

Cardiovascular: Tachycardia with Pulse: Unstable

Goals: Maintain adequate oxygenation, ventilation and perfusion; correct the rhythm disturbance; search for the underlying cause

Inclusion Criteria: Patients of all ages with abnormally fast heart rate for age, a cardiac rhythm other than sinus tachycardia (with palpable pulses), and poor perfusion (acutely altered mental status, hypotension or shock, chest pain/discomfort or acute heart failure)

Exclusion Criteria: Patients with tachydysrhythmia and good perfusion; sinus tachycardia

Refer to: [Chest Pain](#), [Heat-Related Emergencies](#), [Poisoned Patient and Overdose](#), [Shock](#), [Stroke](#), [Tachycardia-Stable](#), [Toxic Chemical Exposure](#), [Vfib/pulseless VTach](#), and other, symptom-specific CPGs

NOTES:

- **This CPG is intended to treat hemodynamically unstable patients with narrow- or wide-complex tachydysrhythmia and HR usually greater than 150 bpm, not sinus tachycardia.**
- Sinus tachycardia should be treated according to the underlying cause.
- If the patient is stable with good perfusion, refer to [Tachycardia-Stable CPG](#).
- If pulseless arrest develops, immediately begin CPR and refer to the [Cardiac Arrest](#), [Asystole/PEA](#) and [Vfib/pulseless VTach CPGs](#), as appropriate.

Basic Level

1. Assess and support ABCs according to [UNIVERSAL CARE – ADULT](#) or [UNIVERSAL CARE – PEDIATRIC](#), as clinically indicated:
 - a. A (Airway): Ensure airway patency, with suctioning and OPA or NPA, as needed
 - b. B (Breathing): Provide supplemental oxygen to maintain SpO₂ of at least 94% (continuous monitoring)
 - c. C (Circulation): Evaluate, document and treat signs/symptoms of shock according to the [Shock CPG](#) and treat chest pain/discomfort according to the [Chest Pain CPG](#); initiate continuous ECG monitoring
 - d. D (Disability): Assess and document GCS; assess pupillary size and reactivity; assess for and treat possible acute stroke according to the [Stroke CPG](#)
 - e. E (Exposure/Environmental): Treat traumatic injuries according to the [Trauma CPG](#) and heat-related illness according to the [Heat-Related Emergencies CPG](#)
2. Positioning:
 - a. Place the patient in a position of comfort; treat shock according to the [Shock CPG](#)
3. Perform and document a POC Glucose analysis and treat according to the [Diabetic Emergencies CPG](#)
 - a. Do not administer glucose unless there is documented, symptomatic hypoglycemia
4. Obtain SAMPLE history, focusing on the “Hs and Ts”, prior cardiac history, and medications/drugs
5. Once advanced level care arrives on scene, give report and transfer care

Advanced Level

6. Maintain continuous SpO₂ and ECG monitoring and initiate continuous PetCO₂ monitoring until patient care has been transferred to hospital staff
7. Obtain and transmit a 12-Lead ECG as soon as possible, preferably before initiating transport:
 - a. **NOTE:** 3-Lead ECG monitoring is not a substitute for a 12-Lead ECG
 - b. **NOTE:** Do NOT delay care of the unstable patient for 12-Lead ECG acquisition
8. Obtain a rapid, focused “SAMPLE” history and physical examination to exclude sinus tachycardia as the likely cause of the patient’s symptoms:
 - a. ADULT: Narrow-complex tachycardia (NCT) with a rate greater than (220 – patient age (years)) is more likely to be Supraventricular Tachycardia (SVT) than Sinus Tachycardia
 - b. PEDIATRIC patient less than 14 years of age:

i. Child older than 1 year of age: HR greater than 180 bpm is more likely to be SVT
ii. Infant less than 1 year of age: HR greater than 220 bpm is more likely to be SVT
9. Establish IV/IO access at TKO (do NOT delay care of the unstable patient for vascular access)
 - a. Prepare for immediate, synchronized cardioversion, especially if IV/IO access is problematic
10. Proceed to **EITHER Step 11 OR Step 12**, depending on the width of the QRS complex on the ECG

11. **UNSTABLE** patient with **NARROW-Complex Tachydysrhythmia e.g. SVT (NOT Sinus Tachycardia):**

