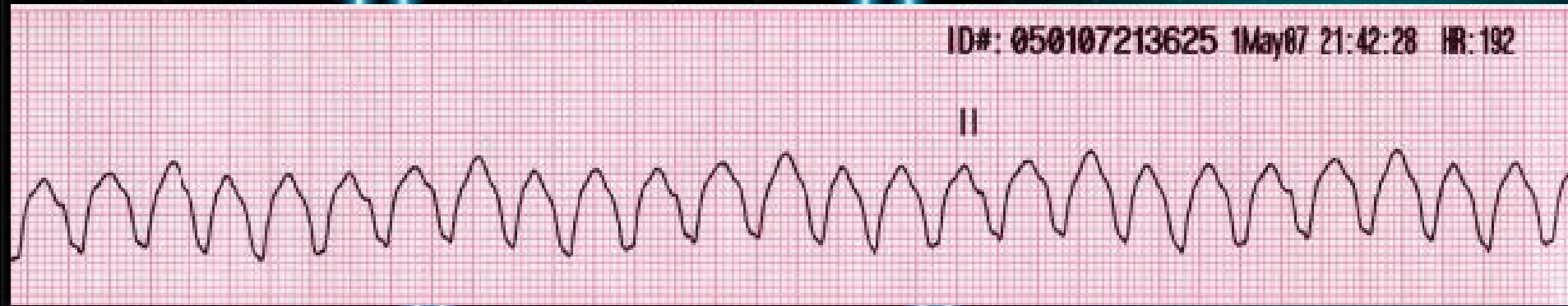
Premature Ventricular Complex (PVCs)



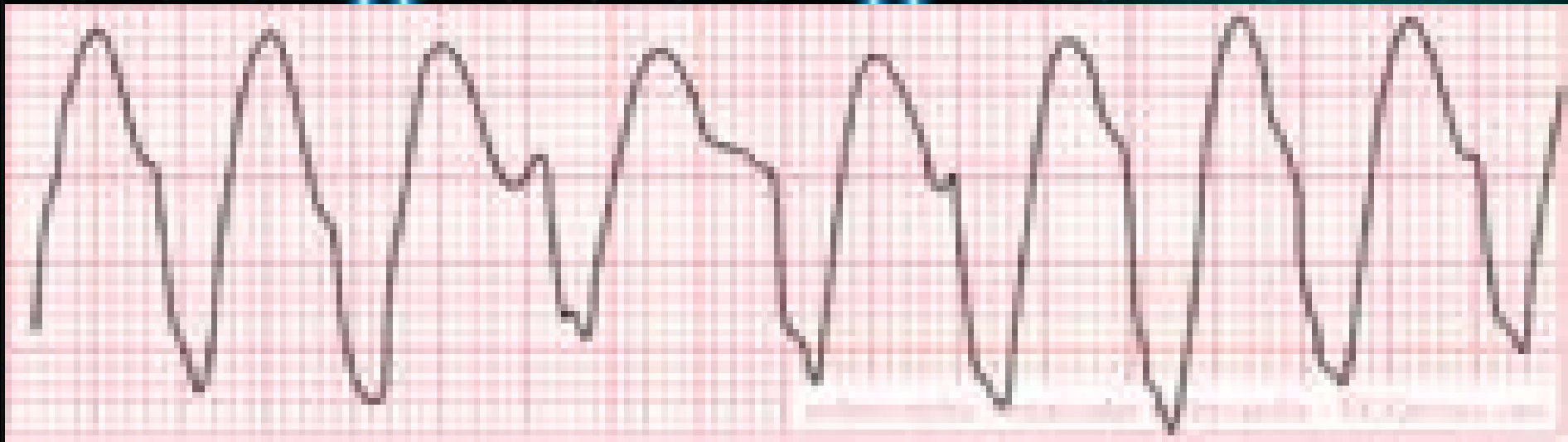
Monomorphic Ventricular Tachycardia (V-tach)

