Arrhythmias

Arrhythmia	Mechanism for Generation	Intervention	Effective drugs
Inappropriate sinus tachycardia	Enhanced normal automaticity	Decrease phase 4 depolarization	β-blockers, digitalis
Ectopic atrial tachycardia	Abnormal automaticity	Maximum diastolic potential or phase 4 depolarization	Digitalis, class I (not lidocaine), class IV
Accelerated idioventricular rhythm	Abnormal automaticity	Maximum diastolic potential or phase 4 depolarization	Usually don't treat; lidocaine, other class I agents, possibly class IV
Ventricular tachycardia in German shepherds	Early afterdepolarizations (EADs)	Arrhythmias occur at slow heart rate	β-Agonists or atropine (increase sinus rate)
Digitalis-induced arrhythmias	Delayed afterdepolarizations (DADs)	Suppress DADs or decrease calcium overload	Lidocaine or phenytoin, possibly class IV (verapamil)
Supraventricular tachycardia resulting from pre-excitation	Reentry (long or short excitable gap or calcium channel-dependent)	Prolong the refractory period or depress calcium channel-dependent conduction	Class I except Ib, class III, class IV, digitalis
Primary (slow) atrial fibrillation	Reentry (short excitable gap)	Prolong refractory period of atrial myocardium	Quinidine, class III
Secondary (fast) atrial fibrillation	Reentry with AV block	Prolong refractory period of AV node to slow ventricular rate	Digitalis, β-adrenergic blockers, diltiazem
Sustained monomorphic ventricular tachycardia	Reentry (long excitable gap)	Depress conduction and excitability to suppress; prolong refractory period to prevent ventricular fibrillation	Mexiletine, class III, lidocaine for short-term suppression
Nonsustained polymorphic ventricular tachycardia	Reentry (short excitable gap)	Prolong refractory period to suppress and prevent ventricular fibrillation	Class III, possibly mexiletine, lidocaine for short-term suppression
Ventricular fibrillation	Reentry (short excitable gap)	Prolong refractory period to prevent fibrillation	Class III
Ventricular premature contractions	Reentry	Prolong refractory period to prevent fibrillation if >30 per minute, or multiform and if primary cause can not be eliminated	Class III, possibly mexiletine, lidocaine for short-term suppression
AV nodal reentrant (most supraventricular) tachycardias	Reentry (calcium channel dependent)	Depress conduction and excitability	Class IV, class II, digitalis