

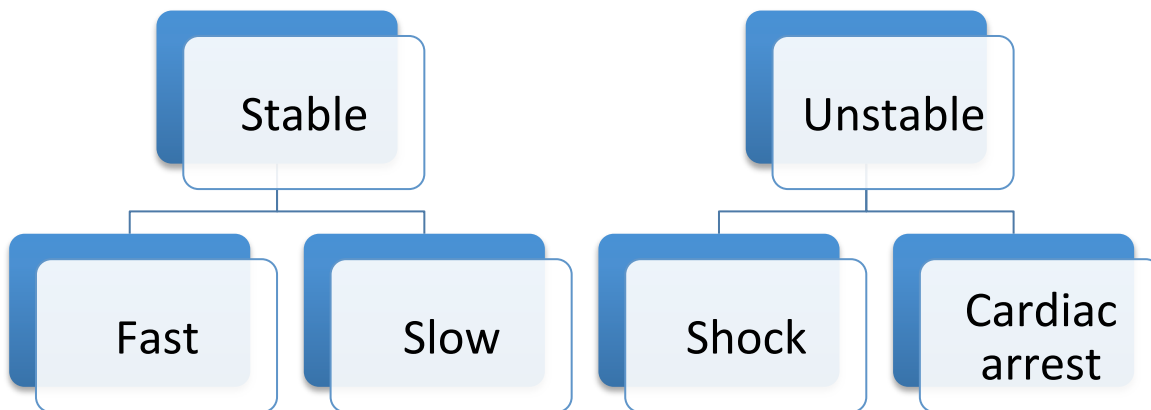
Topic Overview: Cardiac Module**Sub-Module: C7: Arrhythmias and Teamwork**

Last Updated August 7 2012

This handout is designed as pre-reading for the simulation session C7: Arrhythmias and Teamwork. This session involves a presentation and an immersive simulation scenario. Use this document to jog your memory or to aid in your reflection of the session, and in particular the simulation.

Session Objectives

- Discuss skills required to function as a team
- Review the structured approach to arrhythmia management
- Practice treatment of the critical patient in a team environment
- Demonstrate efficient communication skills

Clinical Approach to Arrhythmia

What is the clinical approach?

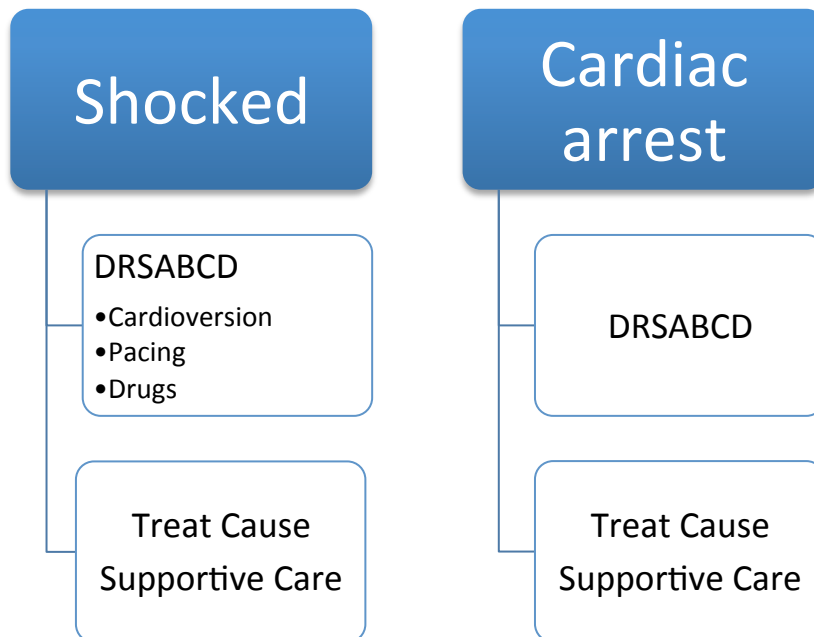
The first clinical question when seeing a patient with an arrhythmia refers to the haemodynamic stability of the patient. So, what is the clinical effect of the arrhythmia on the patient? Note the first question is not the definitive diagnosis of the rhythm. At the bedside, the response required by the patient with the arrhythmia is determined by the effect of the arrhythmia – specifically, is there a compromised cardiac output.

