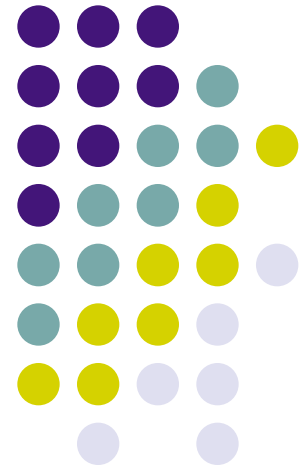


# Arrhythmias in Cardiac Emergencies – The ECG & Treatment You Must Know

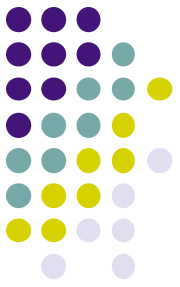
心臟緊急事故中的心律不正：心電圖及治療你要知

2013 Symposium on New Advancements in Cardiovascular  
Diseases Accompanied with HK and Macau Forum on Arrhythmia  
25 August 2013 Macau

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Dept of Medicine & Geriatrics  
Princess Margaret Hospital  
Hong Kong



# Cardiac Arrhythmias in Cardiac Emergencies



## Arrhythmias that warrant urgent or immediate treatment

- Potentially life-threatening
- Haemodynamic compromise
- Very symptomatic

## (1) Bradyarrhythmias (Too Slow)



## (2) Tachyarrhythmias (Too Fast)

- Wide-complex tachycardia (WCT)
- Narrow-complex tachycardia (NCT)

