

## C04: Wide Complex Tachycardia

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Reviewed:

### Introduction

Wide complex tachycardias are characterized by QRS widths greater than 0.12 ms on an ECG. They are often, but are not always, synonymous with ventricular tachycardia (VT), which is a period of three or more ventricular origin beats at a rate of 100/minute or greater, and can either be monomorphic or polymorphic in nature.

### Essentials

- The objective of care is the rapid termination of life-threatening ventricular tachycardia. Electrical cardioversion is the safest, most reliable mechanism to convert VT into a stable perfusing rhythm.
- Although WCT can develop primarily, it is often a sign of an underlying clinical problem, such as ischemia, hypoxia, hyperkalemia, or increased sympathetic tone. A thorough history should be performed prior to formulating a management plan, and these underlying conditions should be considered and addressed concurrently with the tachycardia.
- Consider as unstable any patient with WCT and any of:
  - Ischemic chest pain
  - Systolic blood pressure of less than 80 mmHg
  - Altered or rapidly falling level of consciousness
  - Significant shortness of breath or signs of cardiogenic pulmonary edema

### Additional Treatment Information

- Patients with a wide complex tachycardia who are clinically stable can be managed with supportive care only. However, these patients can deteriorate quickly, so preparatory measure should be taken (IV access, therapy electrodes placed and attached). For longer transport times (> 20 minutes), infusion of amiodarone can be considered in consultation with CliniCall.
- Unstable patients should be cardioverted as soon as possible. Sedation will generally be required.
  - Synchronized cardioversion is the preferred choice in monomorphic wide complex tachycardia. Begin at 100J, escalating by 100J to a maximum of 360J. If cardioversion fails, consider switching to the alternate pad placement (i.e., if positioned anterior-lateral, place new pads anterior-posterior). Consultation with CliniCall for refractory VT is recommended. When performing a synchronized cardioversion, ensure that the shock button is pressed and held until the energy is delivered.
  - For unstable polymorphic ventricular tachycardia, unsynchronized cardioversion (i.e., defibrillation) is the preferred choice. Begin at 200J and follow the standard energy escalation protocol.
- Stable polymorphic wide complex tachycardia can be managed with magnesium sulfate. Unstable polymorphic WCT should be defibrillated (unsynchronized cardioversion), beginning at 200J.

### General Information

- Wide complex tachycardia is generally regular. Some irregularity can be normal in ventricular tachycardia, but consistently irregular wide complex rhythms should prompt consideration of an atrial origin rhythm, usually atrial fibrillation, in conjunction with a bundle branch block.
  - Note that this must be distinguished from polymorphic WCT or Torsade de pointes, where the morphology each QRS complex is different, and the R-R interval continues to change.
- A small percentage of regular, wide complex tachycardias are actually supraventricular in origin and result from an aberrantly conducted electrical impulse, but the vast majority are, and should be managed as, ventricular tachycardia.

### Interventions

**First Responder**

- Oxygen as required to maintain  $\text{SpO}_2 \geq 94\%$ 
  - [→ A07: Oxygen and Medication Administration](#)
- Position of comfort
- Monitor patient closely. Consider potential for sudden deterioration. An AED must be available. Be prepared to perform chest compressions.
  - [→ PR06: High-performance CPR](#)

**Emergency Medical Responder – All FR interventions, plus:**

- Oxygen as required to maintain  $\text{SpO}_2 \geq 94\%$ 
  - [→ A07: Oxygen and Medication Administration](#)
- Transport early
- Consider ACP intercept if available

**Advanced Care Paramedic – All FR, EMR, and PCP interventions, plus:**

- Obtain and interpret 12 lead ECG
  - [→ PR16: 12 Lead ECG](#)
- Attach therapy electrodes
- Obtain vascular access
  - [→ D03: Vascular Access](#)
- For stable, monomorphic WCT:
  - CliniCall consult
  - [Amiodarone](#)
- For unstable, monomorphic WCT:
  - Sedation and analgesia as required
    - [→ PR17: Procedural Sedation](#)
- Synchronized cardioversion, 100-200-300-360J
  - [→ PR20: Synchronized Cardioversion](#)
  - Consider switching electrical axis if cardioversion fails
- For stable, polymorphic WCT:
  - CliniCall consult
  - [Magnesium sulfate](#)
- For unstable, polymorphic WCT:
  - Sedation and analgesia as required
    - [→ PR17: Procedural Sedation](#)
- Defibrillate 200-300-360J

**Evidence Based Practice**

[Stable Wide Complex Tachycardia](#)

[Unstable Tachycardia: Wide or Narrow Complex](#)

