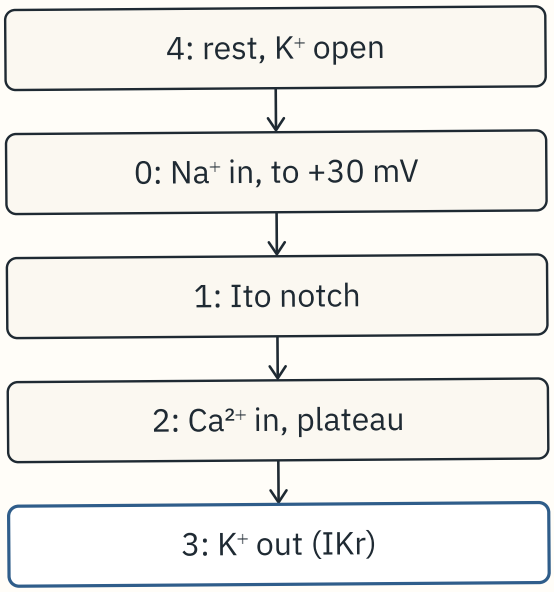
Ventricular action potential

Phases 0–4, currents and drug classes



Step by step

1. Highest-conductance ion wins the tug of war
2. Phase 0 slope sets conduction speed
3. Plateau Ca^{2+} triggers Ca^{2+} release from the SR
4. Na^{+} channels inactivated: no new action potential

Phase	Current	Drug class
0	Fast Na^{+} in, to +30 mV	I: flattens slope
1	Transient outward K^{+} (Ito)	–
2	L-type Ca^{2+} in (about 175 ms)	IV: acts on plateau
3	Delayed rectifier K^{+} (IKr)	III: delays phase 3
4	Resting K^{+}, near −90 mV	–

Phase, current and drug class

Count the phases

0 sodium in, 1 potassium out
2 calcium in, 3 potassium out
4 rest

Exam traps

- The funny current is a sinoatrial pacemaker current, not the ventricular plateau.
- Class I changes phase 0, class IV the plateau, class III phase 3.
- Too much slowing of repolarization lengthens QT and risks torsades de pointes.

Ventricular action potential: phases 0 to 4 and their ion currents

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/heart-sounds-murmurs-ecg/ventricular-action-potential

For exam study only, not medical advice. Follow local guidelines and your lab's ranges.
© 2026 Medservatory, a project of ADMR Solutions Ltd. Free to print and share for personal study.