- a. "NARROW-Complex" definition: QRS duration less than/equal to 0.12 sec (0.09 sec in pediatric pt.)
- b. ADULT patient at least 14 years of age:
 - i. Immediate, synchronized cardioversion: Initial and subsequent recommended doses depend on the device manufacturer's recommendations:
 1. Narrow QRS, regular rhythm (probable SVT): Initial synchronized dose is 50 to 100 J
 2. Escalate subsequent synchronized shock doses, up to 200 J, or as specified by the device manufacturer
 - ii. If the patient is conscious and IV/IO access is in place, consider sedation:
 1. Midazolam 2.5 to 5 mg slow IV/IO/IM/IN
 2. May repeat once after 5-10 minutes (maximum total, cumulative dose: 10 mg); **OR**
 3. Diazepam 2.5 to 5 mg slow IV/IO/IM
 4. May repeat once after 5-10 minutes (maximum total, cumulative dose: 10 mg)
 - iii. **NOTE:** If ECG rhythm is narrow and regular, AND rate is greater than 220 – age (years), AND if an antecubital IV access is in place, consider adenosine: 12 mg IVP + 10-20 mL NS flush prior to attempting cardioversion
 1. **NOTE:** ECG monitor must run continuously (preferably with paper strip printout) during adenosine administration and response

c. PEDIATRIC patient less than 14 years of age:
i. And if QRS is narrow and rhythm is regular, prepare to administer adenosine:
ii. Dose: 0.1 mg/kg (maximum 6 mg) RAPID IVP + NS flush (5-10 mL)
iii. If no response, may repeat once: 0.2 mg/kg (maximum 12 mg) RAPID IVP + NS flush
iv. NOTE: ECG must run continuously, as described above for ADULT patient
v. If IV access is unavailable, or if adenosine is unavailable or ineffective, prepare for immediate synchronized cardioversion:
vi. Initial synchronized shock dose: 0.5 to 1.0 J/kg
vii. Repeat synchronized shock dose: 1 to 2 J/kg
viii. BioTel may authorize sedation with midazolam (0.1 mg/kg IV/IO/IM/IN)
ix. Contact BioTel as soon as possible after adenosine or cardioversion

- d. **NOTE:** Do NOT administer adenosine if:
 - i. Rhythm is irregularly-irregular (suggestive of Atrial Fibrillation)
 - ii. Rhythm shows "saw-tooth" pattern (suggestive of Atrial Flutter)
 - iii. Poisoning- or drug-induced tachycardia is suspected

12. **UNSTABLE** patient with **WIDE-Complex Tachycardia (WCT) (possible Ventricular Tachycardia):**

- a. "WIDE-Complex" definition: QRS duration greater than 0.12 sec (0.09 sec in pediatric pt.)
- b. ADULT patient at least 14 years of age with WCT:
 - i. Immediate, synchronized cardioversion: Initial and subsequent recommended doses depend on the device manufacturer's recommendations:
 1. Wide QRS, regular rhythm (probable VTach): Initial synchronized shock dose is 100 J
 2. Escalate subsequent synchronized shock doses, up to 200 J, or as specified by the device manufacturer
 - ii. If the patient is conscious, consider sedation, as in Section 11.b.ii
 - iii. **NOTE:** If WCT and IRREGULAR rhythm, deliver unsynchronized DEFIBRILLATION shock
 1. Defibrillation shock doses depend on device manufacturer (refer to [VF/pVT CPG](#))
 - iv. **NOTE:** If WCT morphology suggests Torsades de Pointes, administer magnesium sulfate:
 1. Add 2 g to 250 mL NS; infuse IVPB over 20 minutes (contraindicated if dialysis pt.)

d. PEDIATRIC patient less than 14 years of age with WCT (QRS greater than 0.09 sec):
i. Prepare for immediate synchronized cardioversion
ii. Contact BioTel prior to cardioversion attempt, if possible
iii. Initial synchronized shock dose: 0.5 to 1.0 J/kg
iv. Repeat synchronized shock dose: 1 to 2 J/kg
v. BioTel may authorize sedation with midazolam (0.1 mg/kg IV/IO/IM/IN)
vi. Contact BioTel as soon as possible, if not already done

13. Initiate transport and monitor vital signs, level of consciousness, ECG, SpO₂ and PetCO₂

14. For additional patient care considerations not covered under standing orders, consult BioTel