What is meant by haemodynamic stability?

Frequently, you will be asked if the patient is stable or unstable. The reference is to the haemodynamic status of the patient. How is stability evaluated? The decision is made on clinical evidence readily available at the bedside.

Management of Unstable

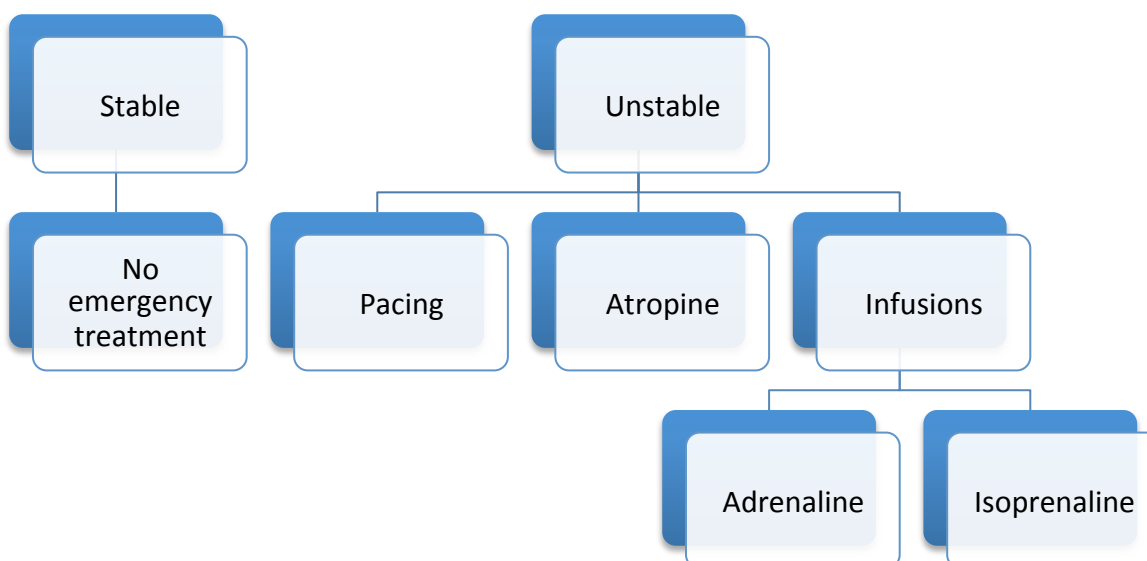
A systematic approach to management. As with the systematic approach to arrhythmia, here is the systematic approach to an unstable patient.



The important note in this slide is to remember that the underlying cause must be considered while the immediate treatment of the arrhythmia is taking place. The underlying causes have been placed into an easily remembered form called the 4Hs and 4Ts.

Approach to Bradycardias

The approach to Bradycardias is simpler than for the tachyarrhythmias. The first question to ask is still the haemodynamic status of the patient.



If the patient is haemodynamically stable, there is no acute treatment required in the emergency department. This is correct regardless of what the arrhythmia. Though the patient may still require admission or cardiology intervention.

However, 2 steps need to be followed.

