

Arrhythmias

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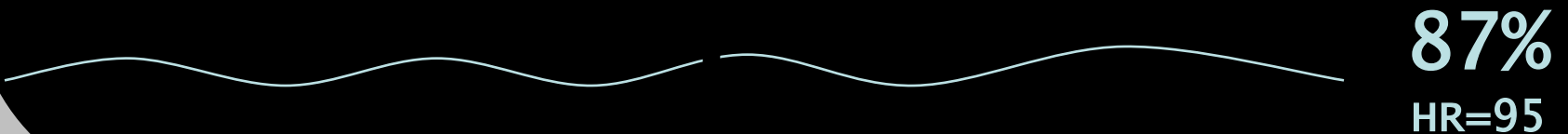
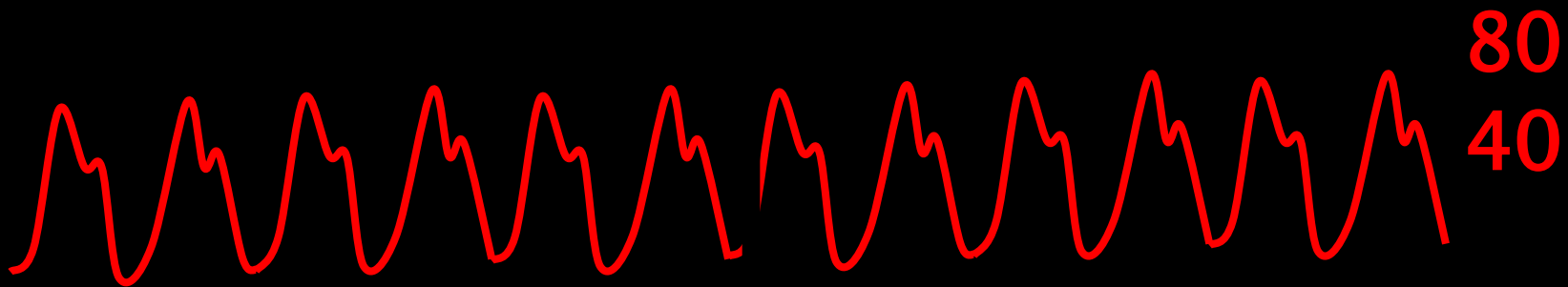
BASIC

Case A



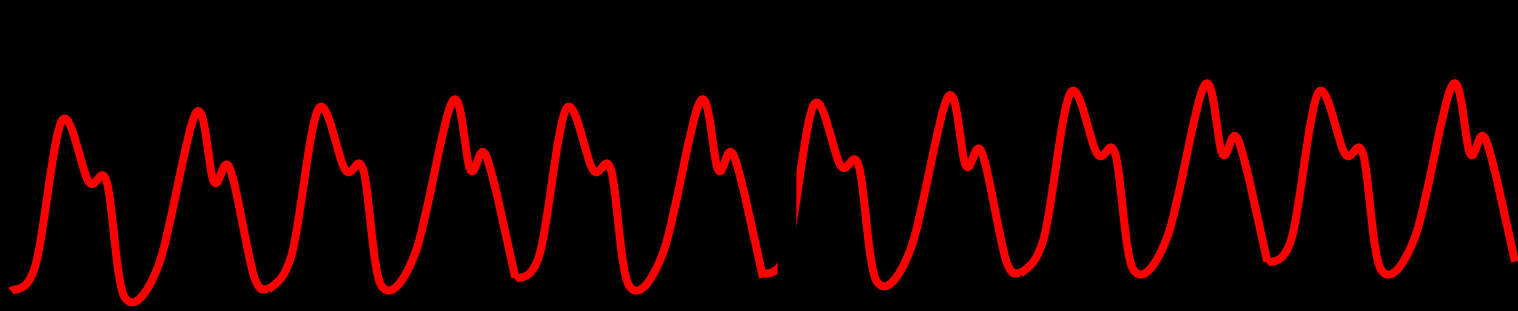
- 32 year old man
- Admitted with pneumonia
- Sudden onset of tachycardia
- Management?

Decide how much rhythm contributes to clinical deterioration





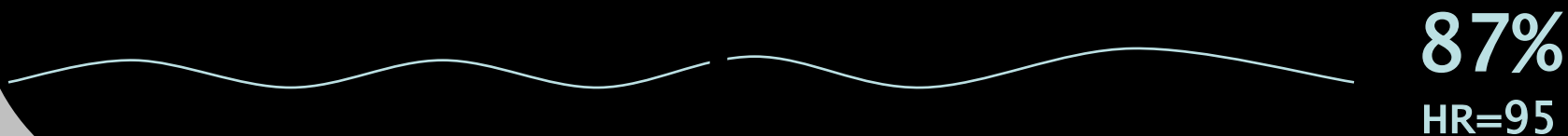
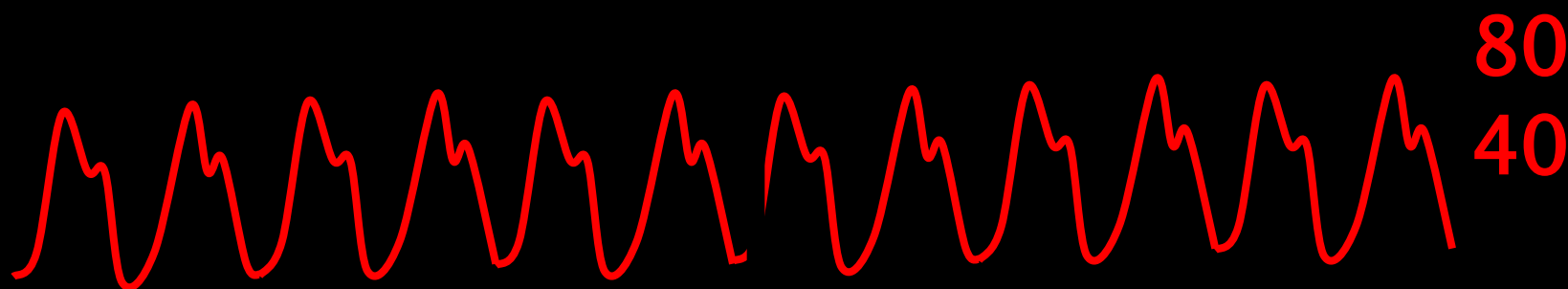
153



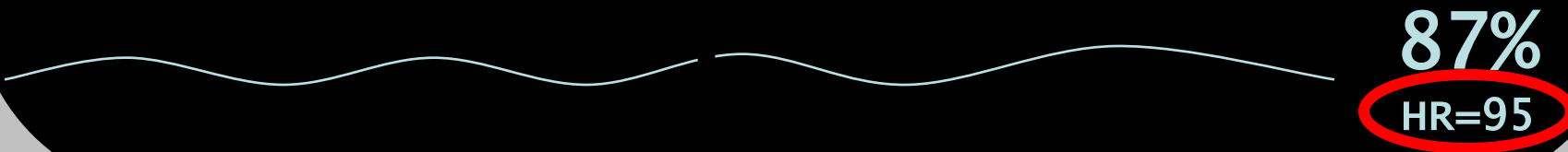
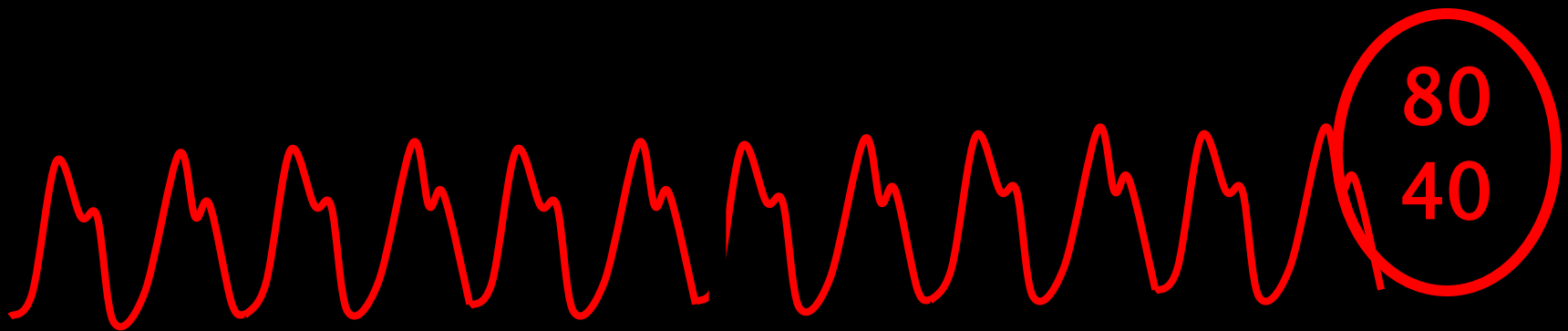
80
40