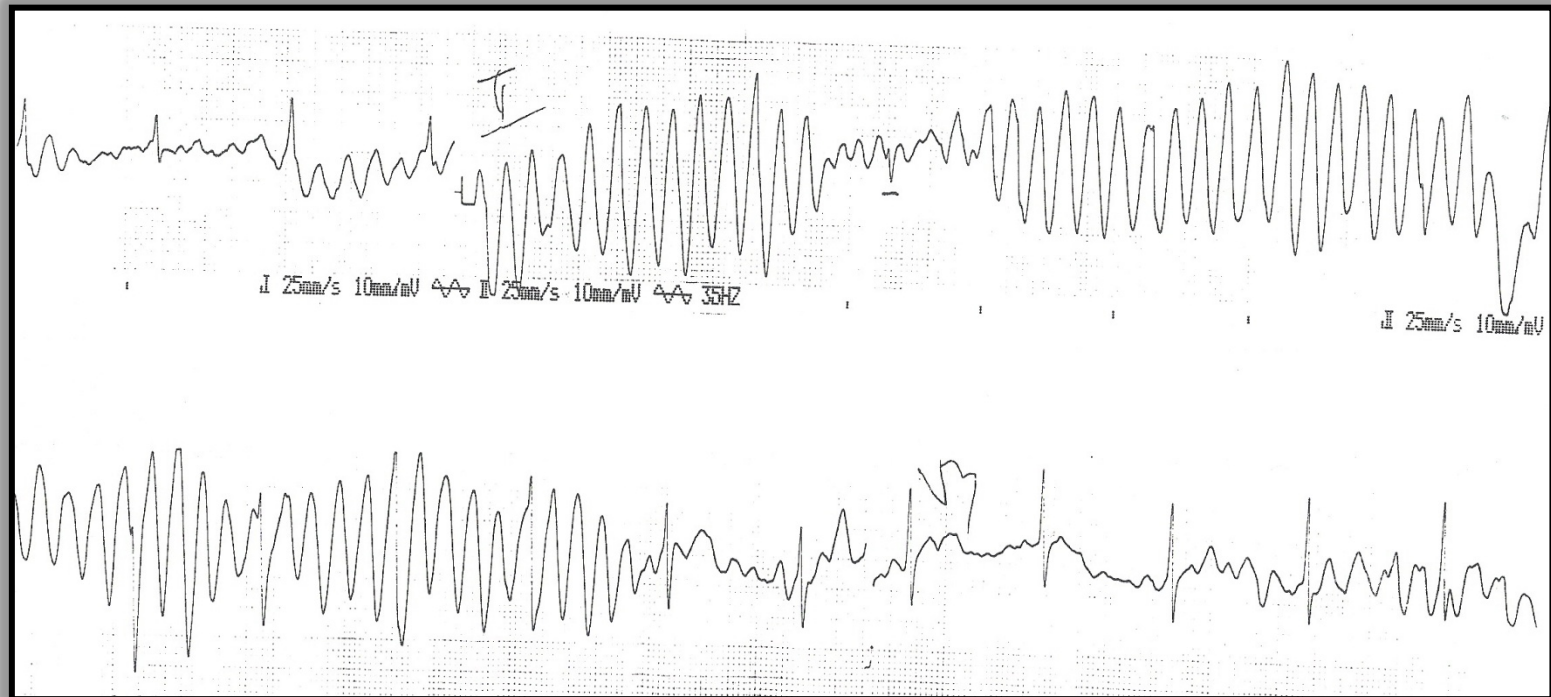


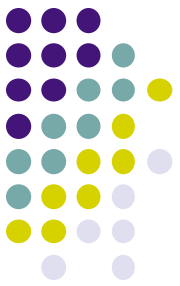
# A gentleman with a Wide-Complex Tachycardia

- M/ 60
- Admitted Medical Ward because of non-specific chest discomfort
- Cardiac monitor shows WCT

