**Synchronised DC Cardioversion**

**Routine indications:** AF/atrial flutter after 4 weeks anticoagulation  
**Emergency indications:** tachyarrhythmia with adverse signs (shock, syncope, myocardial ischaemia, heart failure)  
**Synchronised DC cardioversion** is used for patients with a pulse (shock synchronises with R wave to avoid inducing VF)  
**Unsynchronised DC cardioversion (defibrillation)** is used for patients without a pulse (cardiac arrest) – see ALS

**Pre-procedure**  
*Skip this section if it is being performed as an emergency*  
- Read referral letter  
- Check potassium >4mmol/L  
- Check ECG still shows AF/flutter  
- Consent patient  
  - Risks: stroke (<1%), pain or burns from pads, failure (1/3), ventricular arrhythmias (may require further shocks/CPR), bradycardia or asystole (may require external pacing)  
- Check anticoagulation has been taken for >4 weeks  
  - NOAC – check no missed doses  
  - Warfarin – check INRs in last 3 weeks are >2  
- Check patient is clinically well and fit for anaesthetic

**Procedure**  
- Anaesthetist must be present to sedate patient  
- Apply 3-lead cardiac monitoring (clockwise from right arm **Ride Your Green Bicycle**) and connect lead to external cardiac monitor or defibrillator machine  
  - Red: anterior aspect of right shoulder  
  - Yellow: anterior aspect of right shoulder  
  - Green: left anterior superior iliac spine  
  - Black: not present on defibrillation machine  
- Apply defibrillator pads (in AP position) after shaving chest if required  
  - ‘Right’ pad: place longitudinally on left sternal edge  
  - ‘Left’ pad: place longitudinally on left paraspinal muscles (in line with anterior pad)  
- Connect pads lead to defibrillator machine  
- Set defibrillator machine monitoring trace to ‘pads’  
- Set defibrillator to **synchronised mode** (synchronises shock with R wave to avoid inducing VF)  
- Set energy level (increase as shown if unsuccessful)  
  - Broad-complex tachycardia or AF: **150J → 200J → 200J** (biphasic)  
  - Narrow complex tachycardia or atrial flutter: **70J → 120J → 200J** (biphasic)  
- Ask anaesthetist to sedate patient and wait until they are happy to proceed  
- Ask everybody to move away from the patient and ask for the oxygen to be moved away  
- Press charge (then move hand away from button)  
- Re-check everybody and oxygen is away from the patient, announce you are about to shock and press and hold the shock until shock is delivered (it will wait for the R wave)  
- Re-assess the rhythm  
- If unsuccessful, repeat at next energy (maximum 3 attempts)

**Dealing with complications**  
- Asystole or bradycardia with haemodynamic compromise (SBP<90) → if sustained, proceed to transcutaneous pacing  
  - Set defibrillator to pacing mode  
  - Set onscreen pacing rate (default usually ~70bpm) and energy (default starting energy usually ~30mA)  
  - Click onscreen start pacing button  
  - Observe the monitor to see if QRS complexes follow every pacing spike – if not, increase the energy until they do – ‘electrical capture’ (usually occurs at 50-100mA)  
  - Next check the patients pulse corresponds to the induced QRS complexes – ‘mechanical capture’  
  - Seek senior help if does not resolve  
  - **Note you can touch the patient during pacing**  
- Bradycardia without haemodynamic compromise → monitor, reduce β-blockers  
- Ventricular tachycardia with pulse → repeat synchronised DC shock as above  
- Pulseless arrhythmia → unsynchronised DC shock if shockable rhythm (VT/VF); if ongoing or not shockable rhythm, start chest compressions and manage as cardiac arrest (see ALS)
**Post-procedure**

- Document procedure
- Complete discharge letter
  - Continue all medications (except digoxin if taking and successfully cardioverted)
  - Continue anticoagulation until patient has been reviewed at least 4 weeks post-cardioversion
- Book for clinic follow up
- Re-check ECG and observations
- Advise patient not to drive for 24 hours and stay with someone overnight