87%
HR=95



Determine urgency of treatment



DC cardioversion

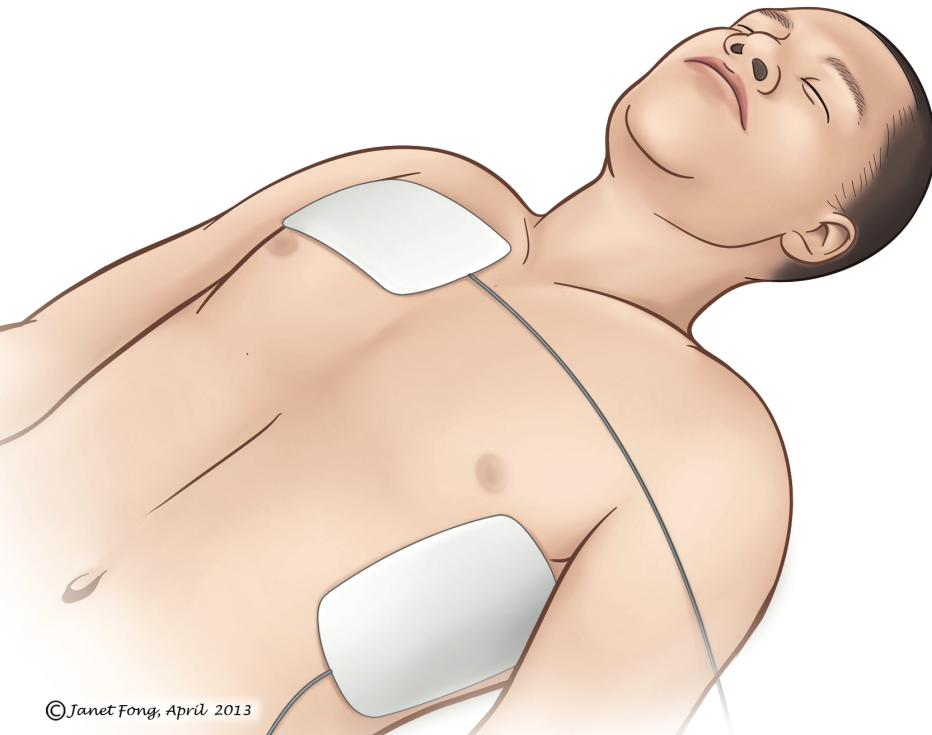
- Narrow complex tachyarrhythmia
 - Start with:

PSVT and atrial flutter

– 50-100 J (biphasic)

AF

– 120-200J (biphasic)



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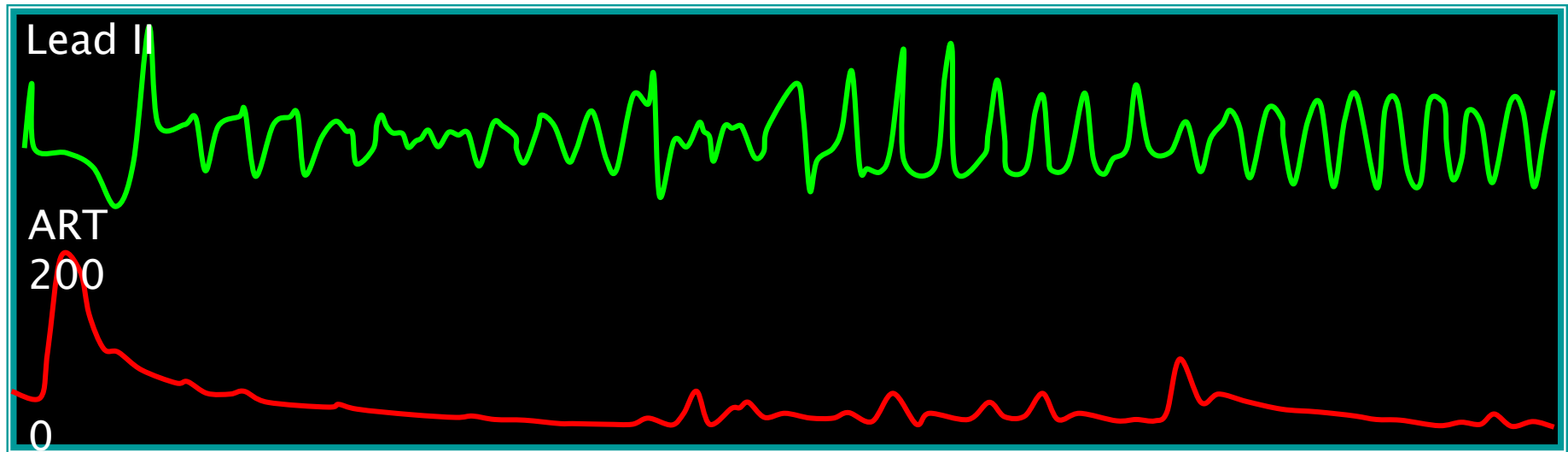
Treatment

- Treat underlying cause
- Correct precipitating abnormalities eg hypokalaemia



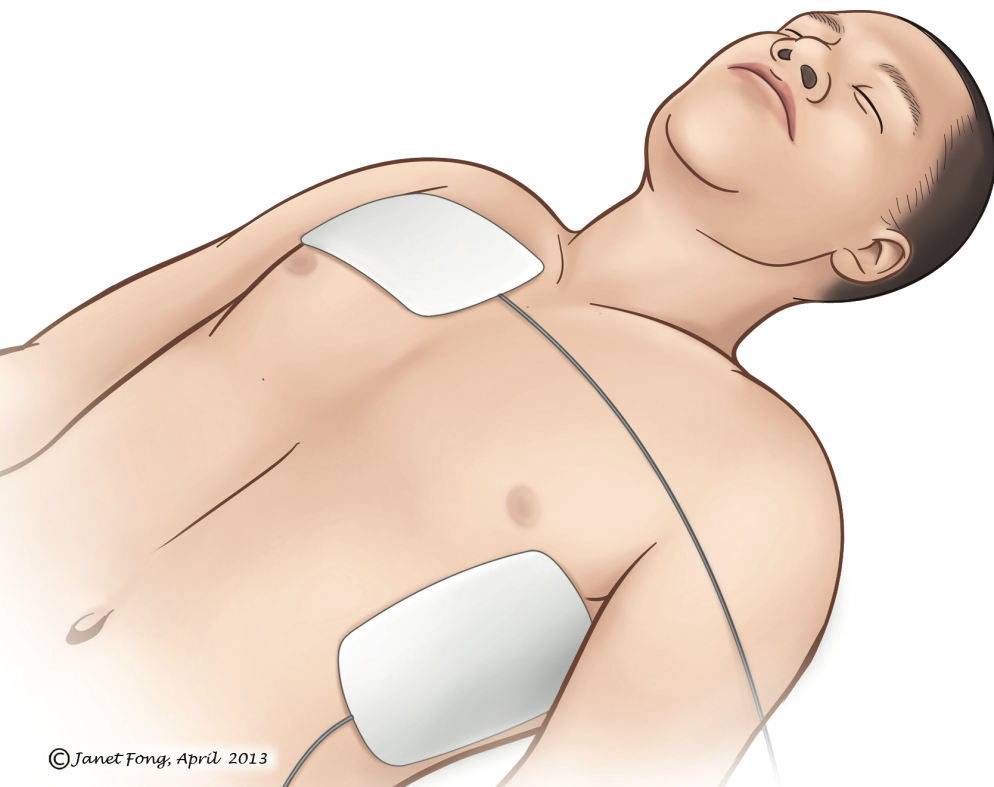
Case B

- 45 yr old woman
- Sudden collapse at home, followed by convulsion
- GCS 7/15, intubated for airway protection
- Following CT develops this arrhythmia:



Treatment

- Defibrillation
 - 150-200J (biphasic)
- Treat as for VF
- NOT cardioversion



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Management

- Check QTc
 - >460 msec: torsades de pointes
 - <460 msec: ischaemic in origin until proved otherwise



$$QT_c = \frac{QT \text{ interval}}{\sqrt{RR \text{ interval}}}$$



Causes of long QTc

- Congenital
- Acquired
 - Electrolyte abnormalities: $\downarrow K, \downarrow Mg$
 - Hypothermia
 - Drugs
 - Class I and III anti-arrhythmics
 - Antimicrobials (erythromycin, ketoconazole)
 - Tricyclics
 - Intracranial bleeding



Management of torsades

- Withdraw precipitating agent
- IV magnesium 5-10 mmol over 15 minutes irrespective of serum level
- Rapid ventricular pacing

