

Case 8 Unstable Tachycardia

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Learning Objectives

At the end of Case 8 be able to

- Recognize unstable tachycardia
- Recognize that instability is due to the tachycardia
- Rapidly identify the specific rhythm
- Follow algorithms for tachycardias and cardioversion
- Properly perform synchronized cardioversion
- Provide post-cardioversion treatment and monitoring

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Case Scenario

- Your patient: a 45-year-old woman
- CC: palpitations, difficulty breathing, severe pressure on her chest, extreme weakness
- “I feel like I’m going to faint.”



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Classify Specific Tachycardia

1. Atrial fibrillation/flutter
2. Narrow-complex tachycardias
 - Paroxysmal supraventricular tachycardia (PSVT)
 - Junctional tachycardia
 - Multifocal atrial or ectopic atrial tachycardia
3. Wide-complex tachycardia of unknown type
 - Wide-complex tachycardia—not specified
 - Aberrant conduction of an SVT
4. Ventricular tachycardia
 - Stable monomorphic VT
 - Stable polymorphic VT (baseline QT interval normal)
 - Stable polymorphic VT (baseline QT interval prolonged = torsades de pointes)

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Know How to

- Operate defibrillator/monitor to both defibrillate and cardiovert
- Monitor rhythm through pads or paddles
- Define “defibrillation” vs “cardioversion”
- Switch to defibrillator/monitor mode or cardioversion mode
- Attach monitor leads in modified lead II configuration
- Recognize when device is in active *synchronization* mode
- Switch from synchronized cardioversion to unsynchronized defibrillation
- Understand major elements of post-cardioversion care: oxygen, IV access, monitoring, antiarrhythmics

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Electrical Cardioversion

Immediate electrical cardioversion is indicated for a patient with serious signs and symptoms related to the tachycardia.

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Sinus Tachycardia

Paroxysmal Supraventricular Tachycardia



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Sinus Tachycardia

- Symptoms and treatment
 - Pain—analgesia
 - Anxiety—sedation
 - Hyperdynamic state— β -blockade
 - Hypovolemia—volume replacement

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Supraventricular Arrhythmias

- Atrial flutter and fibrillation with hemodynamic compromise
 - Promptly restore normal sinus rhythm
 - Synchronized DC cardioversion or rapid atrial pacing
 - Avoid verapamil if hypotension or LV failure present

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Supraventricular Arrhythmias

- PSVT with hemodynamic compromise
 - Synchronized cardioversion

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Ventricular Tachycardia

- Unstable: synchronized cardioversion
 - Post-conversion: antiarrhythmics

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Afib/Flutter: Treatment

- If rate can be controlled before further compromise, consider antiarrhythmic therapy:
 - β -Adrenergic blockade
 - Diltiazem
 - Verapamil
 - Digoxin
 - Procainamide (not for rate control; only to prevent recurrence)
 - Quinidine (not for rate control; only to prevent recurrence)

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Atrial Flutter:

Atrial Rate = 250 bpm, Ventricular Rate = 125 bpm



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Atrial Flutter/Fibrillation: Treatment

- Indications for synchronized cardioversion
 - Any unstable condition related to tachycardia
 - Chest pain
 - AMI
 - Shortness of breath
 - Pulmonary congestion/CHF
 - Decreased level of consciousness
 - Low blood pressure
 - Shock

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Synchronized Cardioversion

- Procedure
 1. Attach monitor leads to patient
 2. Apply conductive material to paddles if not using hands-free defibrillation pads
 3. Turn on defibrillator

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Synchronized Cardioversion

- Procedure (cont'd)
 4. Turn on synchronization mode
 5. Verify synchronization signal on monitor screen
 6. Select energy level
 7. Place defibrillator paddles on chest and apply pressure (if necessary)
 8. Charge defibrillator

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Synchronized Cardioversion

- Procedure (cont'd)
 9. "CLEAR!"
 - Check yourself
 - Check patient
 - Check bed/stretchers
 10. Press both buttons until discharge occurs

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Synchronized Cardioversion

- Energy selection
 - PSVT: 50 J, 100 J, 200 J, 300 J, 360 J
 - VT: 100 J, 200 J, 300 J, 360 J
 - Polymorphic VT (treat like VF): 200 J, 200 to 300 J, 360 J
 - Atrial fibrillation: 100 J, 200 J, 300 J, 360 J
 - Atrial flutter: 50J, 100 J, 200 J, 300 J, 360 J

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Synchronized Cardioversion

- Premedicate with both a sedative and an analgesic if appropriate
 - Sedatives
 - Diazepam
 - Midazolam
 - Barbiturates
 - Etomidate
 - Ketamine
 - Methohexital
 - Analgesics
 - Fentanyl
 - Morphine
 - Meperidine