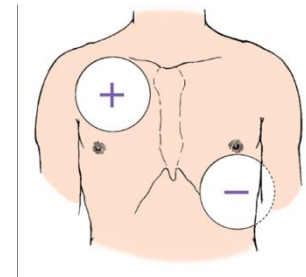


Lets Learn About Pacemakers

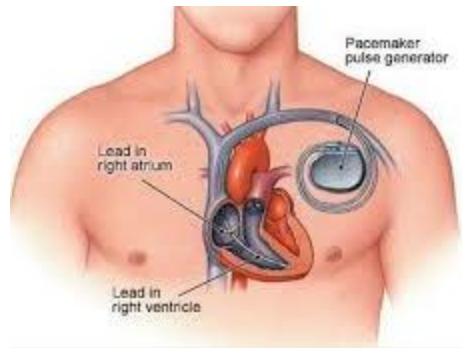
- Transvenous pacing
 - Permanent
 - Temporary
- Epicardial pacing
 - Permanent
 - Temporary
- Transcutaneous pacing
 - Temporary
- Leadless pacing
 - Permanent



Transvenous pacing

Threading of pacing lead through a vein into the right atrium, right ventricle, or both

- A. Can be permanent
- B. Can be temporary.



A



B



NURSING CARE (Tranvenous)

- Monitor EKG for functioning of pacemaker, look for presence of paced rhythm
- Ensure all connections are secure
- Check sensitivity and document every shift
- Change electrodes every 24 hours
- Change battery every 24 hours
- Monitor vital signs as per unit
- Monitor patients level of comfort
- Change dressing every 48 hours
 - Do not dislodge electrode when removing existing dressing
 - Assess insertion site for signs of infection and phlebitis
 - Apply chloraprep and dry sterile dressing and tape securely
- Minimize motion of extremity or torso at site of insertion to avoid dislodgment of electrode
 - Keep patient on bed rest for 24hrs
- Check the peripheral pulses distal to insertion site for signs of thrombosis.



Epicardial pacing

The pacing electrodes are placed in the outer wall of the atrium or ventricle.

- A. Can be permanent: Performed in pediatrics b/c they have small veins and unable to thread transvenous pacing leads. Performed also in congenital heart patients
- B. Can be temporary: Used during open heart surgery should the procedure create AV block.



Policy Number
6030.05010



Epicardial pacing

- Nursing Staff must be aware that if two wires are present, they are located in the ventricular chambers of the heart. If four wires are present, two will be located in the atrial chambers and two will be located in the ventricular chambers of the heart. If there are any questions about the location of epicardial wires, the cardiovascular surgeon must be notified.



Care of the Epicardial Wires Connected to a Temporary Pacemaker

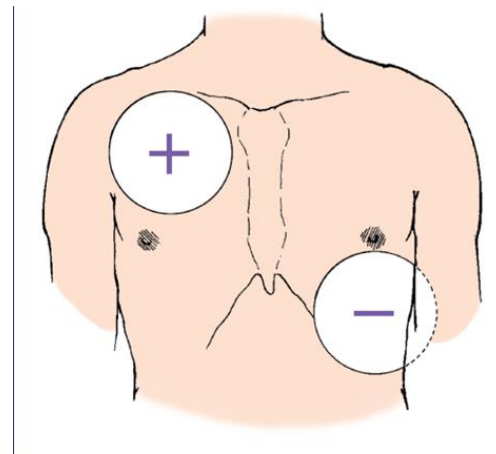
1. Wash hands and don gloves.
2. Cleanse pacer wire insertion site every 24 hours with antiseptic solution and wipe off excess.
3. Dress with 2x2 gauze
4. Tape pacer wires securely to the patient's abdomen to prevent accidental dislodgment.
5. Assure that pacer wires are attached to cable and secure cable/wire connector securely to the patient's abdomen with tape.
6. Replace the batteries when the low battery indicator flashes during temporary pacemaker operation.
7. Document as follows:
 - *Date and time of site care.
 - *Condition of insertion site.