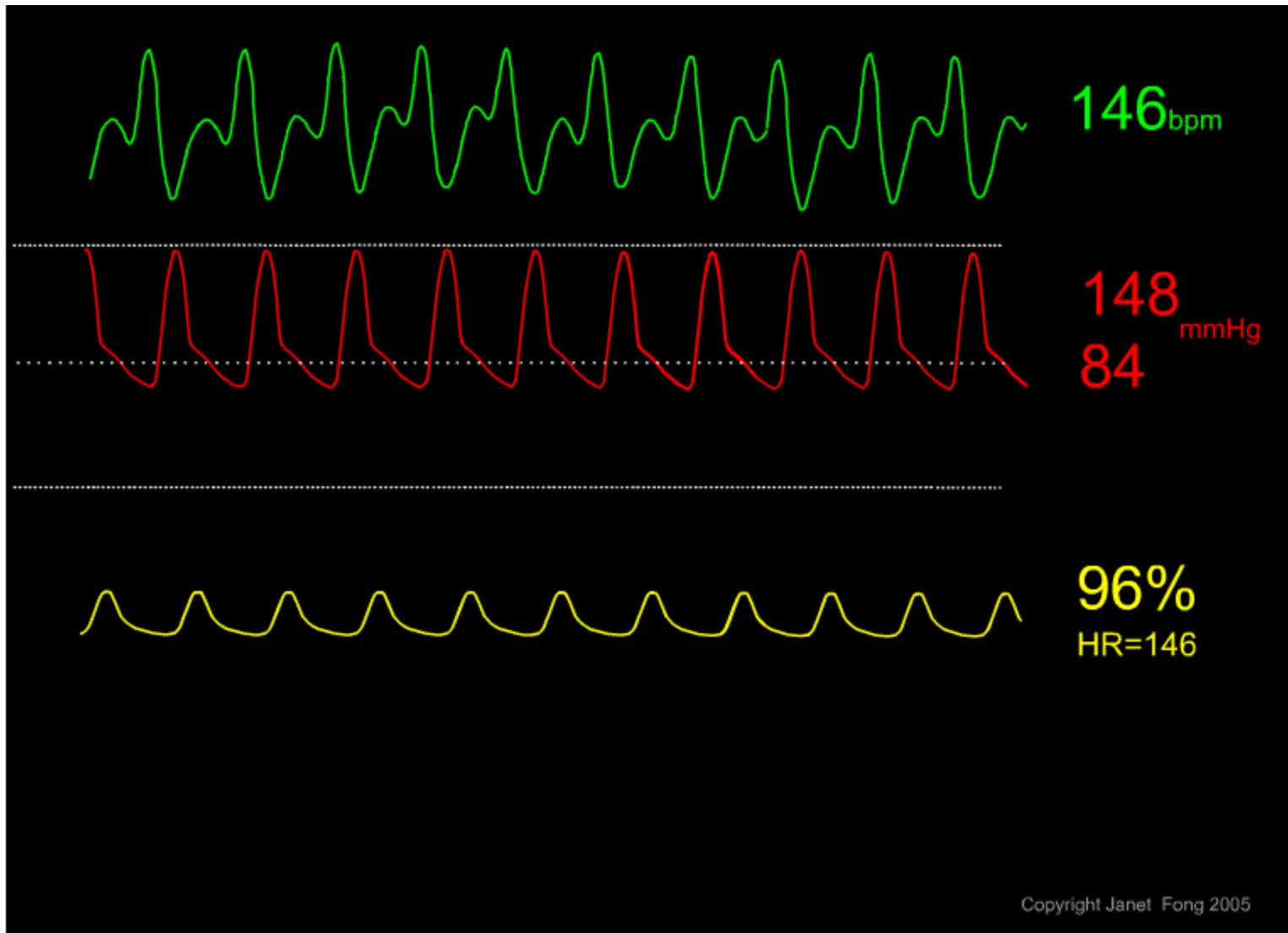


Polymorphic VT & MI

- Consider withdrawal of catecholamines (if tolerated)
- Anti-angina therapy, especially β blocker, revascularization or IABP
- IV amiodarone or lignocaine if above measures contraindicated



Case C



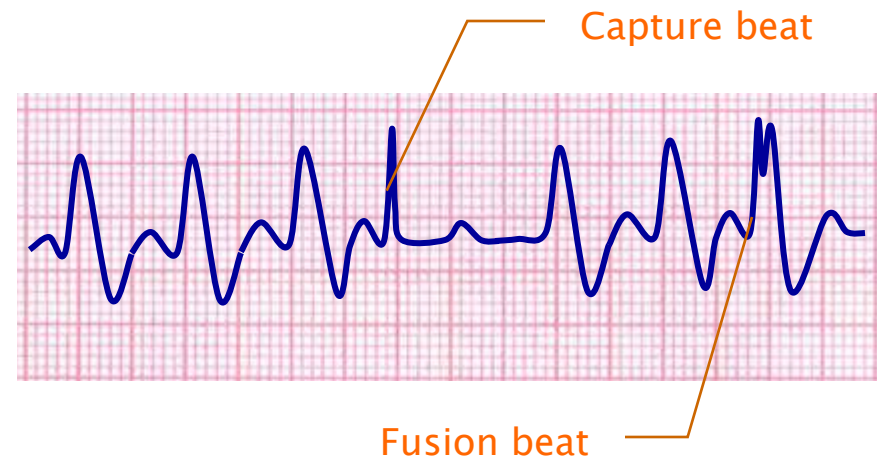
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VT or SVT?

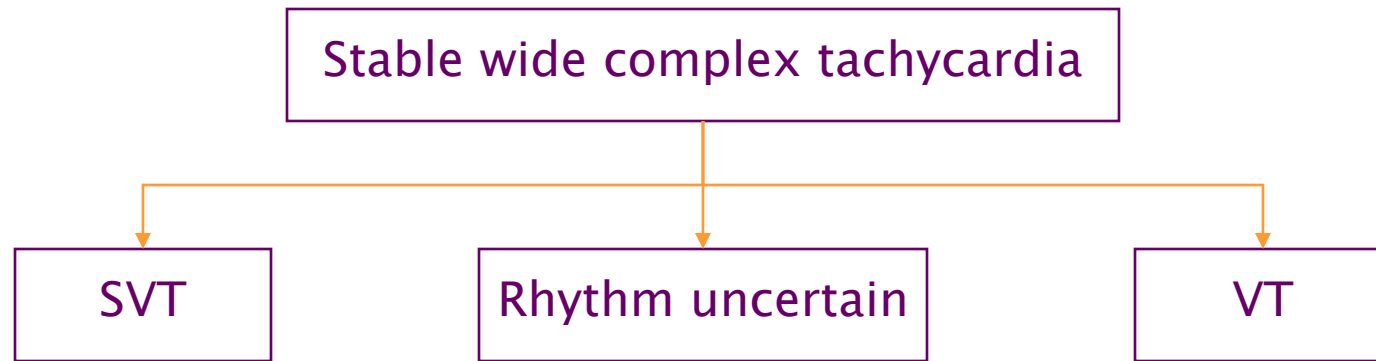
- VT
 - History
 - IHD
 - Structural heart disease
 - ECG criteria
 - AV dissociation on ECG
 - Fusion beats
 - Capture beats
 - Other criteria too complicated