- A. IV Amiodarone ?**
- B. Defibrillation ?**
- C. Others ?**

**What is your ECG Dx & immediate Treatment ?**



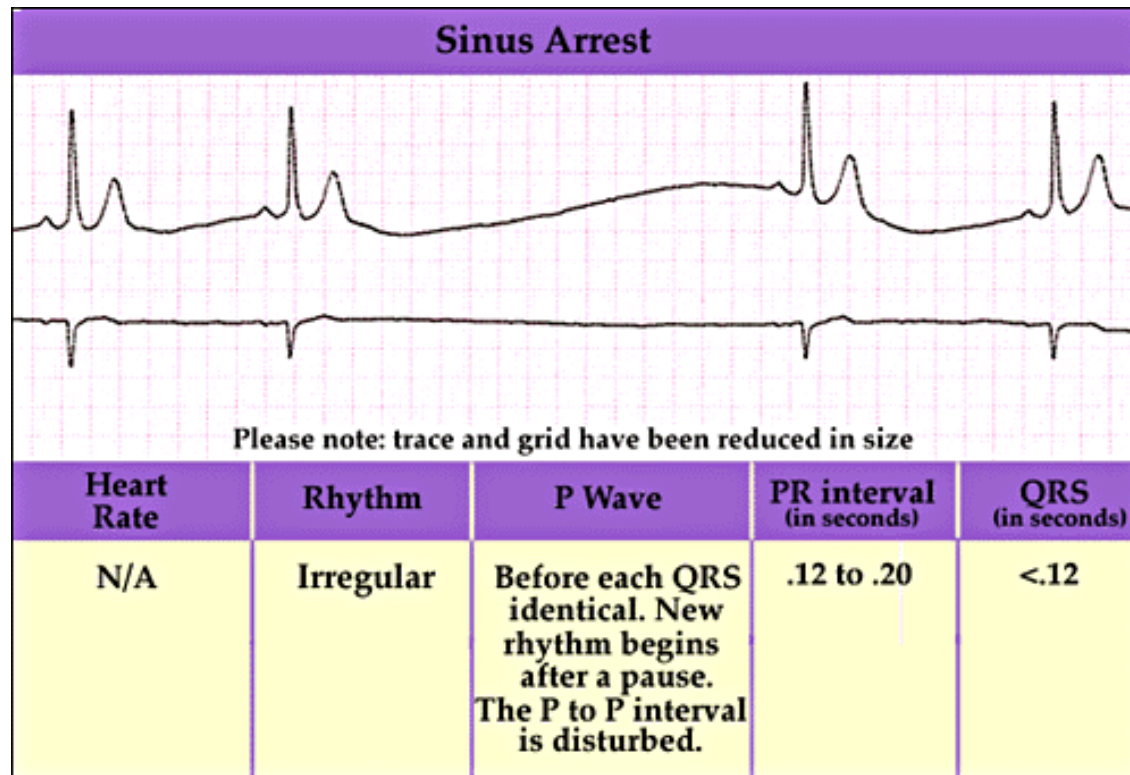


# Bradyarrhythmias

May present with