ID#: 050107213625 1May87 21:42:28 HR:192

II

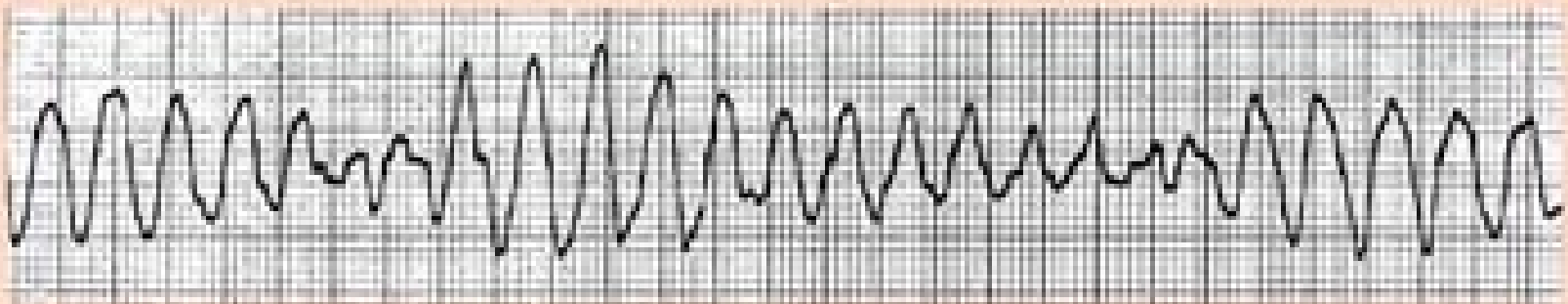


Polymorphic Ventricular Tachycardia (V-tach)

