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Bradycardic Rhythms

- Sinus Bradycardia is any rhythm where the heart rate is < 60 bpm. Bradycardia usually involves one of the following rhythms:

- **Sinus Bradycardia**
- **First degree AV block**
- **Second degree AV block**
 - **Type I (Mobitz I / Wenckebach)**
 - **Type II (Mobitz II or Fixed)**
- **Third degree AV block**

The Key Clinical Questions to ask are, Is the Bradycardia causing the patient's symptoms or Is there some illness perhaps causing the Bradycardia

- Sinus Bradycardia in a patient can have multiple causes. Some will require treatment, while at other times it will not, often depending on the cause(s) and the physical condition / health of the patient. Bradycardia can present itself as either **'Stable or Unstable.'**

- **There are three criteria to determine if a patient with Bradycardia is Symptomatic/ Unstable. They are:**

- **The Heart rate is SLOW**
- **The patient has SYMPTOMS**
 - Unstable Signs and Symptoms can include:
 - Chest discomfort
 - Shortness of Breath / Dyspnea
 - Decreased Level of Consciousness
 - Weakness
 - Fatigue
 - Syncope, or Pre-syncope
 - Fatigue
 - Lightheadedness
 - Hypotension
 - Diaphoresis

- **The symptoms are due to the SLOW HEART RATE**

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Treatment for Bradycardia:

- Treating Bradycardia will be determined by the severity of the patient's condition
- **THE** primary determining factor in the algorithm decision on how aggressive we need to be in treating the patient is determined by :
 - Asking '**How well is the patient PERFUSING?**' and
 - The **severity of the Patient's Condition**

If Stable

[Perform on every patient]

- Do your Primary [Life-threatening] and Secondary [S.A.M.P.L.E] Surveys to determine the new onset and possible cause(s) of the Bradycardia
- Establish an IV, Draw Labs, and obtain Vital Signs
- Perform a 12-Lead
- Oxygen as needed
- Consider the H's & T's
- Seek expert Medical Consultation

If Unstable / Poor Perfusion

[In addition to the above treatment]

- **Chest pain,**
- **Signs of shock**
- **Low BP**
- **ALOC**

- Consider:
 - Atropine at 1 mg IV [maximum 3mg]
 - Transcutaneous Pacing
 - Epinephrine 2 - 10 mcg/min
 - Titrate to patient's response
 - Dopamine 2 - 20 mcg/kg/min
 - Titrate to patient's response

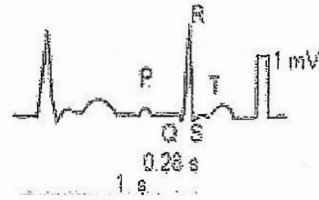
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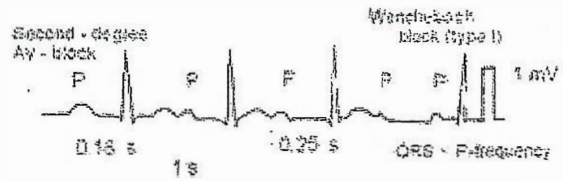
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POEM"

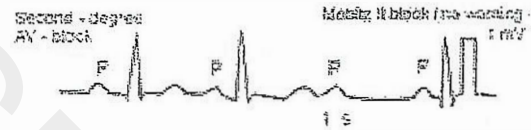
If the R is far from P,
then you have a FIRST DEGREE.



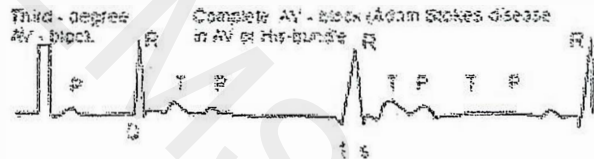
Longer, longer, longer, drop!
Then you have a WENCKEBACH.



If some Ps don't get through,
then you have MOBITZ II.



If Ps and Qs don't agree,
then you have a THIRD DEGREE.