Removal of epicardial pacer wires to be done by CVNN Only



Transcutaneous pacing (TCP)

Performed as initial pacing method of choice in emergency cardiac care



Transcutaneous pacing

Setting the pace

- Explain the purpose of TCP to your patient. Let them know it will involve some discomfort, and that you'll administer medications as ordered to keep the patient comfortable.
- Clip excessive body hair if necessary
- Position the electrodes on clean, dry skin and set the pacing current output



Transcutaneous pacing

- Setting the pace – Cont

- Set the pacing current output (in milliamperes, mA) as follows:
 - **Bradycardia:** start with the minimal setting and slowly increase output until the pacer spike appears on the monitor screen . Continue increasing output until the ECG tracing indicates electrical “capture” (generally characterized by a widened QRS complex and broad T wave after each pacer spike, as shown here). Add 2 mA or set the output 10% higher than the threshold of initial electrical capture as a safety margin. (Threshold is the minimum current needed to achieve consistent electrical capture.)



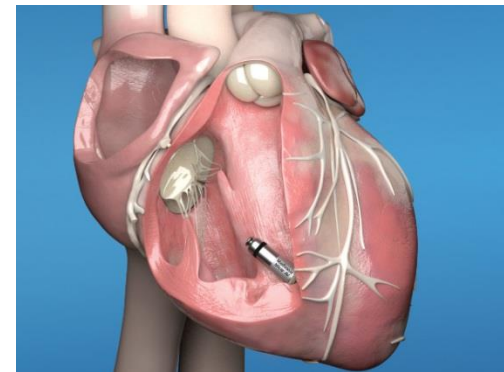
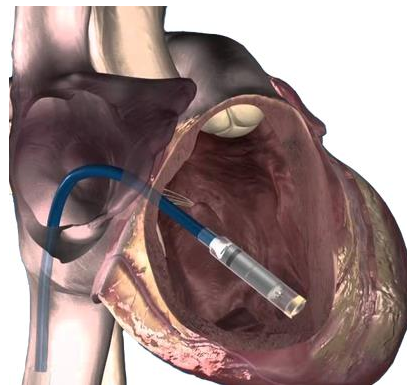
CAUTIONS FOR USING TCP

- Watch for a change in your patients underlying rhythm.
- Periodically check the area where the electrodes are placed for skin burns or tissue damage. Inspection and repositioning as needed to alleviate this problem.

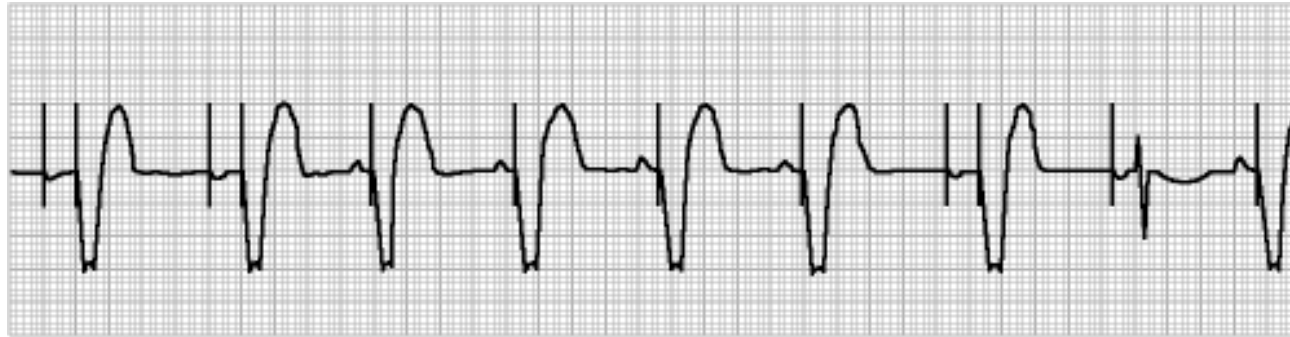


Leadless pacing

The small leadless pacemaker are placed directly in the heart via femoral vein approach.