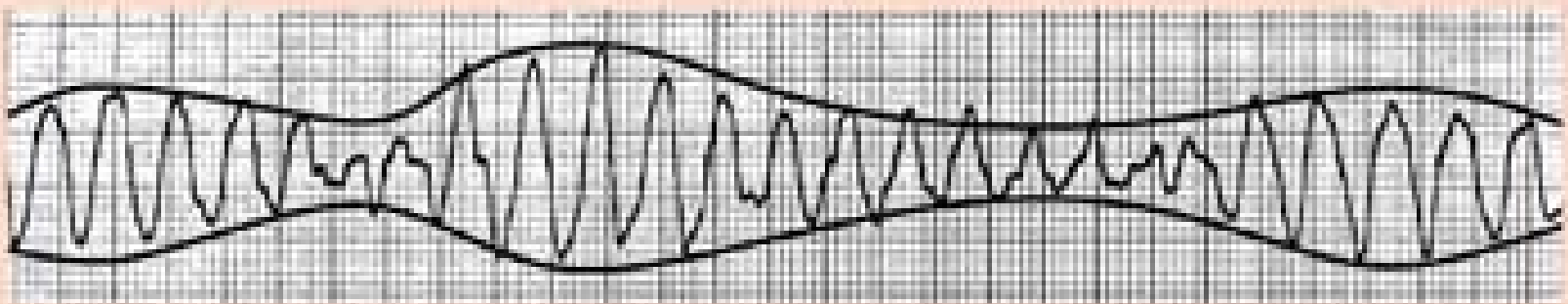


Torsades de Pointes

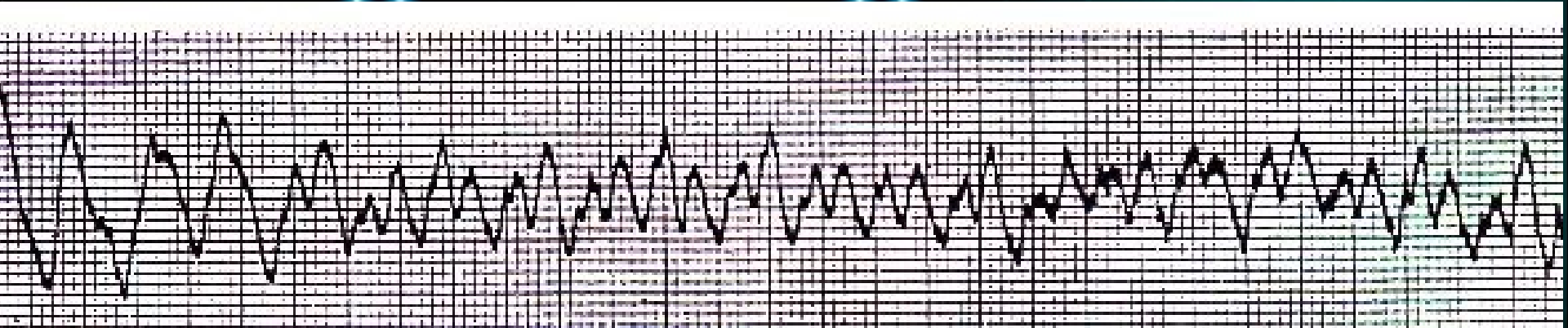
Torsades de Pointes



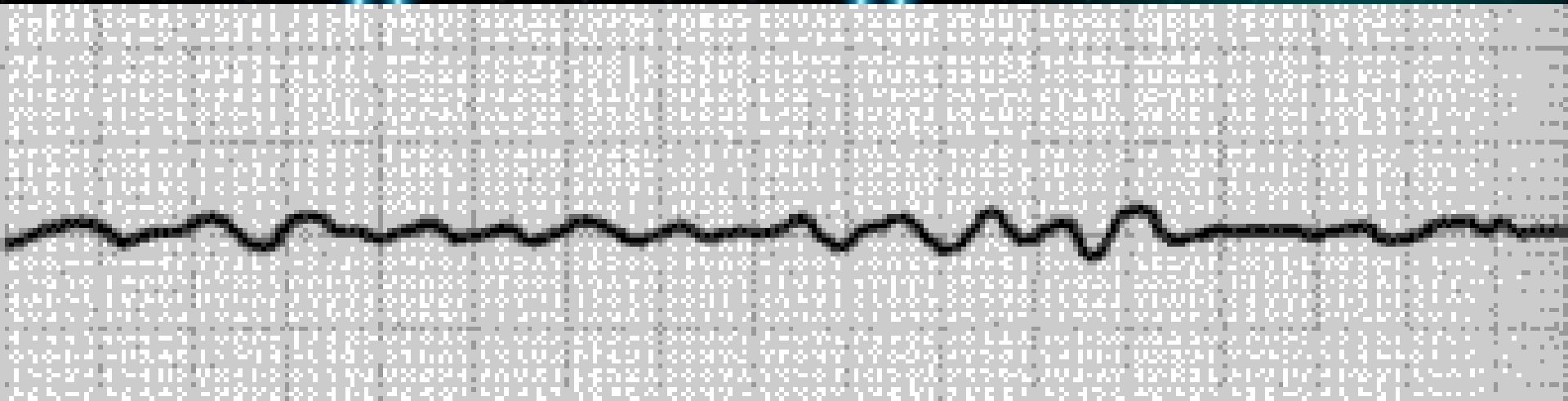
outline looks like a party streamer



Coarse Ventricular Fibrillation (V-fib)



Fine Ventricular Fibrillation (V-fib)