dizziness, syncope or even sudden death

Sick sinus syndrome

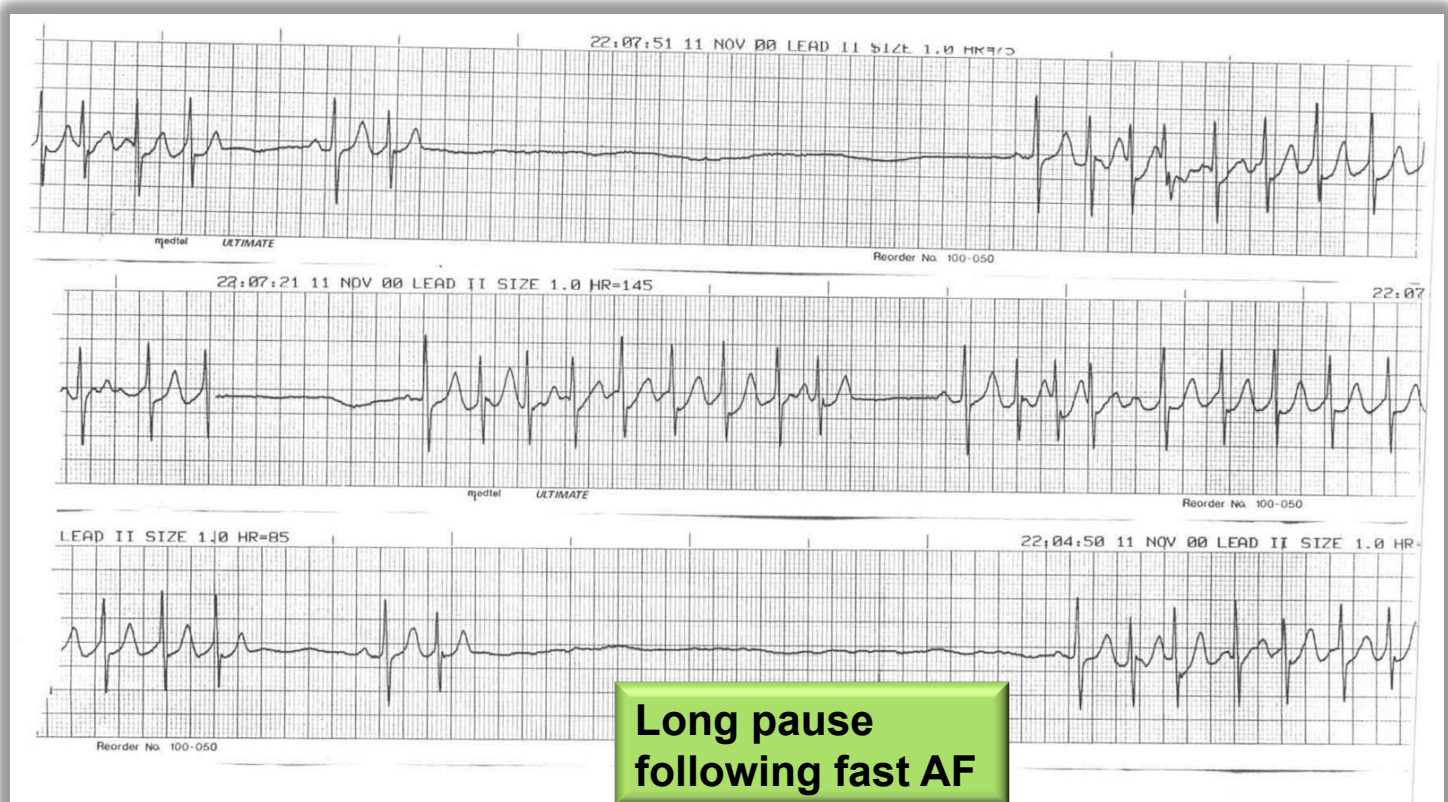
- Sinus pause
- Sinus arrest



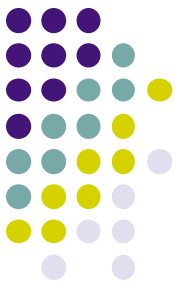
# Bradyarrhythmias