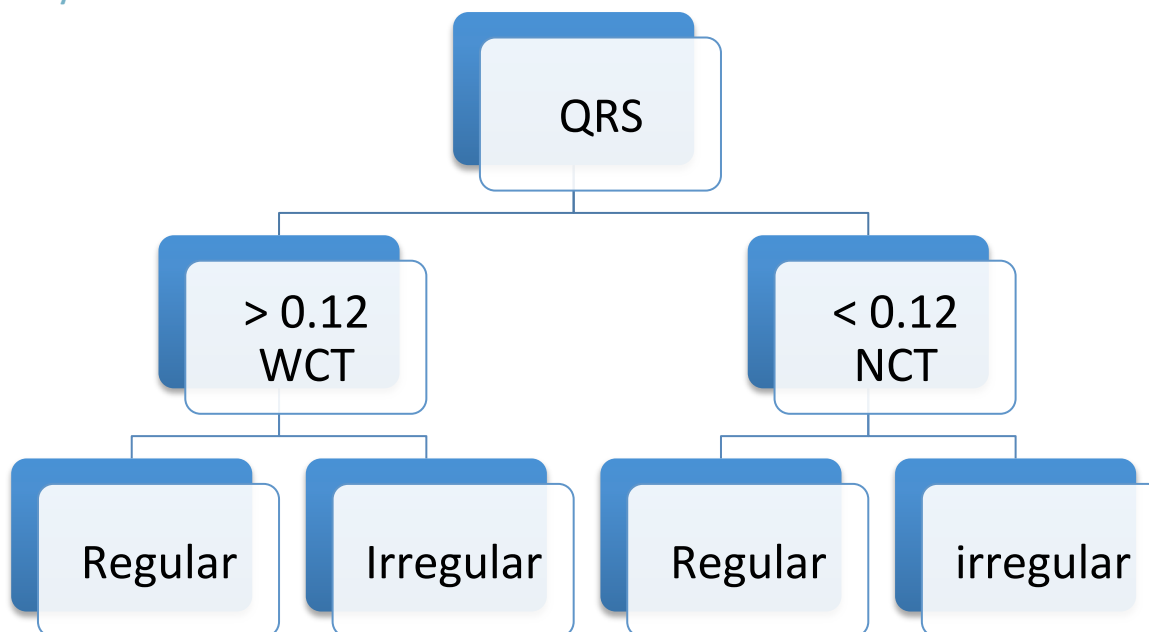
Firstly, what is the underlying *cause* of the slow heart rate.

Secondly, the likelihood of the current arrhythmia to deteriorate into an arrhythmia that is more likely to cause haemodynamic instability must be considered.

Atropine can be very useful in treating some bradycardias, but it should be noted that its effect may be only temporary. Repeated doses may be needed or a different drug may need to be used to maintain the effect.

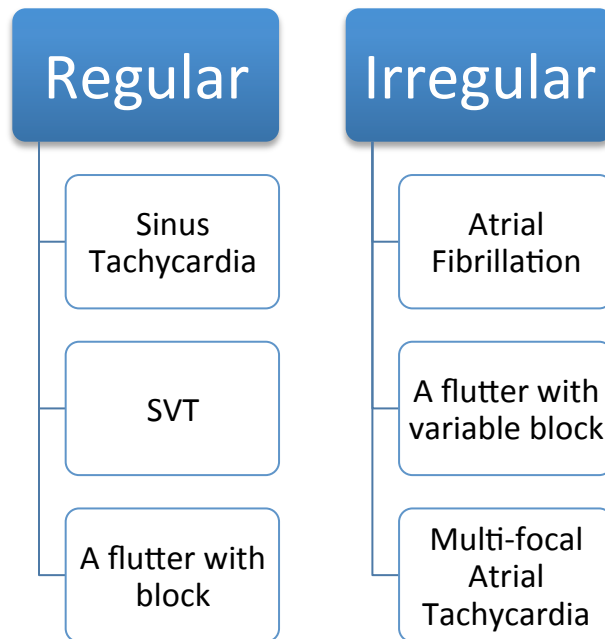
Infusions and/or pacing will have a more lasting effect, until definitive management is available.

Tachycardia ECG Decision Tree



Narrow Complex Tachycardia (<0.12)

The regularity of the rhythm assists in categorizing the arrhythmia and enables its classification, there are three choices on each limb.

Regular NCTs:

Sinus Tachycardia, SVT and Atrial flutter with regular atrioventricular blockade.