Other Rhythms

- Atrioventricular Blocks

- 1st Degree

- 2nd Degree

- type 1

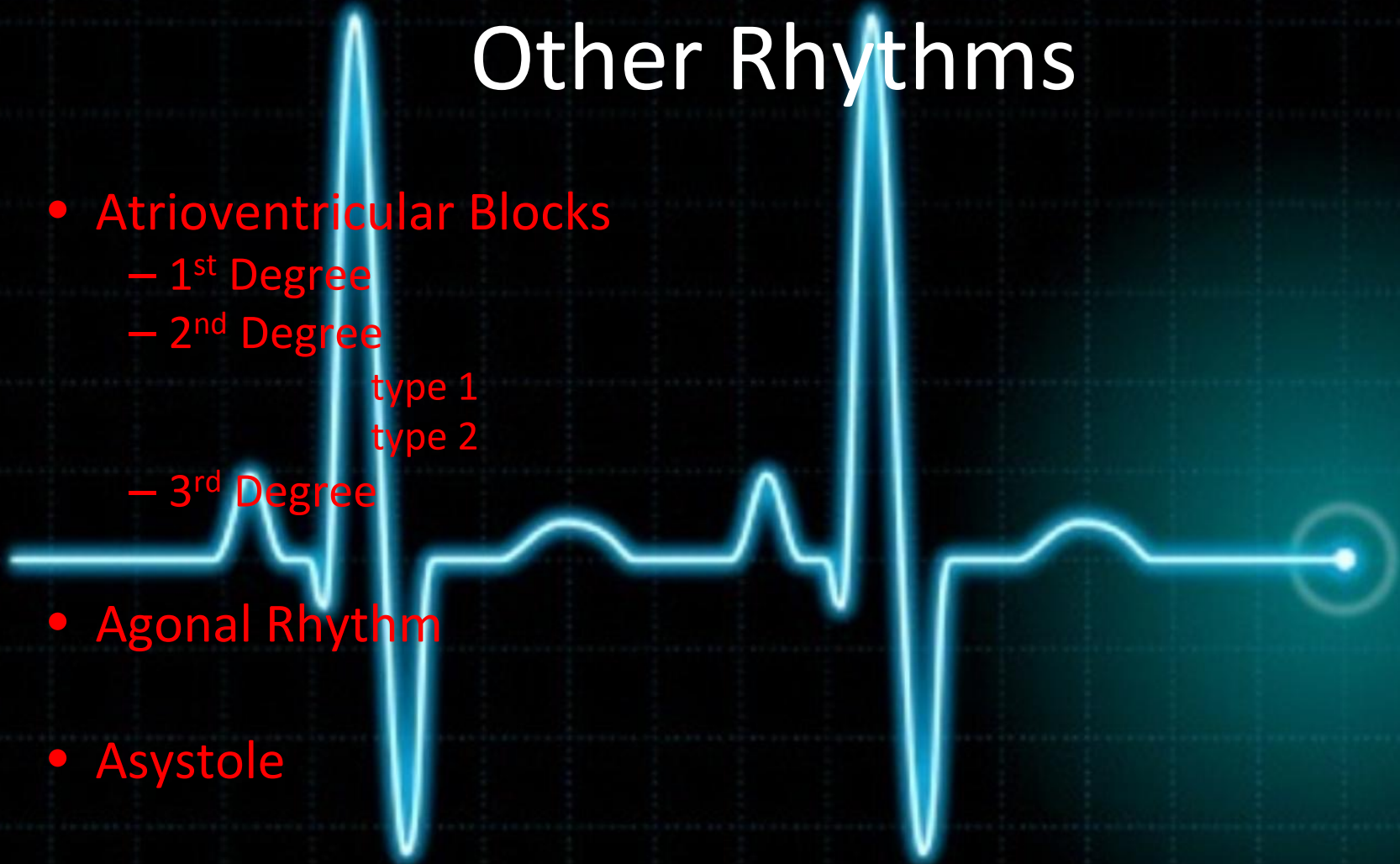
- type 2

- 3rd Degree

- Agonal Rhythm

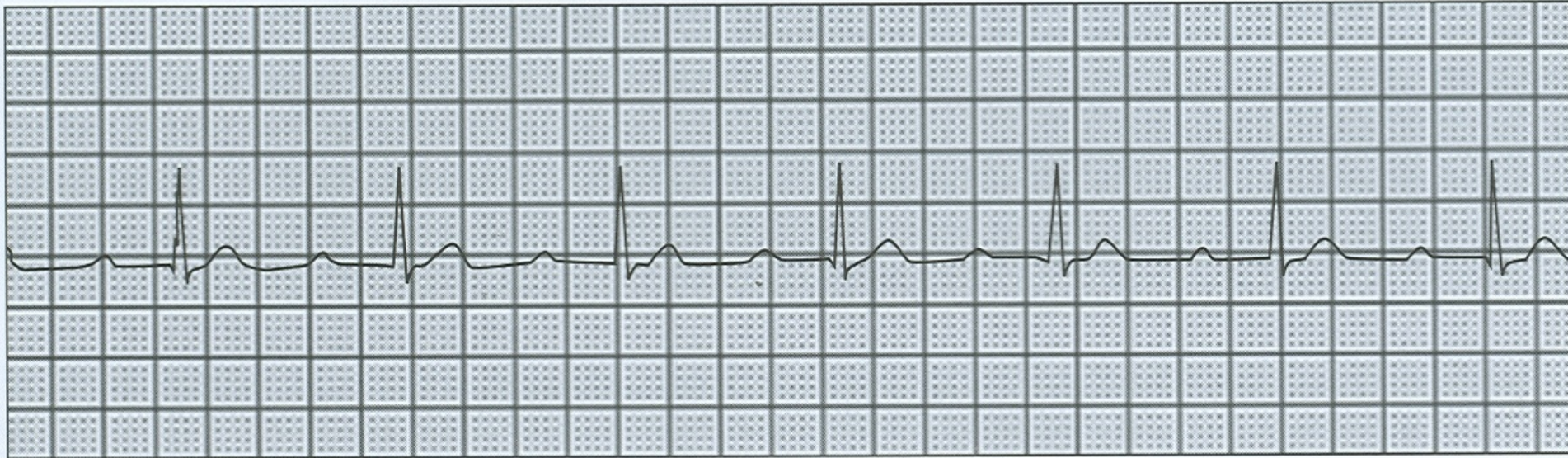
