# TACHYARRHYTHMIAS

The tachycardia-with-a-pulse algorithm · rate > 150

**UNSTABLE?**
*cardiovert*

## STEP 1 · IS THE PATIENT UNSTABLE?

**UNSTABLE = any of:**

Hypotension / shock · altered mental status · ischaemic chest pain · acute heart failure

*Rate-related instability usually needs rate > 150*

### → SYNCHRONISED CARDIOVERSION

Narrow regular (SVT) 50-100 J · Narrow irregular (AF) 120-200 J · Wide regular (VT) 100 J

*Wide irregular → treat as VF: UNSYNCHRONISED defib. Sedate if able.*

## STEP 2 · STABLE? ASSESS THE QRS

*narrow < 0.12 s vs wide ≥ 0.12 s*

### NARROW & REGULAR

***Likely SVT (AVNRT / AVRT)***

Vagal manoeuvres → adenosine 6 mg then 12 mg.

If refractory: diltiazem or beta-blocker.

### NARROW & IRREGULAR

***Likely AF / flutter / MAT***

Rate control: diltiazem or beta-blocker (target < 110).

Consider amiodarone; anticoagulate per risk.

### WIDE & REGULAR

***VT until proven otherwise***

Amiodarone 150 mg / 10 min (or procainamide, sotalol).

Adenosine only if regular & monomorphic.

### WIDE & IRREGULAR

***AF + aberrancy / pre-excited AF / torsades***

Expert help. Pre-excited AF: NO AV-nodal blockers.

Torsades: magnesium 2 g. Defib if unstable.

## SPECIAL SITUATIONS & SAFETY

### WPW / PRE-EXCITED AF

Irregular wide with delta waves. AVOID all AV-nodal blockers (adenosine, verapamil, diltiazem, beta-blockers, digoxin) - can trigger VF. Use procainamide or DC cardioversion.

### TORSADES

Polymorphic VT + long QT. Magnesium 2 g IV, correct K & Mg, stop QT-prolonging drugs, overdrive pacing / isoprenaline. Defibrillate if pulseless.

### AF: RATE / RHYTHM & AC

Lenient rate < 110. Anticoagulate by $CHA_2DS_2$-VASc. Cardiovert if onset < 48 h; otherwise TOE or 3 weeks anticoagulation first.

## DRUG DOSES

*adult IV*

| Drug | Dose | Note |
|---|---|---|
| **Adenosine** | 6 mg rapid push + flush, then 12 mg | Regular narrow (& regular monomorphic wide). Avoid: pre-excited AF, asthma |
| **Diltiazem** | 0.25 mg/kg (15-20 mg) over 2 min | Rate control AF / flutter; avoid in HFrEF, WPW |
| **Metoprolol** | 2.5-5 mg IV q5 min (max 15 mg) | Rate control; avoid in decompensated HF, WPW |
| **Amiodarone** | 150 mg over 10 min, then 1 mg/min | Stable wide-complex; AF in heart failure |
| **Procainamide** | 20-50 mg/min (max 17 mg/kg) | Stable VT / pre-excited AF; avoid in long QT, HF |

**SINUS TACHYCARDIA (do not rate-control):** a compensatory response - find and treat the cause (pain, fever, hypovolaemia, sepsis, anaemia, PE, anxiety, drugs). Rate usually < 150 and variable, with a P wave before every QRS.

## PEARLS & PITFALLS

- Unstable + tachycardia = electricity, not drugs - synchronised cardioversion without delay.
- Pre-excited AF (WPW): NEVER give AV-nodal blockers - use procainamide or DC cardioversion.
- Treat a wide regular tachycardia as VT unless you are certain it is SVT with aberrancy.
- Warn before adenosine (flushing, transient asystole) and have the defibrillator ready.

**References:** AHA ACLS Tachycardia 2020/2025 · ESC SVT 2019 · ESC AF 2024 · ESC Ventricular Arrhythmias 2022.

*Educational aid; verify doses against local protocol and patient factors.*