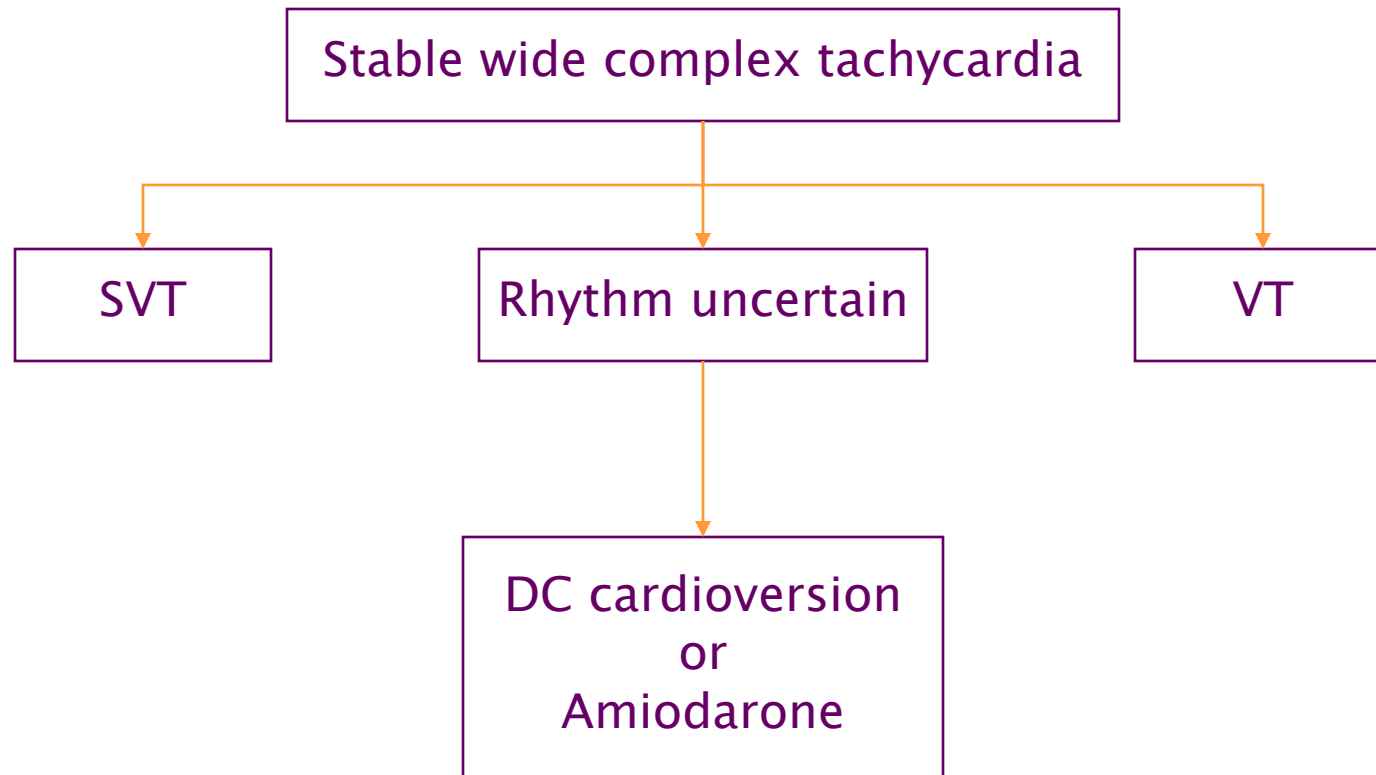


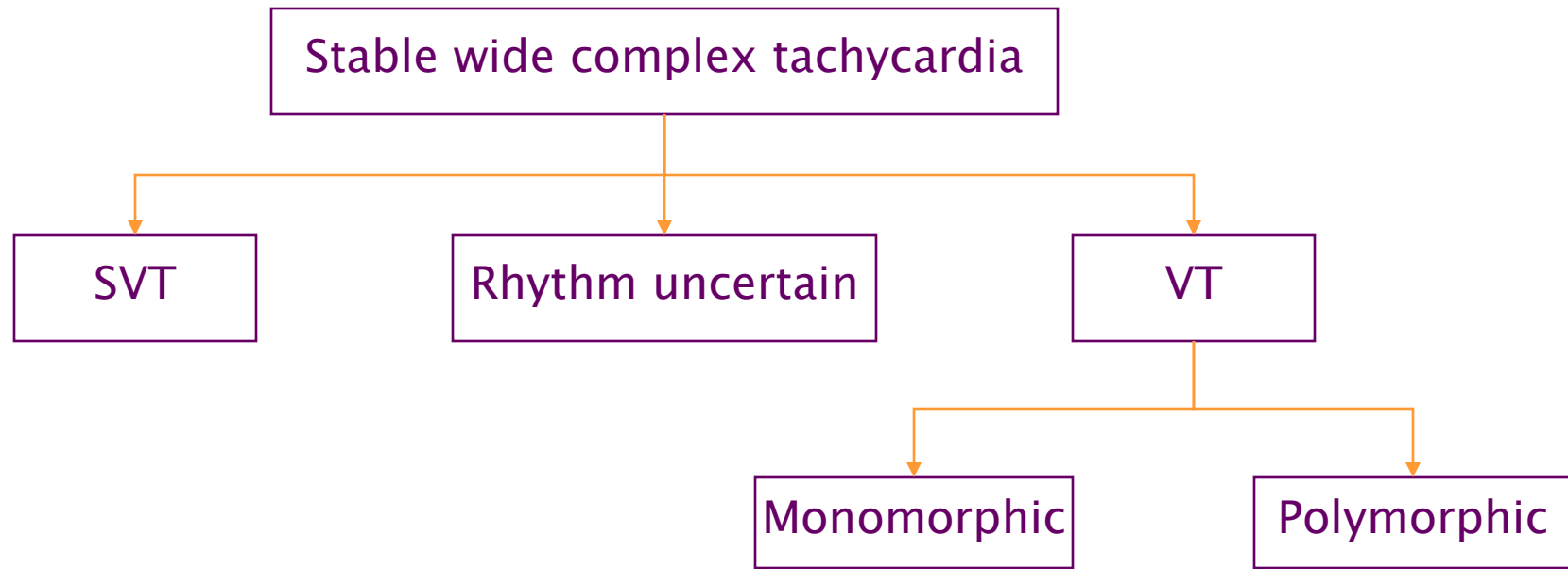
VT or SVT?

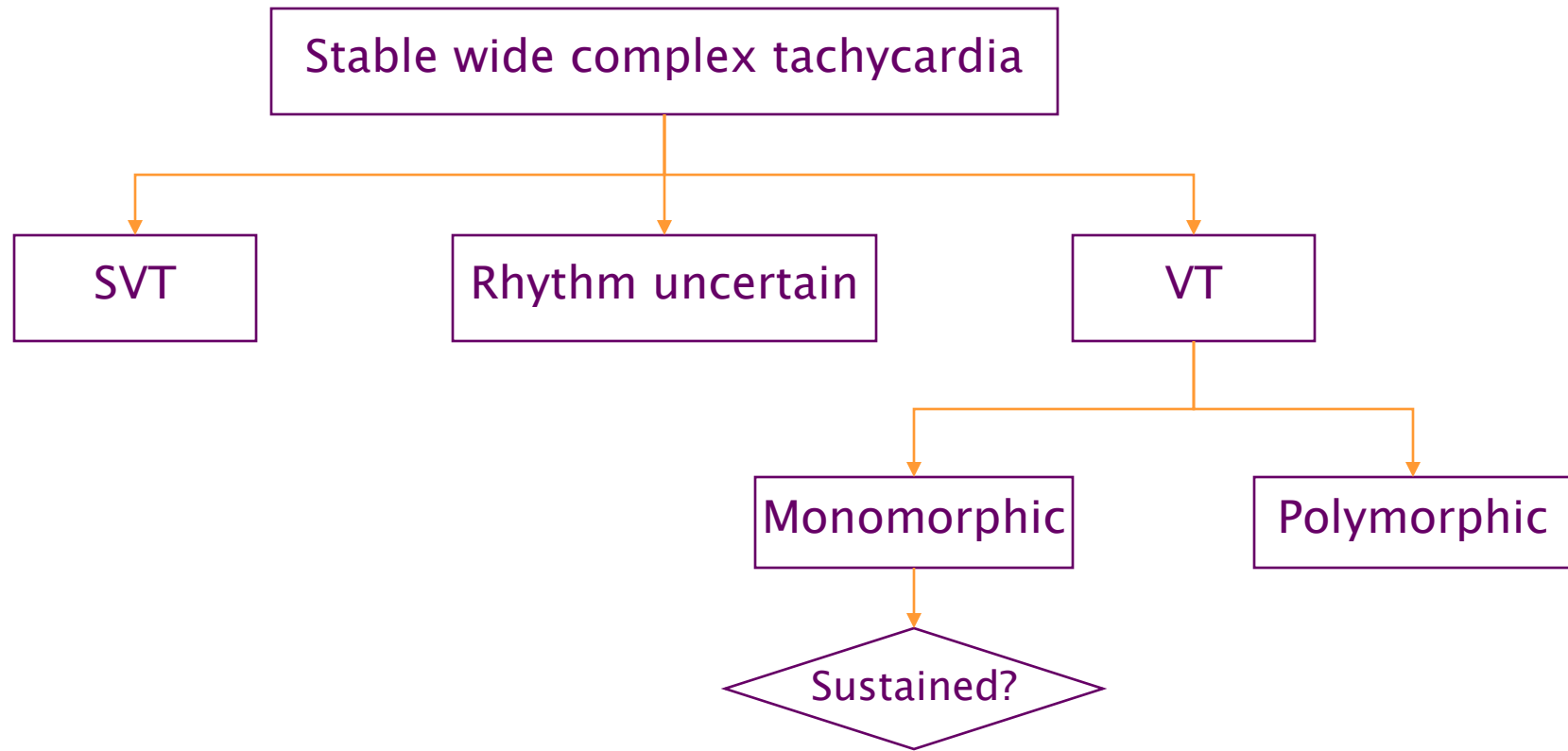
- SVT
 - History
 - Previous aberrant rhythms
 - Accessory pathways
 - BBB
 - Rate dependent BBB
 - \pm slowed/abolished by carotid sinus massage