- Asystole

- Pulseless Electrical Activity



1st Degree AV Block

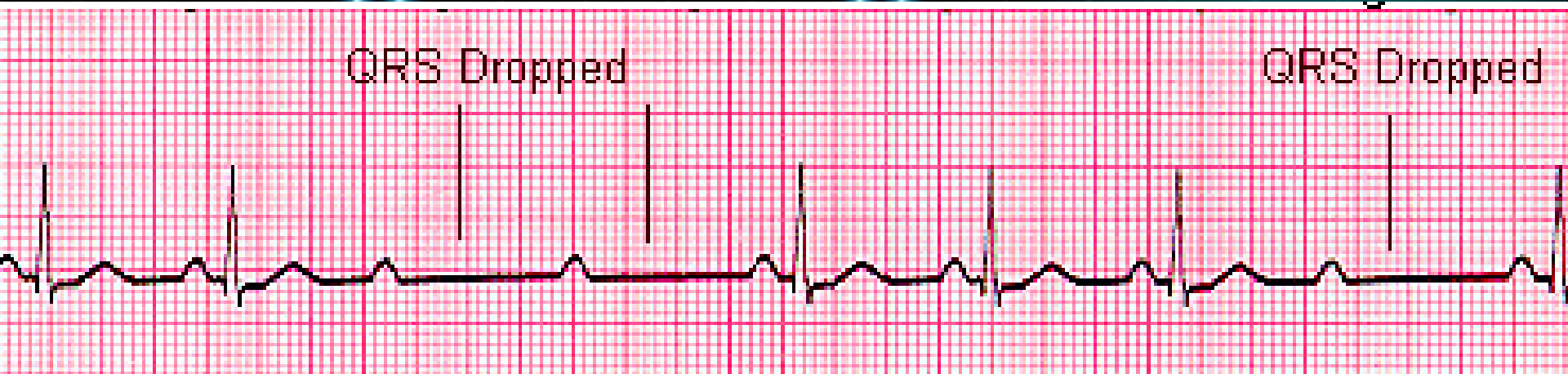
First-Degree AV Block



2nd Degree AV Block type 1 (Mobitz I / Wenkeback)