Atrial flutter is technically a supraventricular tachycardia. Making it a separate entity is related to its acute management. In distinguishing atrial flutter with a regular block from other SVTs, the key is the rate. Atrial flutter with regular block occurs at predictable rates which are fractions of the atrial rate of 300/min.

Atrial flutter with 1:1 conduction from atrium to ventricle occurs at a rate of 300/min.

Atrial flutter with 2:1 blockade has a ventricular rate of 150/min.

Atrial flutter with 3:1 blockade has a ventricular rate of 100/min.

Hence if the rate for a NCTs is exactly any of the above with no beat to beat variation, then atrial flutter rather than other SVTs needs to be considered as the arrhythmia in question.

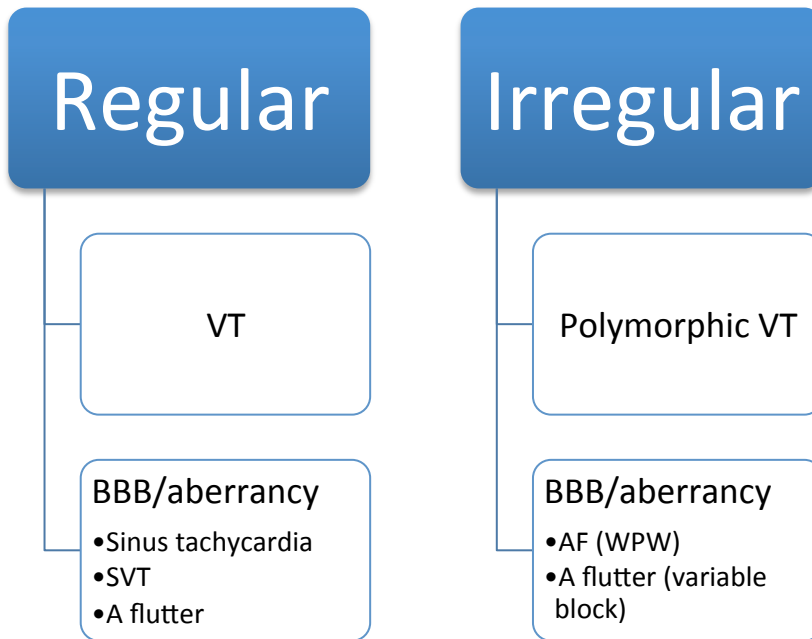
Irregular NCTs:

The commonest arrhythmia in this group is atrial fibrillation with a rapid ventricular rate. Not infrequently, the monitor or the 12 lead ECG will capture saw-tooth waves that are fleeting in appearance. In this situation, the arrhythmia is often termed "flutter-fibrillation". It has implication for treatment as the patient is managed as per atrial fibrillation with the concern for anticoagulation factored in (see later).

Atrial flutter can also be conducted irregularly due to inconsistent block at the atrio-ventricular node. This arrhythmia is called atrial flutter with variable block.

Wide Complex Tachycardia

WCTs are approached in the same way as NCTs.



