

Cardiac Review
Paced Rhythms
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Paced Rhythm Review

SINGLE CHAMBER ATRIAL PACEMAKER RHYTHM

RATE: Varies depending on pacer rate

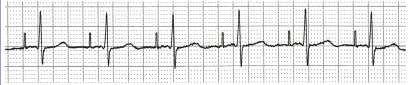
RHYTHM: Regular with asynchronous pacemaker and Irregular for demand pacemaker

P WAVES: Produced during atrial or dual chamber pacemakers and follows atrial spike

PR / QRS

- PR interval 0.12 to 0.20 seconds (normal)
- QRS interval less than 0.12 seconds (normal)

DEFINITION: A single lead is placed in the right atrium and paces the heart between 70 to 80 bpm. These settings will keep the patient's heart rate from falling below the set rate. Pacer spike falls before the P wave.



INTERVENTION **GOOD RHYTHM**

2

Paced Rhythm Review

SINGLE CHAMBER ATRIAL PACEMAKER INTERVENTIONS

There is no intervention needed as the pacemaker is functioning correctly. Continue to monitor for failure to capture, failure to pace, and failure to sense.

INTERVENTION **GOOD RHYTHM**

3

Paced Rhythm Review

SINGLE CHAMBER VENTRICULAR PACEMAKER RHYTHM

RATE: Varies depending on pacer rate


RHYTHM: Regular with asynchronous pacemaker and irregular for demand pacemaker


P WAVES: Produced during atrial or dual chamber pacemakers

PR / QRS


- PR interval **NONE**
- QRS Interval **WIDE greater than 0.12 seconds**

DEFINITION: A single lead is placed in the right ventricle and paces the heart between 70 to 80 bpm. These settings will keep the patient's heart rate from falling below the set rate. Pacer spike falls before the QRS complex.





INTERVENTION



GOOD RHYTHM

4

Paced Rhythm Review

SINGLE CHAMBER VENTRICULAR PACEMAKER INTERVENTIONS

There is no intervention needed as the pacemaker is functioning correctly. Continue to monitor for failure to capture, failure to pace, and failure to sense.



INTERVENTION



GOOD RHYTHM

5

Paced Rhythm Review

DUAL CHAMBER PACEMAKER RHYTHM

RATE: Varies depending on pacer rate


RHYTHM: Regular with asynchronous pacemaker and irregular for demand pacemaker


P WAVES: Produced during atrial or dual chamber pacemakers

PR / QRS


- PR interval 0.12 to 0.20 seconds (normal)
- QRS Interval **WIDE greater than 0.12 seconds**

DEFINITION: Leads is placed in the right atrium and right ventricle and paces the heart at a fixed rate. These settings will keep the patient's heart rate from falling below the set rate. Pacer spikes fall before the P wave and QRS complex.





INTERVENTION



GOOD RHYTHM

6

Paced Rhythm Review

DUAL CHAMBER PACEMAKER INTERVENTIONS

There is no intervention needed as the pacemaker is functioning correctly. Continue to monitor for failure to capture, failure to pace, and failure to sense.



INTERVENTION



GOOD RHYTHM

7

Paced Rhythm Review

FAILURE TO SENSE - UNDERSENSING RHYTHM

RATE: Varies depending on pacer rate

RHYTHM: Irregular due to spike occurring close to previous beat

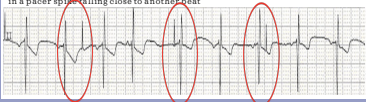
P WAVES: Produced during atrial or dual chamber pacemakers


PR / QRS

- PR interval 0.12 to 0.20 seconds (normal)
- QRS Interval **WIDE** greater than 0.12 seconds


DEFINITION: Sense is the ability for the pacemaker to interpret and respond to the cardiac own intrinsic rhythm

Undersense is the failure of the pacemaker to recognize the intrinsic rhythm resulting in a pacer spike falling close to another beat