Major Pacing Rhythm Nurses Should Know



Normal A V pacing with normal capture and sensing

Policy Number
6030.20000



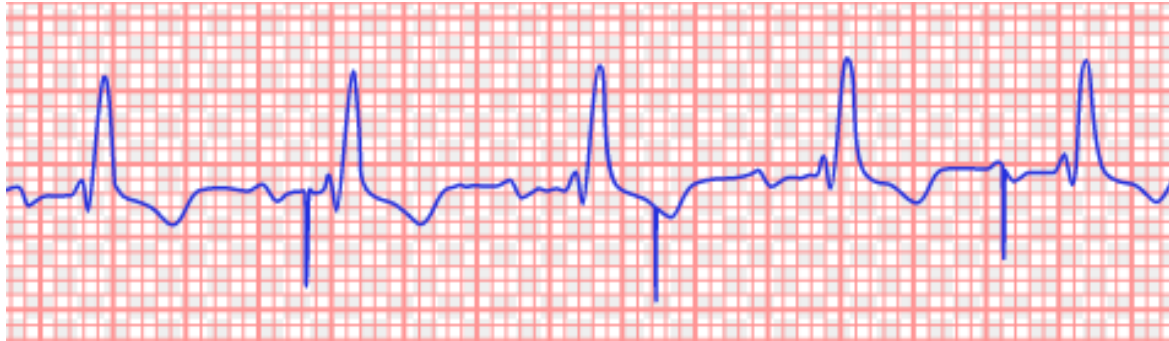
Major Pacing Rhythm Nurses Should Know



After the 5th beat: Ventricular non capture



Major Pacing Rhythm Nurses Should Know



Ventricular undersensing



PROCEDURE for Temporary Pacemaker MALFUNCTIONS AND INTERVENTIONS

- A. Undersensing or Non-sensing** (when the pulse generator doesn't sense the patients intrinsic beats)- pacer spike occurs too soon after QRS:
1. Increase sensitivity by turning the pacemaker sensitivity dial to the RIGHT OR "MOST" synchronous mode or to the lower number of mV
 2. Reposition electrode (done by physician)



Major Pacing Rhythm Nurses Should Know



Ventricular oversensing



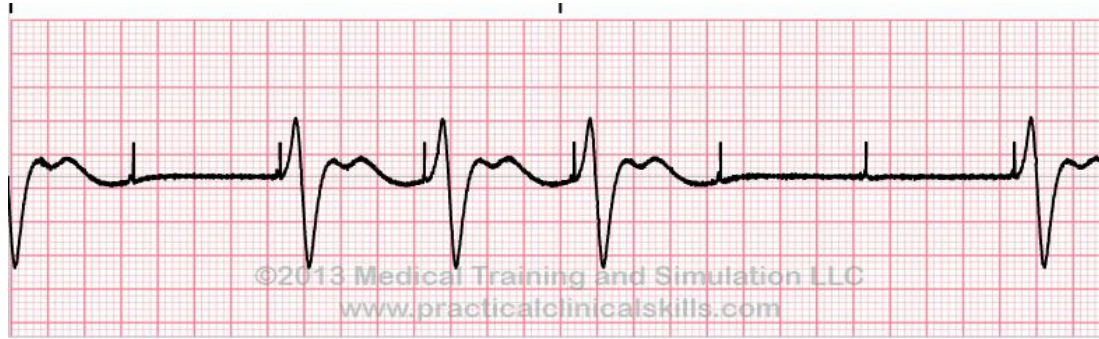
PROCEDURE for Temporary Pacemaker MALFUNCTIONS AND INTERVENTIONS

B. Over-sensing – Unexplained pauses

1. Decrease atrial output settings.
2. Decrease ventricular sensitivity
3. Reposition electrode (done by physician)



Major Pacing Rhythm Nurses Should Know



Failure to capture



PROCEDURE for Temporary Pacemaker MALFUNCTIONS AND INTERVENTIONS

- C. **Failure to capture** (when the ventricle fails to respond to a pacing stimulus) – spike occurs on time (or at the automatic interval) but fails to generate a QRS sequence:
1. Increase output (MA) to a higher number
 2. Change battery if necessary
 3. Reposition electrode (done by physician)



FYI

- Medtronic has given us iPads to interrogate our patients' pacemakers. This program is very user friendly and the step by step instructions are located with the IPADS.
- This device will **only** read Medtronic pacemakers



The IPADS are located on 2 DOU, 3 Vineyard East,
CCU, SICU



If you want to learn more about pacemaker functions and rhythm recognition, there is a pacemaker class you can take.

Check with your nursing educators for the next pacemaker class schedule.