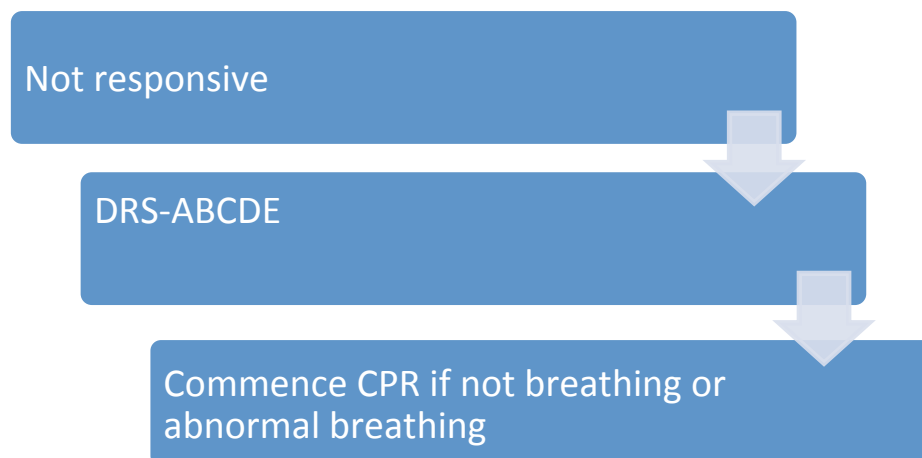
Regular

Supraventricular tachycardia with an underlying abnormal ventricular conduction present as WCTs. The deviation from the normal conduction is also called aberrant conduction this can be due to a bundle branch block or accessory pathway between the atria and ventricles.

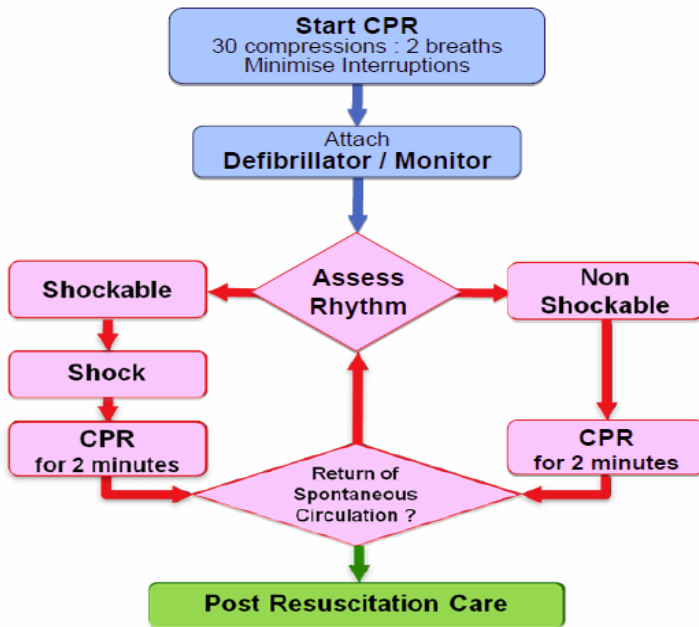
Atrial flutter is one of the supraventricular tachycardias. A rate of 150/min would suggest atrial flutter with 2:1 block and 300/min would be consistent with a 1:1 block.

Important note: If there is doubt it is advisable to consider the regular WCT to be VT. This is important when choosing the drugs to be used in treatment. There are several decision rules to support VT rather than SVT with aberrant conduction. However, in the ED, this approach is generally less safe than adopting the initial perspective of assuming VT until there is certainty of aberrancy – such as the presence of a pre-morbid ECG from medical notes.

Recognition of Cardiac Arrest



Advanced Life Support for Adults



During CPR
 Airway adjuncts (LMA / ETT)
 Oxygen
 Waveform capnography
 IV / IO access
 Plan actions before interrupting compressions
 (e.g. charge manual defibrillator)
 Drugs
 Shockable
 * Adrenaline 1 mg after 2nd shock
 (then every 2nd loop)
 * Amiodarone 300 mg after 3rd shock
 Non Shockable
 * Adrenaline 1 mg immediately
 (then every 2nd loop)

Consider and Correct
 Hypoxia
 Hypovolaemia
 Hyper / hypokalaemia / metabolic disorders
 Hypothermia / hyperthermia
 Tension pneumothorax
 Tamponade
 Toxins
 Thrombosis (pulmonary / coronary)

Post Resuscitation Care
 Re-evaluate ABCDE
 12 lead ECG
 Treat precipitating causes
 Re-evaluate oxygenation and ventilation
 Temperature control (cool)

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Team Skills

These are skills which are required to work effectively as part of a team, often described as the “non technical skills” of team work.

These are some of the skills which have been practiced as part of the three scenarios in this module.

- Assemble the right team
- Plan and Prepare
- Manage Resources
- Manage People
- Communicate Effectively
- Monitor and Evaluate
- Support Each other

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