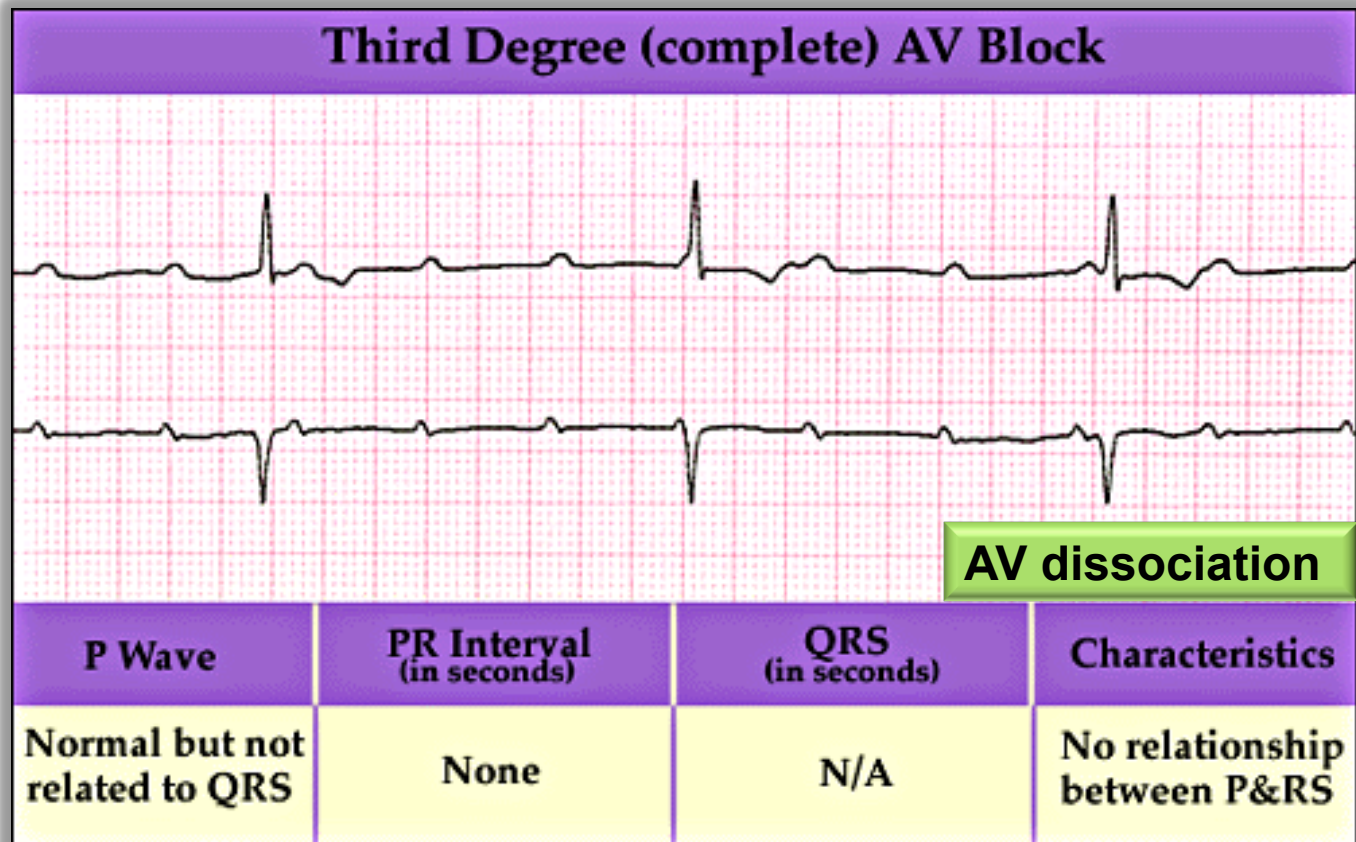
## Tachy-brady syndrome



# Bradyarrhythmias



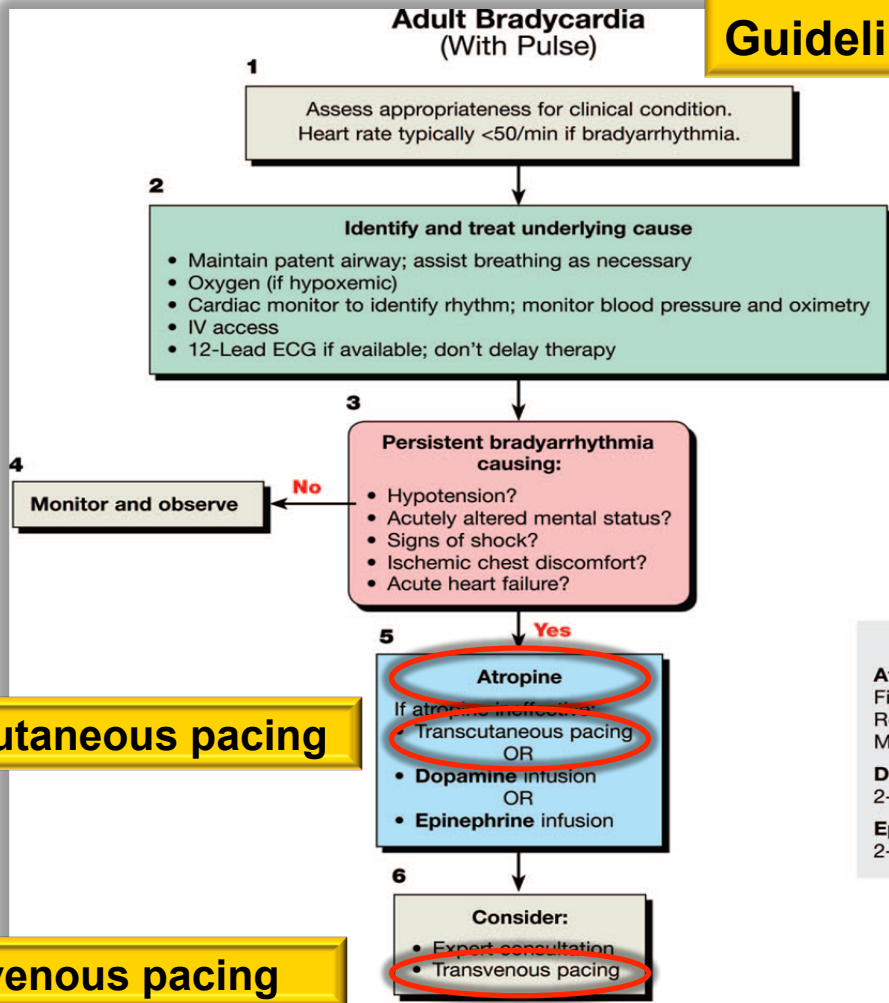
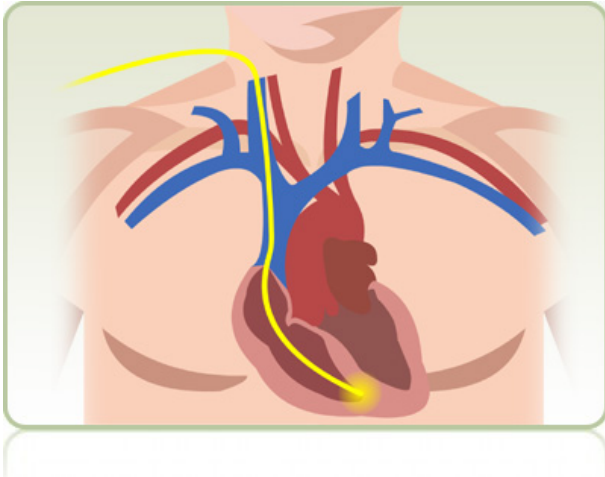
## AV block (Atrioventricular block)