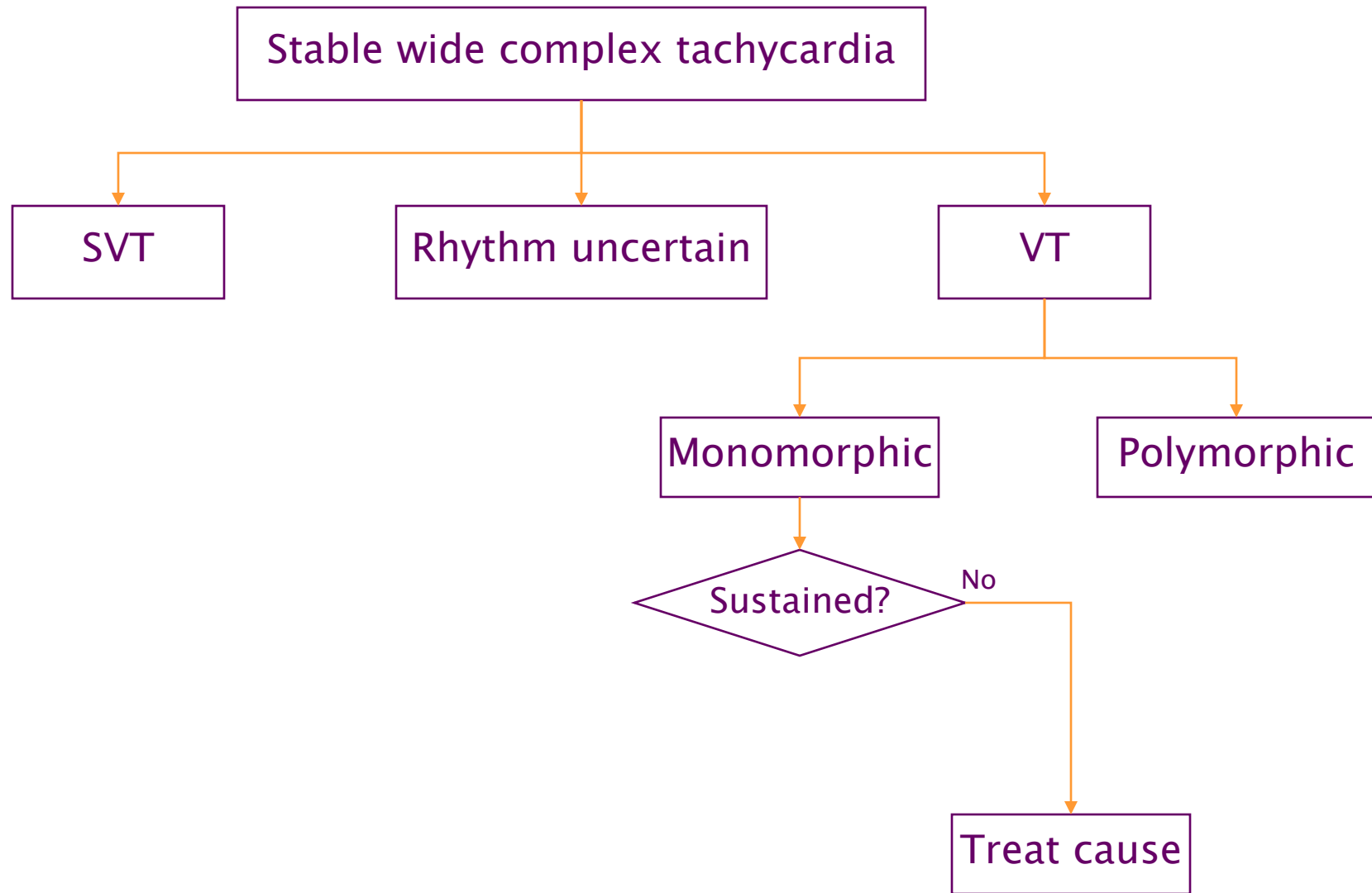


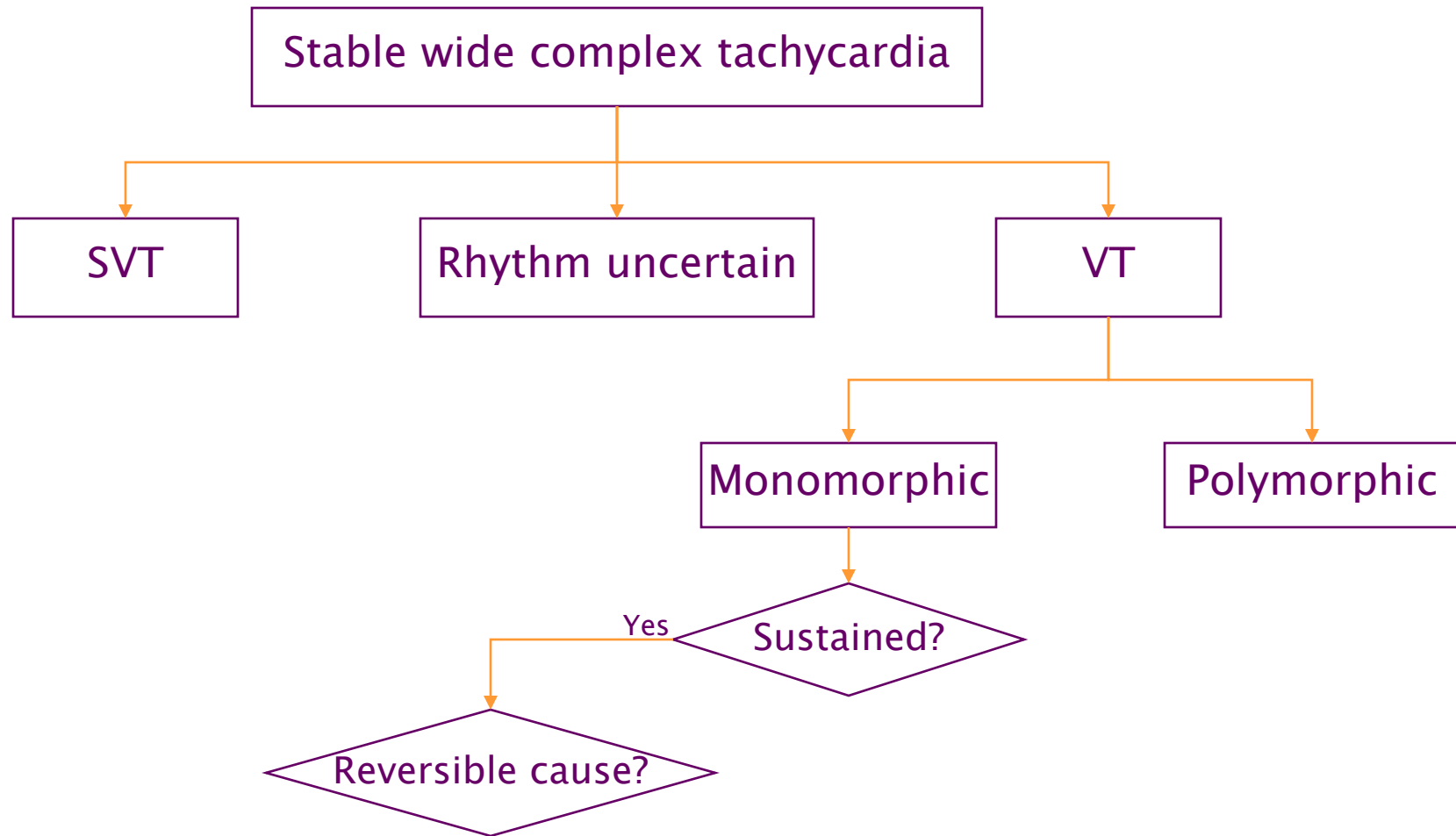


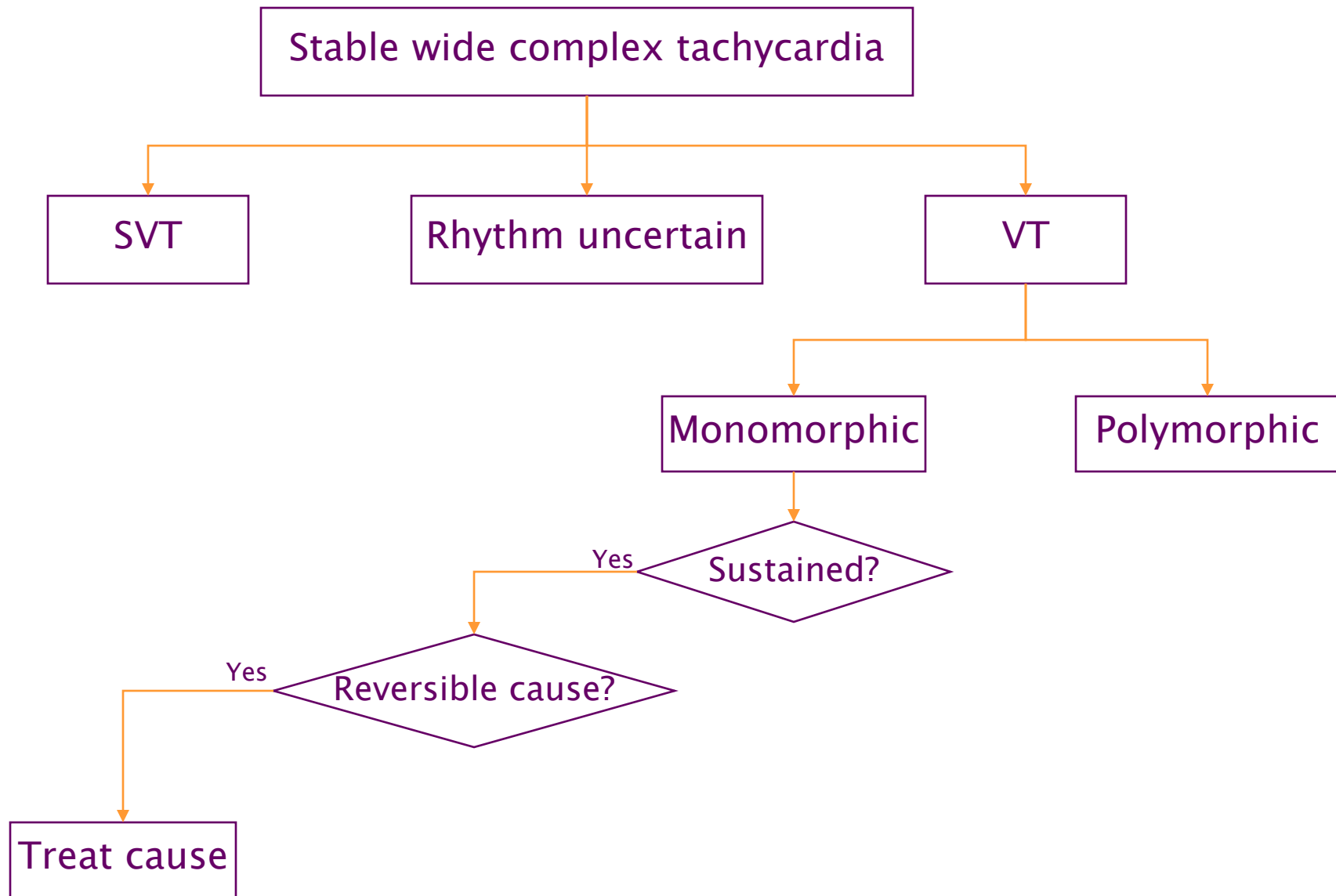


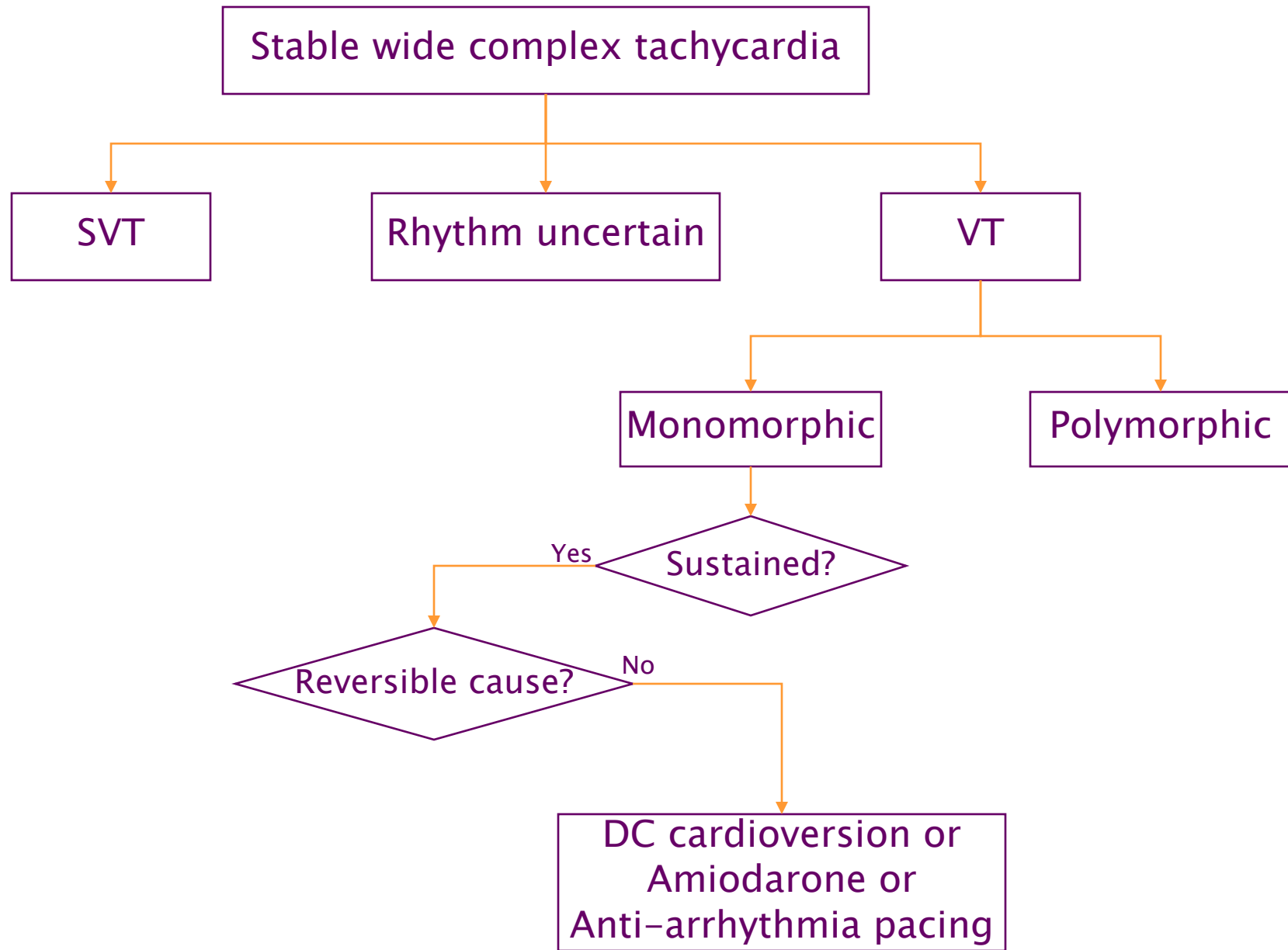




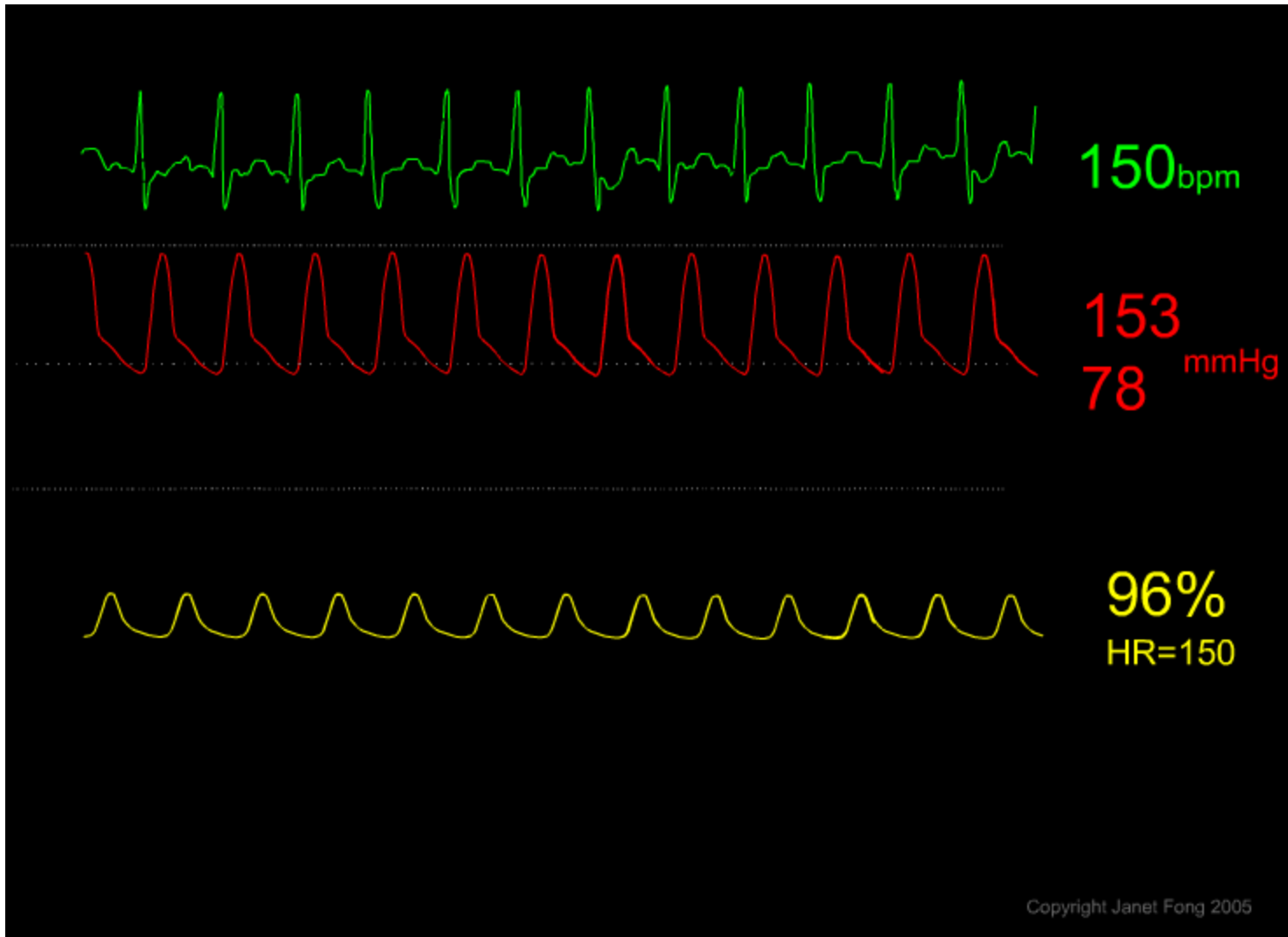


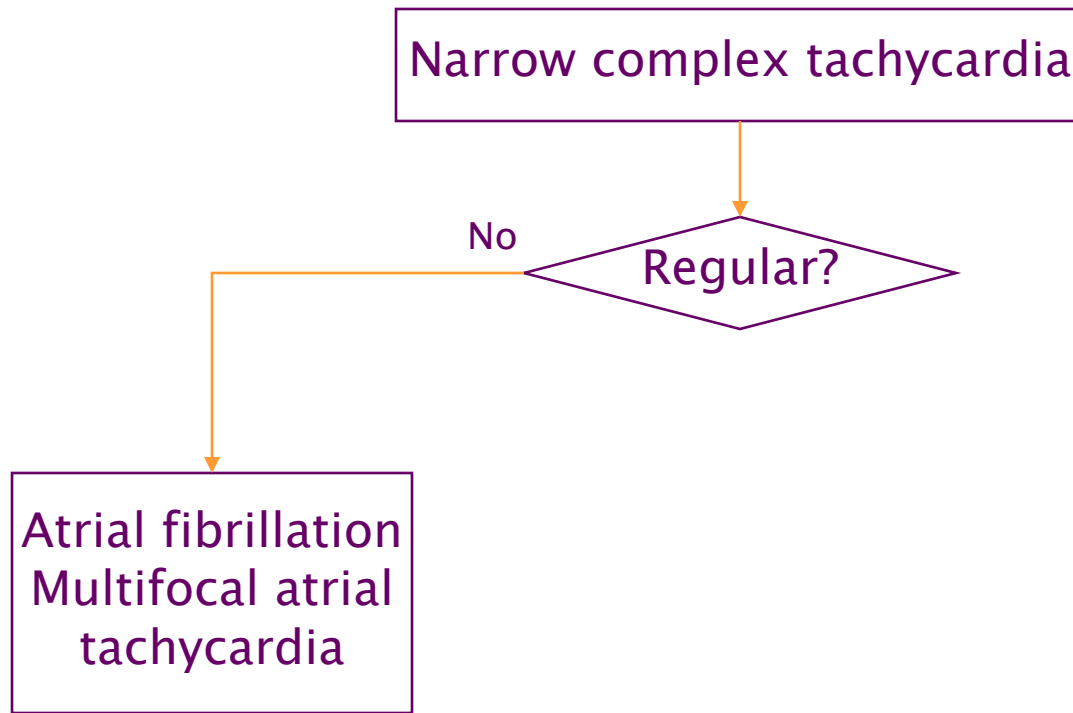




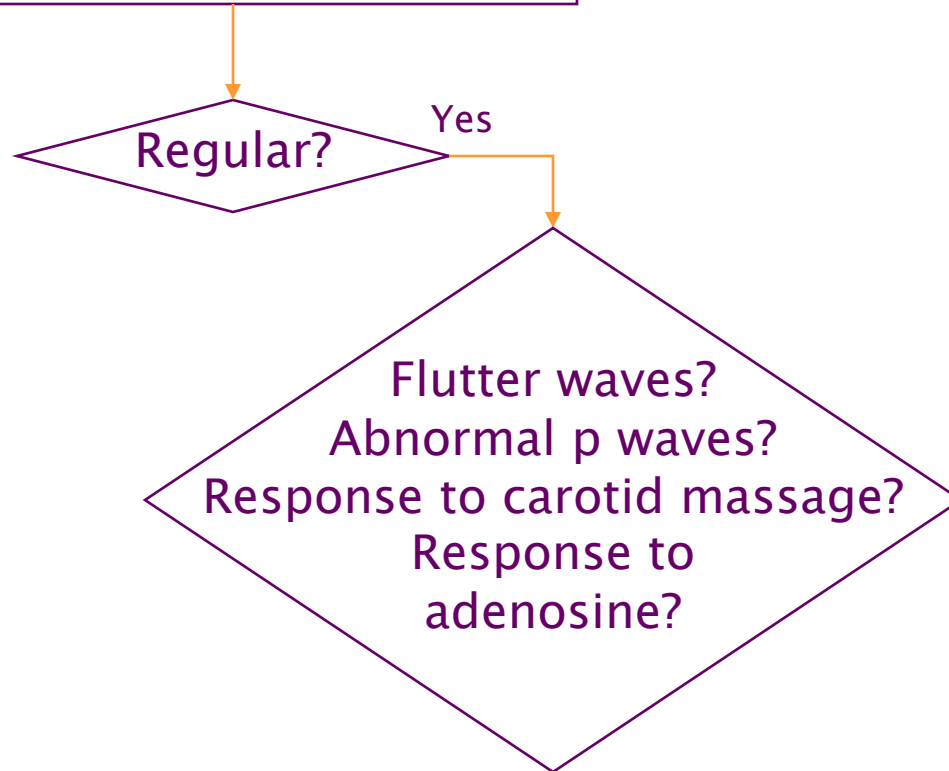


Case D





Narrow complex tachycardia



Narrow complex tachycardia

Regular?

Yes

Flutter waves?
Abnormal p waves?
Response to carotid massage?
Response to adenosine?



Atrial flutter

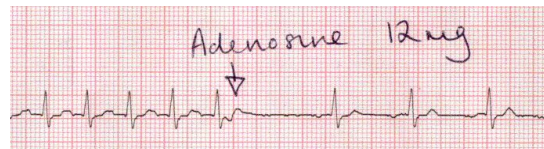


Narrow complex tachycardia

Regular?

Yes

Flutter waves?
Abnormal p waves?
Response to carotid massage?
Response to adenosine?



Atrial flutter

Paroxysmal supraventricular
tachycardia



Narrow complex tachycardia

Regular?

Yes

Flutter waves?
Abnormal p waves?
Response to carotid massage?
Response to adenosine?