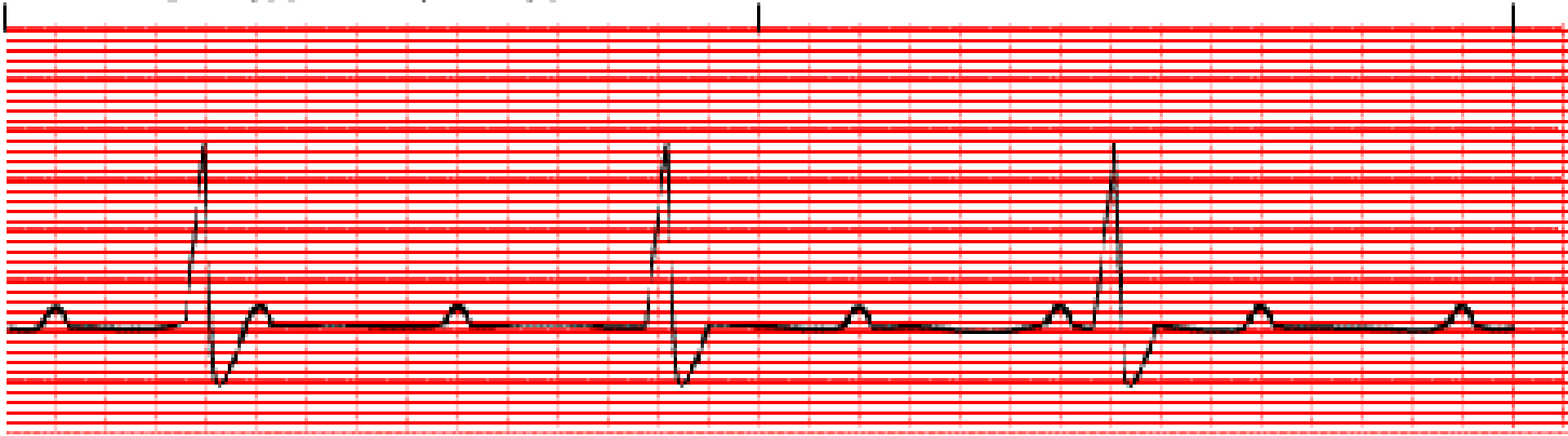


2nd Degree AV Block type 2 (Mobitz II / Hay)



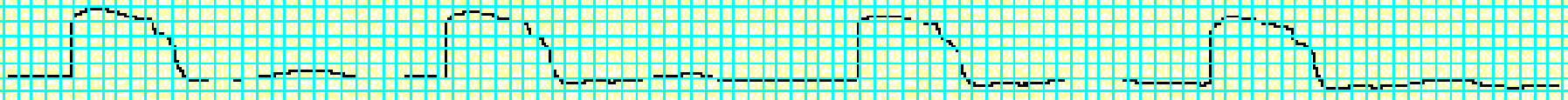
3rd Degree AV Block (AV Dissociation)

THIRD DEGREE (COMPLETE) AV BLOCK

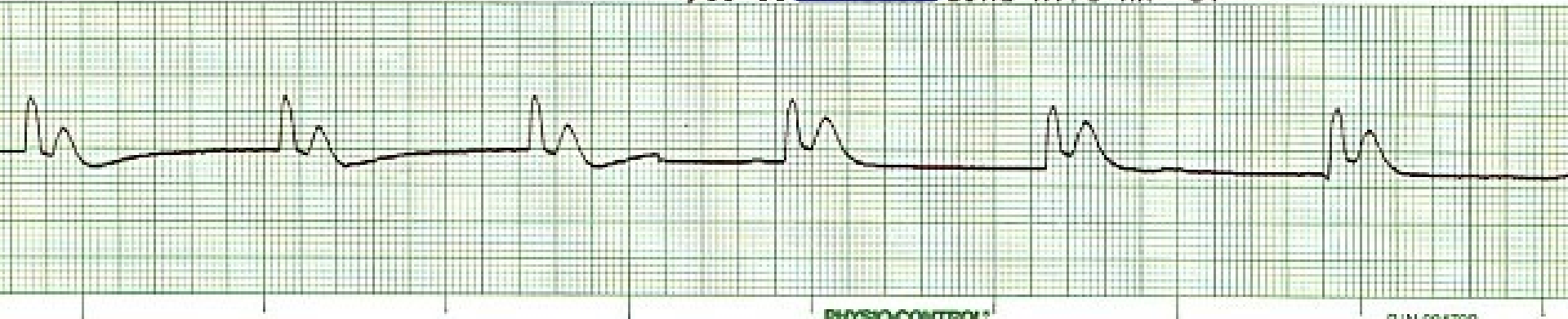


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Agonal Rhythm (Near Death or Swirling the Drain)



