

7.18 TRANSCUTANEOUS PACING

INDICATIONS

Adults: [2.07 Dysrhythmia: Symptomatic Bradycardia](#)

Persistent bradycardia typically <50 bpm, causing one or more of the following:
Altered mental status • Hypotension (Systolic <90mmHg) • Signs of shock • Chest pain

Pediatric: [8.03 Pediatric Dysrhythmia: Bradycardia](#)

Persistent symptomatic bradycardia, refractory to medications

CONTRAINDICATIONS

Asystole or PEA Cardiac Arrest ([2.04 Cardiac Arrest](#))

Hypothermia ([3.06 Cold Injury/Hypothermia](#))

PROCEDURE

1. Place pads in anterior/posterior position, if unable to place pad posteriorly can place in anterior/lateral position. Do not place pads over pre-existing implanted devices such as pacemakers or AICDs.
 - a. **Pediatrics:** Continue CPR if <60 bpm^A throughout procedure until mechanical capture is achieved
2. Attach pacing cables to pads
3. Switch to pacing mode^B
4. Adjust pacing rate to:
 - a. **Adults(>12 yo):** 60-80bpm (ideally >30 bpm above patient's initial rate)
 - b. **Pediatrics(<12 yo):** 100 bpm
5. Set initial current to zero mA, increasing mA until pacing is captured on monitor (Max 120mA)
 - a. If patient is unconscious increase by 20mA intervals, if conscious increase by 10mA intervals
 - b. Electrical capture can be identified on monitor as wide QRS morphology with peaked T waves (see example below)
6. Ensure mechanical capture by palpable of a femoral pulse with every QRS capture^C If unable to quickly access femoral pulse a right radial pulse can be utilized until femoral pulse accessed.
7. If electrical/mechanical capture not achieved at 120 mA, change vector of pads and repeat above steps
 - a. **Pediatrics:** If unable to achieve electrical/mechanical capture continue CPR if <60 bpm^A
8. Once both electrical and mechanical capture obtained, increase by 5-10mA^D
9. Once appropriate current obtained for capture, slowly increase heart rate (**Adults:** max 100 bpm) if necessary to relieve patient's symptoms from bradycardia
 - a. **Pediatrics:** please refer to length-based resuscitation tape for target heart rate and systolic blood pressure goals for age ([13.IV.Normal Pediatric Vital Signs](#))
10. Consider sedation/pain management for all patients undergoing pacing if systolic >90 mmHg (**Adults**) with [Midazolam](#)(Sedation) or [Fentanyl](#)(Pain).

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- a. **Pediatrics:** please refer to length-based resuscitation tape for systolic blood pressure goals for age ([13.IV.Normal Pediatric Vital Signs](#))

CONSIDERATIONS

- A. CPR is safe during TCP and should be performed in pediatric population until mechanical capture is achieved
- B. TCP should not be delayed for IV access, 12-lead ECG, or while waiting for atropine to take effect in an unstable patient
- C. Assessment of carotid pulse is not recommended as pacing can cause muscle contractions difficult to distinguish from pulse
- D. Electrical capture can happen without mechanical capture. Electrical capture can be assessed on monitor with identification of QRS complex after every pacer spike. Mechanical capture is evaluated with palpation of a femoral pulse with every QRS complex
- E. TCP is safe to perform in pregnant patients