First degree AV block



Second degree AV block (Mobitz I or Wenckebach)



Second degree AV block (Mobitz II)



Second degree AV block (2:1 block)



Third degree AV block with junctional escape

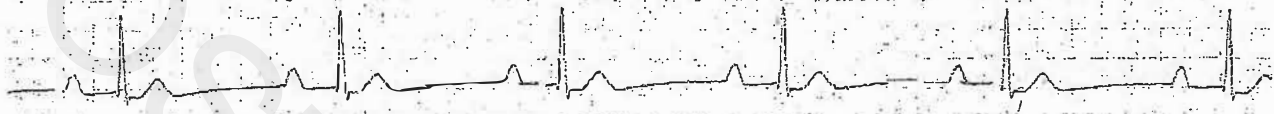




Atrioventricular [AV] Blocks

These blocks fall into three categories: First Degree, Second Degree Types I & II [two types], and Third Degree

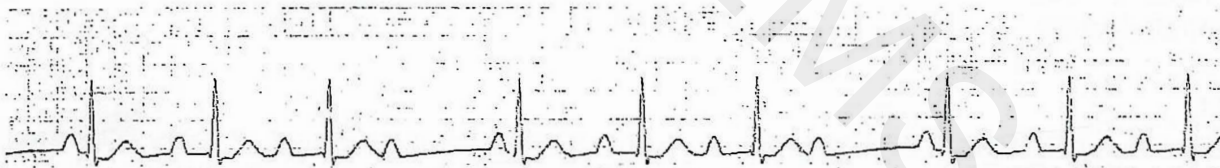
First Degree Block



First-degree atrioventricular block (AV block), or PR prolongation, is a disease of the electrical conduction system of the heart in which the PR interval is lengthened beyond 0.20 seconds [or five (5) small squares on the ECG]. In first-degree AV block, the impulse conducting from the atria to the ventricles, through the atrioventricular node (AV node), is delayed and travels slower than normal. First Degree Block can be caused by medications such as: Digoxin, Calcium Channel Blockers, and Beta Blockers.

If the R is far from P, then you have a First Degree

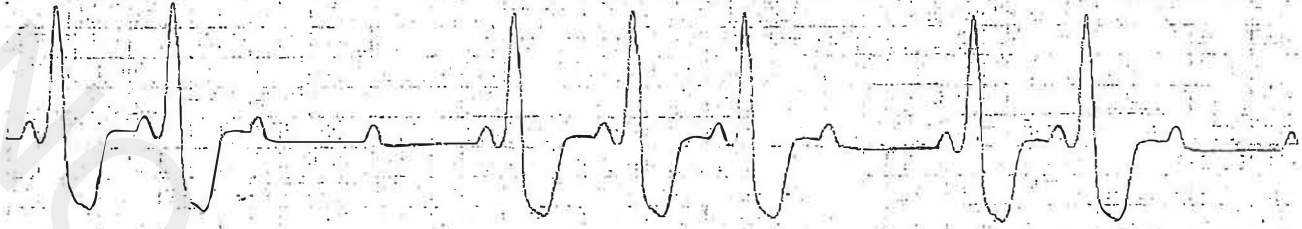
Second Degree Block - Mobitz / Type I [Wenckebach]



Second Degree AV Block Type 1 is a disease of the AV node. This heart block is characterized by **progressive prolongation of the PR interval** on the electrocardiogram (ECG) on consecutive beats followed by a blocked P wave (i.e., a 'dropped' QRS complex). After the dropped QRS complex, the PR interval resets and the cycle repeats itself. This particular rhythm can be caused by medications such as: Digoxin, Calcium Channel Blockers, and Beta Blockers. Cardiac ischemia found in the Right Coronary Artery can also cause this rhythm.

Normal, longer, longer, 'drop'... then you have Wenckebach

Second Degree Block - Mobitz / Type II



Second-degree AV block Type 2, also known as "Mobitz II," is almost always a disease of the distal conduction system (His-Purkinje System). This block can often cause compromised cardiac output which can lead to a complete AV Block.

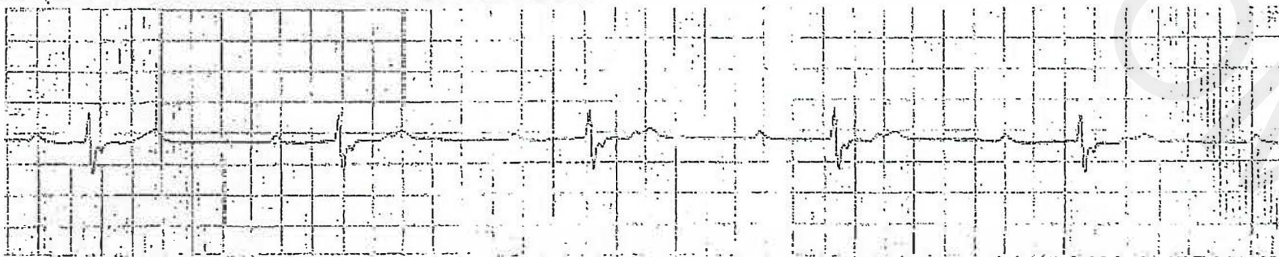
Mobitz II heart block is characterized on a surface ECG by intermittently non-conducted P waves not preceded by PR prolongation and not followed by PR shortening. **When there is a PR interval, it is usually within normal limits**, but could be consistently prolonged. However, there will be dropped beats characterized by P waves without a QRS complex [the beat is blocked at the AV node]. The number of blocked beats can vary in number and will be irregular. This is what makes this such a dangerous block.