# Emergency treatment of bradyarrhythmias



**ACLS Guidelines 2010**



**Transcutaneous pacing**

**Transvenous pacing**

**Doses/Details**

**Atropine IV Dose:**  
 First dose: 0.5 mg bolus  
 Repeat every 3-5 minutes  
 Maximum: 3 mg

**Dopamine IV Infusion:**  
 2-10 mcg/kg per minute

**Epinephrine IV Infusion:**  
 2-10 mcg per minute

# Transcutaneous pacing



Readily available

Success varies with body size, pacing output, patient's tolerance

Painful in conscious patient, may need sedation

May fail to capture, muscle rather than cardiac stimulation



# Tachyarrhythmias

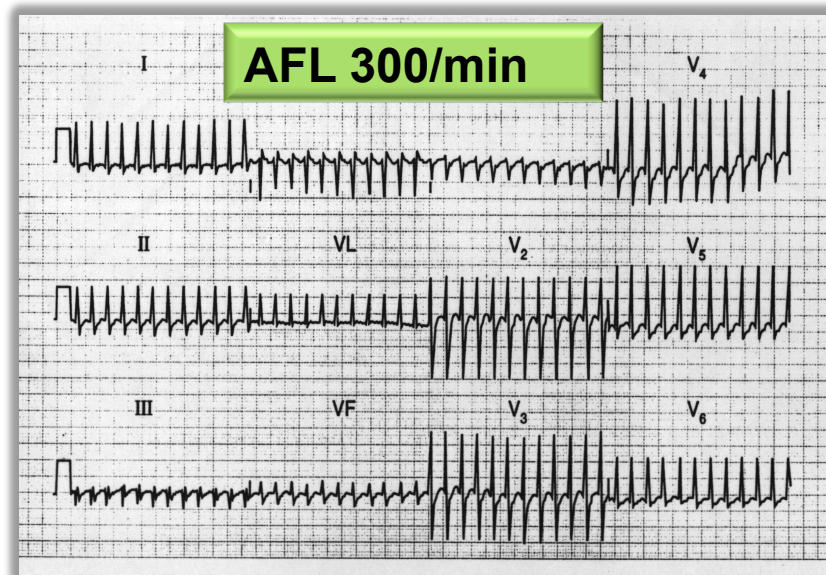
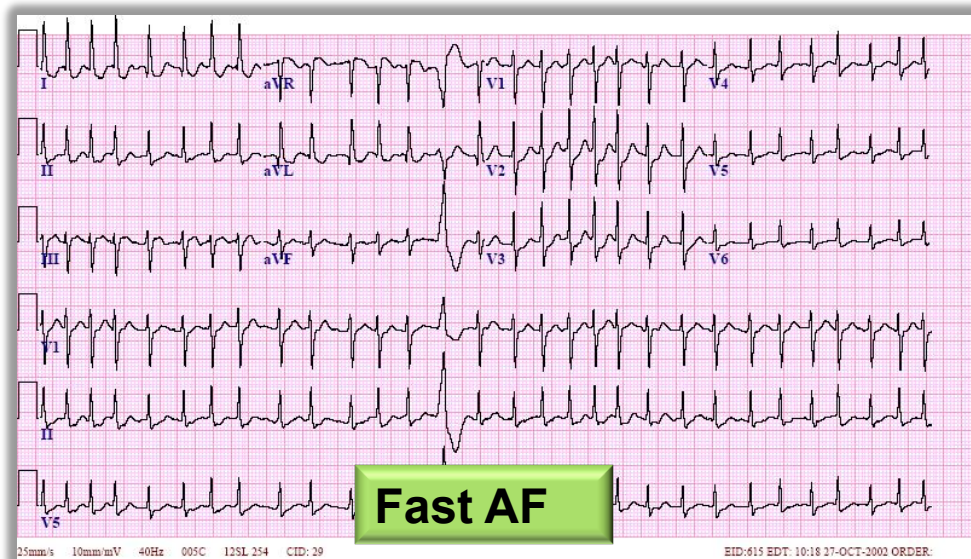
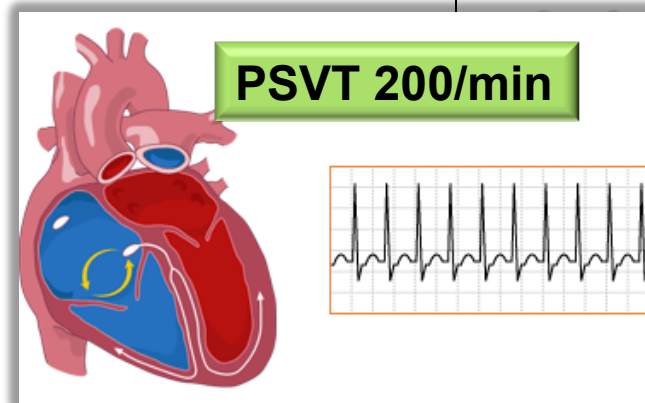
## - Narrow-complex Tachycardia (NCT)



