Transvenous Pacemaker

Equipment Checklist
- Sterile skin prep
- Lidocaine, syringe, needle for injection
- Syringe with needle for cannulation
- Wire for Seldinger technique
- Scalpel
- Sheath introducer (5.5 or 6 Fr) & dilator
- Pacing wire
- 3-way stopcock
- 3 ml syringe
- Sterile sleeve
- Suture, needle driver, & sterile dressing
- Connecting cable
- Adapter pins
- Pacing generator with new battery

Initial Settings for Pacing Generator
- Rate 80 beats/min
- Output 5 mA of current
- Sensitivity 3 mV
- Asynchronous (fixed) mode
  For crashing patients, increase output and turn the sensitivity to "OFF."

Overview of Connections
- Pacing wire in RV → pacing wire coming out of sheath introducer in right IJ → stopcock closed → pacing wire connected to adapter pins → adapter pins plugged into connecting cable (positive to positive, negative to negative) → connecting cable plugged into pacing generator

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**Transvenous Pacemaker**

1. **Insert the sheath introducer**
   Insert the sheath introducer in the right IJ (same technique as a central line).

2. **Setup the connecting cable**
   Nonsterile assistant plugs connecting cable into pacing generator (“V” if dual chamber).

3. **Check balloon**
   Check balloon on pacing wire by using the measured balloon syringe that has the stopper, then deflate it.

4. **Sterile sleeve**
   Place sterile sleeve over wire. Check direction to ensure sleeve will connect to introducer.

5. **Use ultrasound if possible**
   Have an assistant hold US probe in a subxiphoid view during procedure for a continuous view of wire placement.

6. **Insert pacing wire**
   With the curve of the coil facing the intended direction of travel, insert wire through the sheath introducer.

7. **Advance to 20 cm**
   Advance wire to 20 cm, marked by 2 black lines on the pacing wire. At 20 cm the tip of the wire will be out of the sheath introducer.

8. **Connect to pacing generator**
   Connect adapter pins to the pacing wire. Plug the connecting wire into the adapter pins (positive to positive, negative to negative).

9. **Turn on the pacing generator**
   With a new battery in place, turn on the pacing generator with the settings described on page 1.

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Fails to capture?
If the wire is in the RV but not achieving capture, try increasing the output and decreasing the sensitivity.

Deflate the balloon
Deflate the balloon so the wire does not migrate out of the RV. Turn stopcock to off position.

Inflate the balloon
Advance wire to 30 cm (3 black lines) so the tip is in the SVC. Inflate balloon and turn stopcock off.

Verify mechanical capture
Confirm mechanical capture by palpating the pulse or seeing a pulse oximeter waveform at the paced rate.

Float the pacer into the RV
Slowly advance, floating balloon into RV (~35 cm). Capture = pacer spike & STEMI pattern on monitor.

Secure the sheath introducer
Suture down the sheath introducer and place a dressing on top.

Coiled wire?
If the wire coils in the RA, back it up so it uncoils, twist the wire 180° and re-advance it.

Adjust the output
Decrease output until capture is lost, then increase until it is regained. This titrates to the lowest effective output.

Open the sterile sleeve
Connect sterile sleeve to sheath introducer and expand open. Lock the distal end of the sleeve to the pacing wire.

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