INTERVENTION



BAD RHYTHM

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Paced Rhythm Review

FAILURE TO SENSE - UNDERSENSING CAUSES

- Asynchronous modes
- Lead dislodgement
- Decreased P wave or QRS voltage
- Damaged pacing wires
- Battery failure
- Acute myocardial infarction



INTERVENTION



BAD RHYTHM

9


Paced Rhythm Review

FAILURE TO SENSE - UNDERSENSING INTERVENTIONS

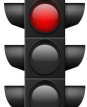
- **Undersensing:** Pacemaker fails to interpret the intrinsic rhythm and continues to pace at a fixed rate. Pacer spike falls too close to the previous beat.

Interventions may include:

- Assess the patient
- Obtain chest x-ray to verify lead placement
- Consult provider for sensitivity setting adjustments, pacer rate, and replacement of leads
- Confirm pacemaker is not set to asynchronous mode
- Treat PVCs to prevent R on T phenomenon



INTERVENTION



BAD RHYTHM

10

Paced Rhythm Review

FAILURE TO SENSE - OVERSENSING RHYTHM (FAILURE TO PACE)

RATE: Varies depending on pacer rate

RHYTHM: May be regular or irregular

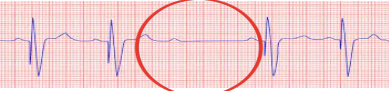
P WAVES: Produced during atrial or dual chamber pacemakers


PR / QRS

- PR interval 0.12 to 0.20 seconds (normal)
- QRS Interval **WIDE** greater than 0.12 seconds

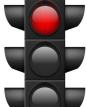
DEFINITION: Sense is the ability for the pacemaker to interpret and respond to the cardiac own intrinsic rhythm

Overensing is when the pacemaker identifies an extra electrical activity as a normal intrinsic beat and do not fire leading to under pacing.





INTERVENTION



BAD RHYTHM

11

Paced Rhythm Review

FAILURE TO SENSE - OVERSENSING CAUSES (FAILURE TO PACE)

- Sensitivity is set too high
- Interference (electromagnetic)
- Programmed rate is inappropriate for patient
- Shivering or seizures



INTERVENTION



BAD RHYTHM

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Paced Rhythm Review

FAILURE TO SENSE - OVERSENSING INTERVENTIONS (FAILURE TO PACE)

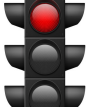
- **Overensing:** Pacemaker oversenses a T wave or some other electrical signal and resets the pacemaker timing incorrectly.

Interventions may include:

- Assess the patient
- Obtain chest x-ray to verify lead placement
- Consult provider for sensitivity setting adjustments, pacer rate, and replacement of leads
- Remove any interference
- Ensure the equipment is grounded appropriately (positive and negative are connected appropriately)



INTERVENTION



BAD RHYTHM

13

Paced Rhythm Review

FAILURE TO CAPTURE RHYTHM

RATE: Varies depending on pacer rate

RHYTHM: Irregular


P WAVES: May be absent after spike


PR / QRS

- PR interval none
- QRS interval may be absent after spike

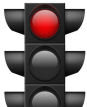
DEFINITION: Capture is the ability for the pacemaker to depolarize the chamber being paced. Pacer spikes are followed by a P wave or QRS complex.

Failure to capture is when the pacemaker provides the chamber with a stimulus, but depolarization does not occur





INTERVENTION



BAD RHYTHM

14

Paced Rhythm Review

FAILURE TO CAPTURE CAUSES

- Lead displaced or lead wire is broken
- Scar tissue formed around the lead tip
- Chamber perforation
- Acute myocardial infarction
- Electrolyte disturbances



INTERVENTION



BAD RHYTHM

15

Paced Rhythm Review

FAILURE TO CAPTURE INTERVENTIONS

- Assess the patient
- Consult provider for voltage setting adjustments, lead positioning, and replacement of the battery
- Monitor for cardiac tamponade
- Correct the underlying cause