If some Ps don't get through, then you have a Mobitz II

Second-degree AV block - Fixed Conduction

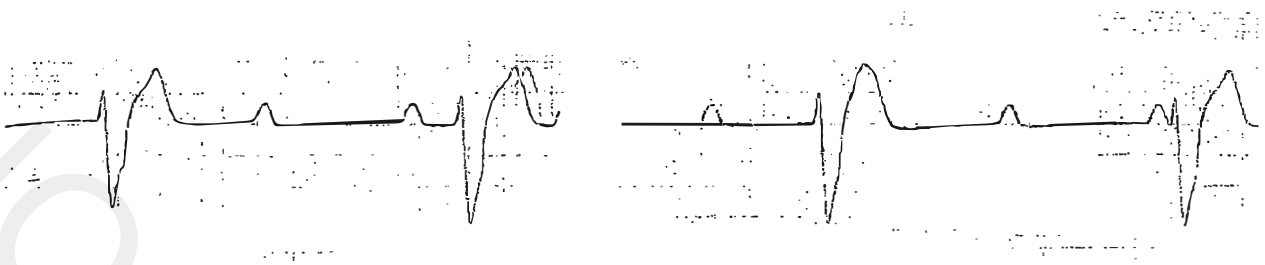
There is an additional type of Second Degree AV Block - **Mobitz II with a fixed ratio/conduction of P waves to QRS complexes**. It is still a dangerous block that can lead to Third Degree Block and Death unless treated. This type of Mobitz II is characterized by a **regular number of P waves before every QRS complex**. It will usually present as a regular 2:1 conduction [2 P waves before every QRS], or 3:1 conduction [3 P waves before every QRS], or 4:1 conduction [4 P waves before every QRS], etc.

Example of: Mobitz II with 2:1 conduction



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Third Degree Block - Complete Heart Block

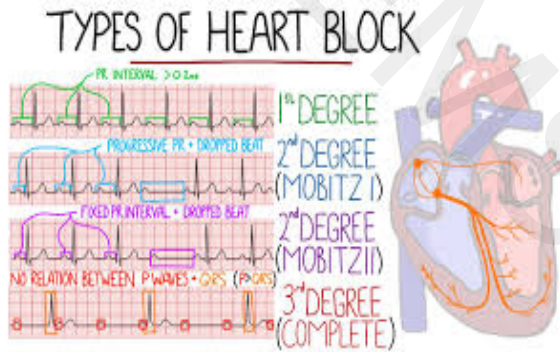


Third-degree atrioventricular block (AV block), also known as **complete heart block**, is a serious medical condition in which the impulse generated in the sinoatrial node (SA node) in the atrium of the heart does not propagate to the ventricles.

Because the impulse is blocked, there is an accessory pacemaker in the lower chambers that will typically activate the ventricles. This is known as an **escape rhythm**. Since this accessory pacemaker also activates independently of the impulse generated at the SA node, this is a very dangerous block because two independent "rhythms" can be noted on the ECG. This rhythm is often associated with cardiac ischemia involving the Left Coronary Arteries

You will find that the P waves and QRS complexes are regular, but not associated with each other. The P waves [usually 60 to 100 bpm] will march out regularly throughout the rhythm. The QRS complexes [usually 30 to 40 bpm] will also be regular and march out. They just don't associate.

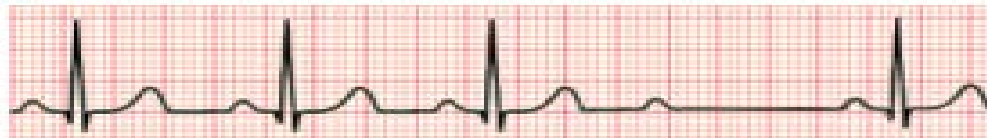
If Ps and Qs don't agree, then you have a Third Degree



Mobitz I or Wenckebach



Mobitz II



2:1 block