Multifocal or ectopic
atrial tachycardia

Atrial flutter

Paroxysmal supraventricular
tachycardia

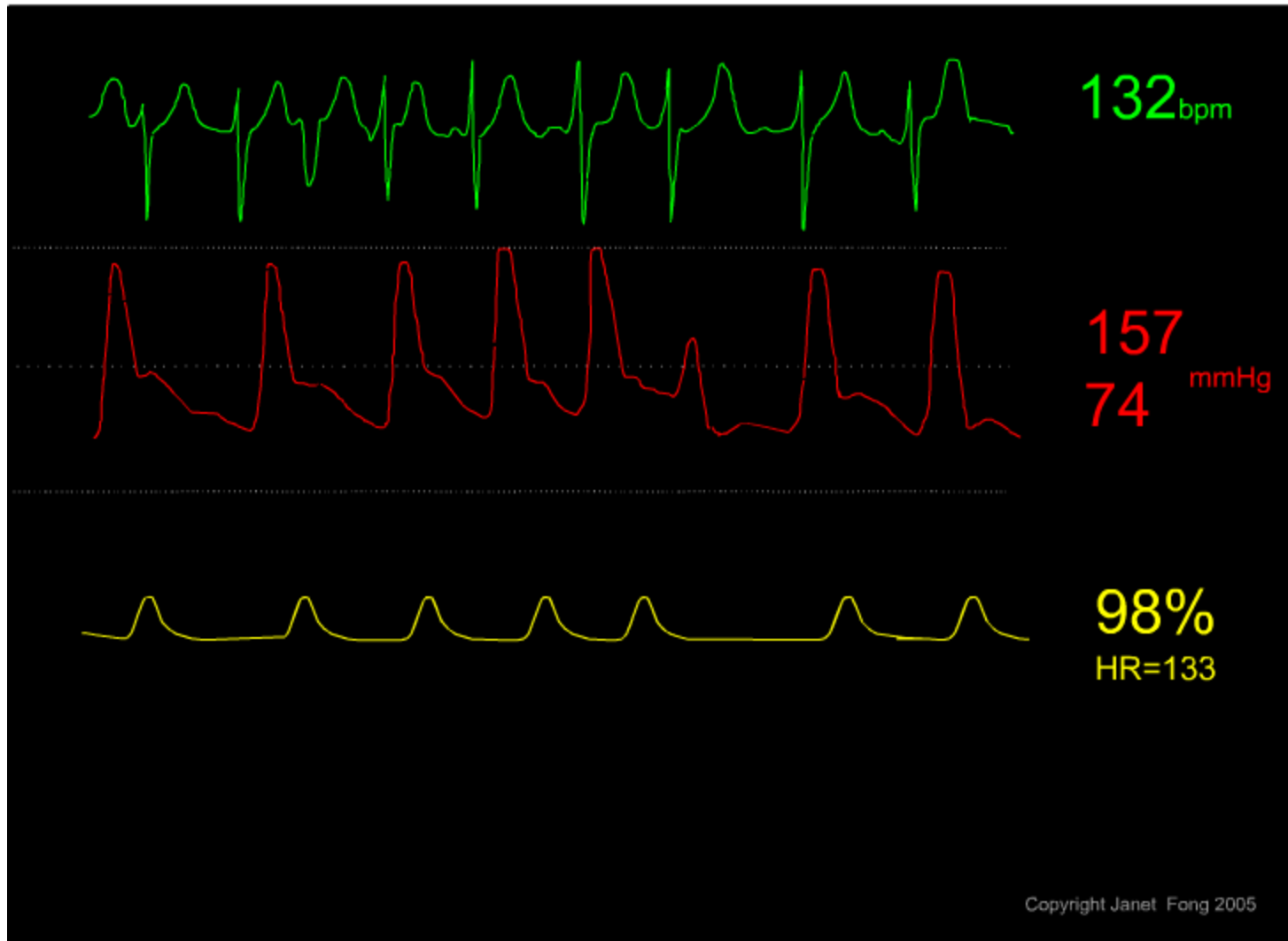


Treatment of PSVT

- Good LV function
 - Ca channel blocker
 - Verapamil
 - Diltiazem
 - β blocker
 - Amiodarone
- Poor LV function
 - Amiodarone
 - Diltiazem



Case E



Irregular rhythm

- Atrial fibrillation
- Atrial ectopics
- Multifocal atrial tachycardia



Treatment of AF

- Aims
 - Chronic
 - Rate control
 - Acute
 - Restoration of sinus rhythm
 - Rate control
 - Paroxysmal
 - Restoration of sinus rhythm
 - Secondary prevention
 - Prevention of complications



Pharmacological treatment

- Rate control only
 - β blockers
 - Diltiazem, verapamil
 - Digoxin (heart failure)
- Rate control & pharmacological cardioversion
 - Amiodarone
 - Procainamide
 - Ibutilide



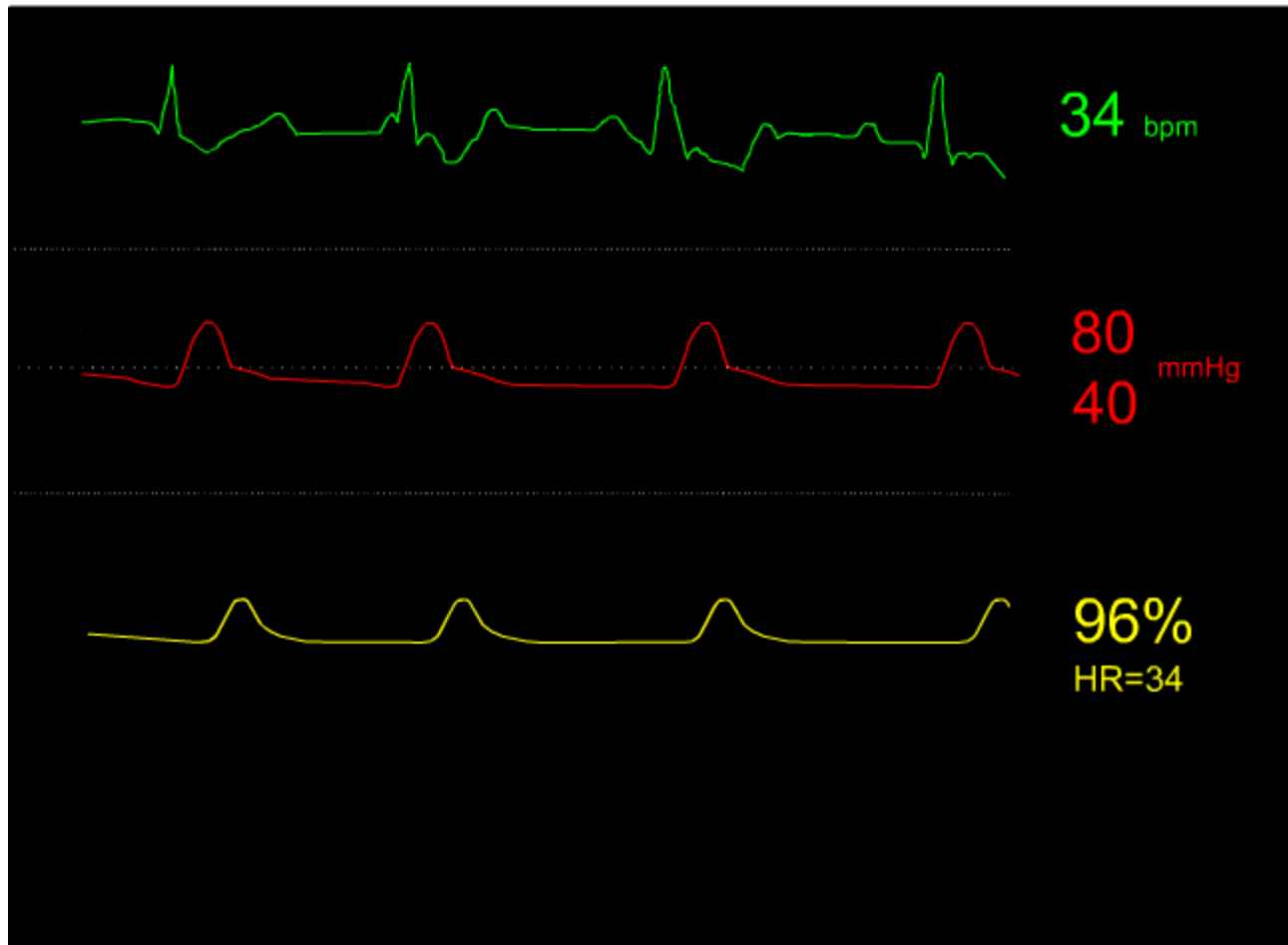
Prevention of complications

- AF >48h
 - Consider anti-coagulation to prevent systemic embolization
 - Use agents that may convert rhythm with extreme caution unless patient anticoagulated
 - Anticoagulation for 3 weeks prior to cardioversion



Case F

- 78 year old man with dizziness



Look for cause

- Myocardial infarction
- Drugs
- Electrolytes (K, Mg, Ca)
- Hypothyroidism
- Hypothermia
- Sepsis
- Endocarditis
- Vagal-mediated in ICU
 - Intubation, suctioning, \uparrow ICP, urination, defaecation, vomiting, retching



Summary

- Tachycardias
 - Is the arrhythmia pathological?
 - Is the patient shocked?
 - (Yes \Rightarrow cardioversion)
 - Treat/correct precipitants
 - Control or abort arrhythmia
 - Prevent complications



Summary

- Bradycardias
 - Is the patient shocked?
 - Yes \Rightarrow atropine \pm epinephrine
 - What is the arrhythmia?
 - Atropine then isoproterenol/epinephrine or pacing