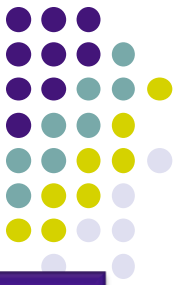
**AF**

**Atrial flutter**

**PSVT (AVNRT / AVRT / AT)**



# NCT – Emergency treatment



Vagal Maneuvres

eg. Carotid massage

Anti-arrhythmic drugs (AADs)

Rate control

Rhythm control

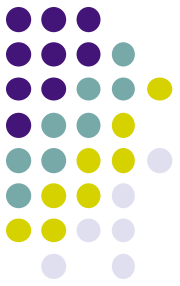
Electrical cardioversion

Refractory to AADs

Haemodynamically unstable

Anti-thrombotic treatment in AF

# Role of ATP / Adenosine in PSVT



>90% success in terminating PSVT

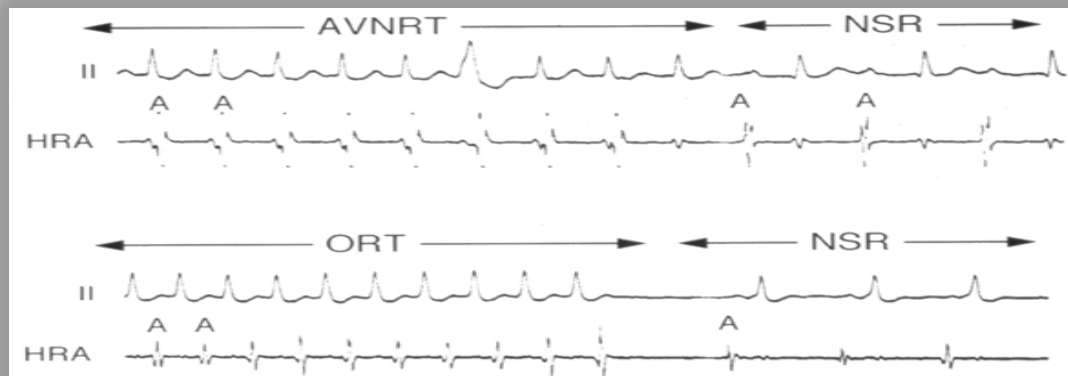
Revealing AT or Atrial flutter by transiently increasing AV block

