**Antiarrhythmics**

Many antiarrhythmics have negative inotropic effects, with the potential to worsen active CHF. This is most likely to occur with the use of calcium channel blockers or β-blockers in the treatment of supraventricular tachyarrhythmias. Therapeutic decisions can be challenging when it is suspected that the presence of a tachyarrhythmia is worsening CHF by reducing the time for ventricular filling during diastole. This is further confounded by the fact that animals in heart failure generally have elevated sympathetic tone, which can worsen tacharrhythmias. Thus, there is some debate as to whether mild to moderate tachyarrythmias (heart rate of up to 180 bpm) in heart failure should be treated, or simply observed while awaiting better therapeutic control of heart failure.

There is little debate as to whether severe sustained tachyarrhythmias (heart rate >180–200 bpm) should be treated. As previously mentioned, digoxin is the treatment of choice in most patients with atrial fibrillation or supraventricular tachycardia in the setting of CHF. However, effects of digoxin are generally not seen for 3–5 days and, in many cases, it is only moderately effective at reducing the ventricular response rate to atrial fibrillation. Diltiazem or β-blockers such as atenolol are often added to digoxin for their ability to further slow AV nodal conduction and reduce the ventricular response rate (β-blockers should not be used if active CHF is present). If the addition of diltiazem or a β-blocker results in worsening signs of congestion, these agents should be withdrawn until the animal is no longer in CHF. Other options for the treatment of atrial fibrillation or supraventricular tachycardia in CHF include procainamide or amiodarone (see [Antiarrhythmics](http://www.merckmanuals.com/vet/pharmacology/systemic_pharmacotherapeutics_of_the_cardiovascular_system/antiarrhythmics.html)).

Treatment of significant ventricular arrhythmias (successive ventricular beats demonstrating R-on-T phenomena) or tachycardia (>160–180 bpm) in CHF is generally attempted with class IB antiarrhythmics (lidocaine or mexilitine) or amiodarone. All of these agents possess minimal or mild negative inotropic effects. Sotalol, a class III antiarrhythmic with β-blocking properties, may also be used, although it possesses more negative inotropic effects and may not be tolerated if significant myocardial dysfunction or CHF are present.

Chronic bradyarrhythmias as seen with AV block (high grade second or third degree) or sick sinus syndrome may also lead to CHF, and in these animals, pacemaker implantation is the treatment of choice. If pacemaker implantation is not a viable option, anticholinergics or sympathomimetics may be administered. Propantheline is an oral anticholinergic that is dosed at 0.25–0.5 mg/kg, PO, bid-tid. Adverse effects include tachycardia and GI upset. Theophylline is a nonselective PDE inhibitor with modest chronotropic effects, dosed at 9 mg/kg, PO, tid-qid in dogs, and at 4 mg/kg, PO, bid-tid in cats. A sustained-release formula is also available, which is dosed at 10–15 mg/kg, PO, bid in dogs, and at 20 mg/kg, PO, every 24–48 hr in cats. Adverse effects may include restlessness, excitability, tachycardia, or GI upset. Terbutaline is a β-agonist that also possesses modest chronotropic effects and has similar adverse effects to those seen with theophylline. It is dosed at 1.25–5 mg, PO, tid in dogs, and 0.625 mg, bid in cats. Attempts to overcome clinically significant bradyarrhythmias with oral therapy are often unrewarding, although overall clinical signs may improve in some patients.

SOURCE: http://www.merckmanuals.com/vet/circulatory\_system/heart\_disease\_and\_heart\_failure/heart\_failure.html