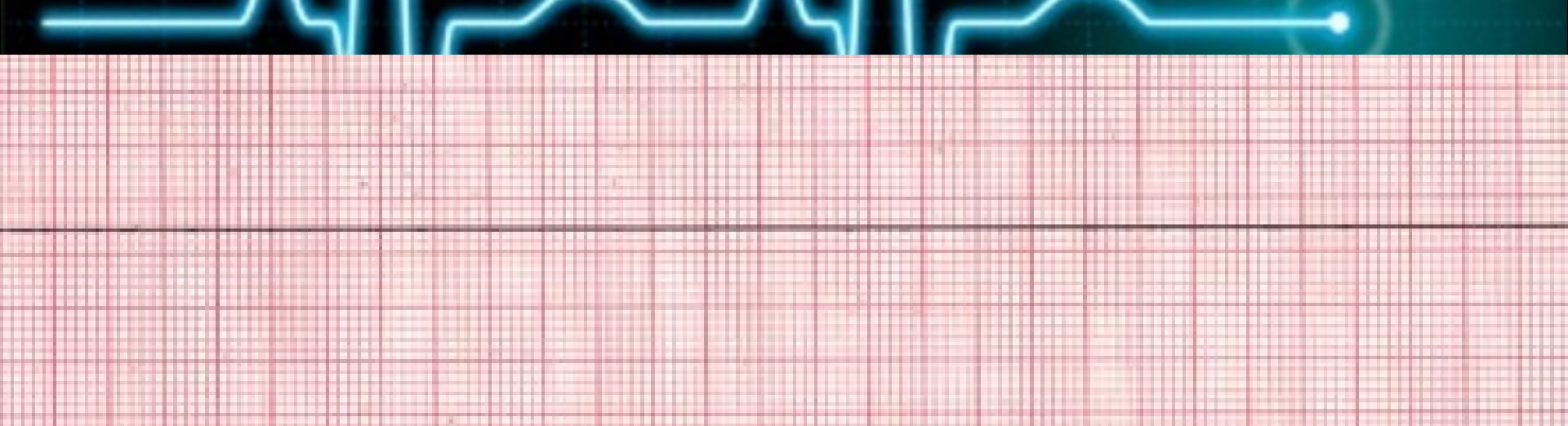
▶09:00 DIAG X1.0 HR= 31



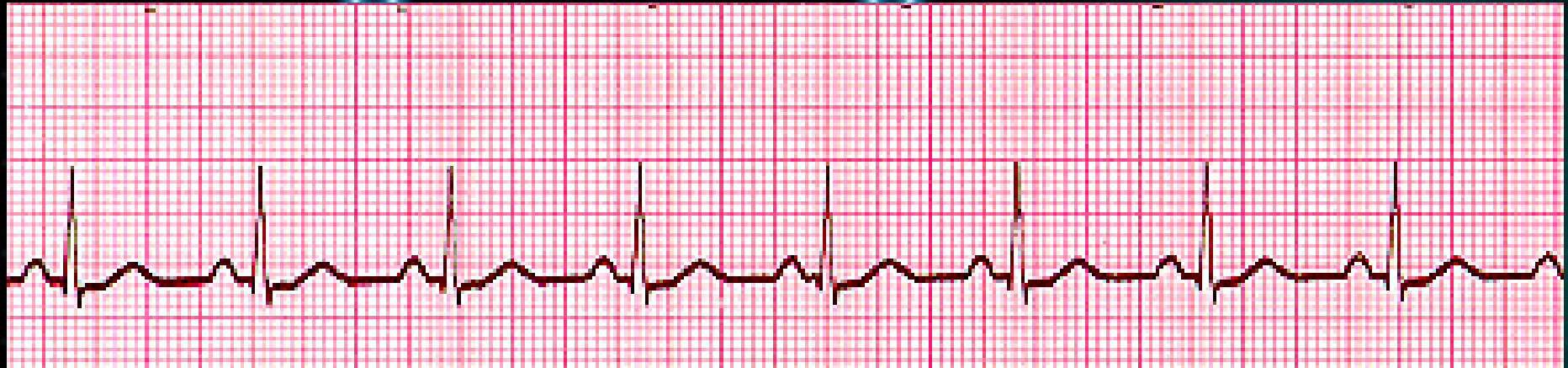
PHYSIO CONTROL

PHYSIO CONTROL

Asystole (Death)



Pulseless Electrical Activity (PEA)





Quick Tips

Know your 5 H's and 5

Memorize the 5 keys to breaking down any rhythm.

Know your general Anatomy

Remember these numbers-

300-150-100-75-60-50

But most important:

ABC's, BLS, Check Your
Equipment and Teamwork!!

