**Ancillary Therapy**

**Bronchodilators** (theophylline, terbutaline) are generally reserved for patients with chronic airway disease, which is not uncommon in older small-breed dogs. Caution should be taken in animals with CHF, especially with tachyarrhythmias, due to the sympathomimetic effects of these agents. In dogs with CVD and syncope, theophylline has been used with some success for its vagolytic effects. Dosages of theophylline and terbutaline are as previously described under treatment for bradyarrhythmias (*see*above).

**Cough suppressants** may help reduce coughing related to mainstem bronchial compression secondary to left atrial enlargement. Coughing may also be seen with reactive airway disease (cardiac asthma). However, caution must be taken in patients with CHF, because suppressing a cough may mask worsening pulmonary edema. Common antitussive agents used for dogs with cardiac disease include butorphanol at 0.05–0.3 mg/kg, PO, tid-qid or hydrocodone at 0.22 mg/kg, PO, bid-tid.

**Anxiolytic therapy** may be required for animals with severe respiratory distress secondary to CHF. Morphine has traditionally been recommended to alleviate anxiety in dogs and people with acute CHF because of its concurrent sedative and venodilating (and thus preload reducing) properties. Morphine may be used at a dosage of 0.1–0.25 mg/kg, SC. The most common adverse effects include respiratory depression and nausea or vomiting. Morphine is generally avoided in cats, because it may induce agitation and dysphoria. Butorphanol is a partial opiate agonist/antagonist with minimal cardiovascular effects. A sedative dosage of 0.2–0.5 mg/kg administered IM or IV can be used in cats and dogs. Butorphanol may also be combined with a benzodiazepine (midazolam or diazepam), with the latter also dosed at 0.2–0.5 mg/kg, IM or IV. Phenothiazine tranquilizers (eg, acepromazine) may be used to alleviate severe anxiety; however, they induce vasodilation via a blocking effect and should be used cautiously, if at all, in animals with severe hemodynamic compromise or systemic hypotension. A low dosage of 0.01–0.1 mg/kg, IM or IV can be used if potent anxiolysis is required.

Source: <http://www.merckmanuals.com/vet/circulatory_system/heart_disease_and_heart_failure/heart_failure.html>