Short T  $\frac{1}{2}$  (< 10s), need IV push followed by flushing of saline,

Starting dose ATP 10mg, up to 20mg

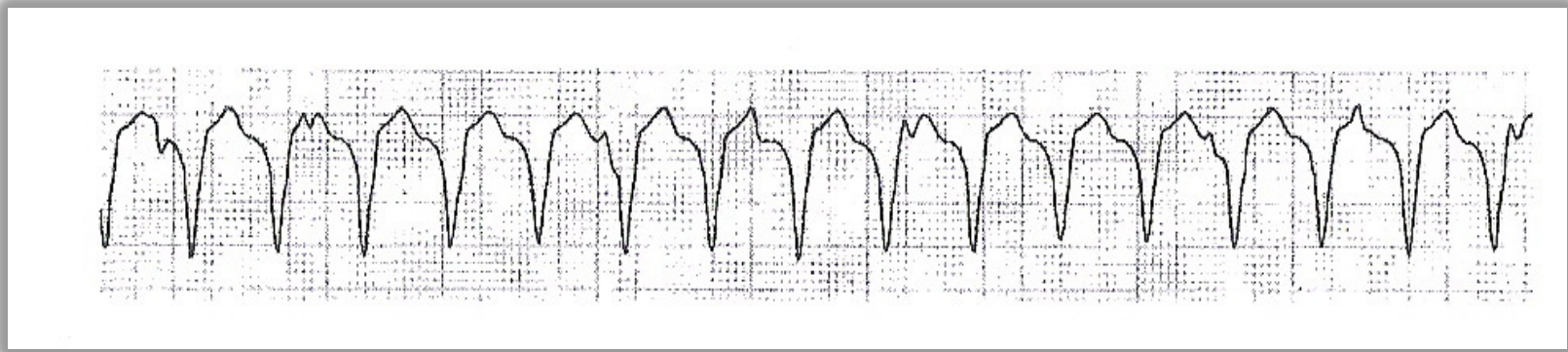
Warn patient about potential side effects (chest tightness, flushing, SOB due to bronchoconstriction) which are self-limiting

Contraindicated in acute asthma

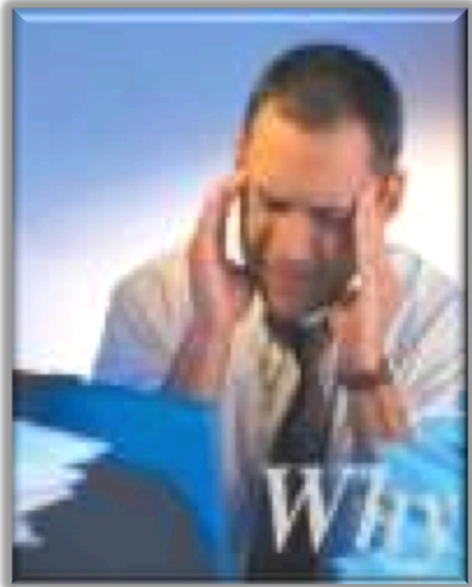


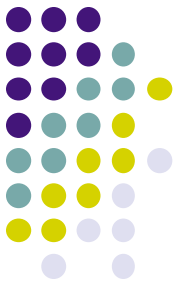
# Tachyarhythmias

## - Wide complex tachycardia (WCT)



***WCT - A headache to all of us !!!***





# What is WCT ?

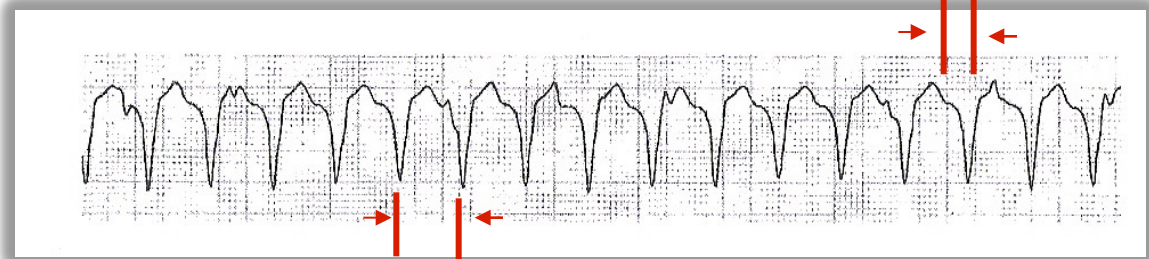
Definition

- QRS duration  $\geq 120\text{ms}$
- Rate  $\geq 100\text{bpm}$

2  
Subgroups

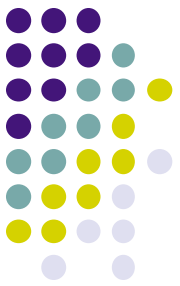
- Regular WCT
- Irregular WCT

$\geq 3$  small squares



$\leq 3$  large squares

# Regular WCT – DDX



## Ventricular Tachycardia (VT)

- Monomorphic VT
- Bi-directional VT (rare)

ECG artifacts  
mimicking WCT

SVT with bundle  
branch block  
(BBB)

Antidromic SVT  
in WPW  
syndrome