

# ATRIAL PREMATURE COMPLEXES

## BASICS

### OVERVIEW

- The heart of the dog or cat is composed of four chambers; the top two chambers are the right and left atria and the bottom two chambers are the right and left ventricles
- In order to pump blood to the lungs and body, the heart must work in a coordinated fashion; the normal control or “pacemaker” of the heart is the sinoatrial (SA) node, which starts the electrical impulse to begin the coordinated contraction of the heart muscles—the electrical impulse causes the atria to contract, pumping blood into the ventricles; the electrical impulse moves through the atrioventricular (AV) node and into the ventricles, causing the ventricles to contract and to pump blood to the lungs (right ventricle) and the body (left ventricle)
- The normal heart rate for dogs varies based on the size of the dog; however, the general range is 60 to 180 beats per minute (with smaller dogs have faster normal heart rates)
- The general range for normal heart rate in cats is 120 to 240 beats per minute
- An electrocardiogram (“ECG”) is a recording of the electrical impulse activity of the heart; the normal ECG is a tracing with P, QRS, and T waves; the P waves are the first upward deflection of the ECG tracing that look like a “bump” in the tracing; the P waves are a measure of the electrical activity of the atria; the QRS looks like an exaggerated “W” with the Q wave being a short, downward deflection, the R being a tall, spiked upward deflection, and the S being another short, downward deflection; the QRS is a measure of the electrical activity of the ventricles; finally the T wave may be an upward or downward deflection of the ECG tracing; the T wave is a measure of ventricular recovery prior to the next contraction
- “Atrial premature complexes” are premature atrial beats (seen on the ECG as early or premature P waves) that originate outside the sinoatrial node and disrupt the normal heart rhythm for one or more beats
- Also known as “APCs”

### ECG Features

- Heart rate usually is normal; rhythm irregular due to the early or premature P waves
- QRS complex—early or premature; appearance is usually normal

### SIGNALMENT/DESCRIPTION of ANIMAL

#### Species

- Dogs and cats

#### Breed Predispositions

- Small-breed dogs

#### Mean Age and Range

- Senior animals, except those with congenital (present at birth) heart disease

### SIGNS/OBSERVED CHANGES in the ANIMAL

- No signs may be seen
- Congestive heart failure (condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs)
- Coughing and difficulty breathing (known as “dyspnea”)
- Exercise intolerance
- Fainting (known as “syncope”)
- Irregular heart rhythm
- Heart murmur
- Sequence of three heart sounds (known as a “gallop rhythm”), when listening to the heart with a stethoscope; heart beat sounds like a galloping horse instead of normal “lub-dub”

### CAUSES AND RISK FACTORS

- Long-term (chronic) disease of the heart valve(s)
- Congenital (present at birth) heart disease
- Disease of the heart muscle (known as “cardiomyopathy”)
- Inflammation of the atrial heart muscle (known as “atrial myocarditis”)
- Electrolyte disorders
- Cancer
- Excessive levels of thyroid hormone (known as “hyperthyroidism”)
- Toxic substances in the blood (known as “toxemias”)
- Drug toxicity (such as from digitalis)
- Normal variation in aged animals

## TREATMENT

## HEALTH CARE

- Treat animal as inpatient or outpatient, depending on severity of clinical signs
- Treat underlying congestive heart failure (condition in which the heart cannot pump an adequate volume of blood to meet the body's needs), heart disease, or other underlying causes
- Correct any electrolyte or acid/base imbalances

## ACTIVITY

- Restrict, if animal has clinical signs

## DIET

- No modifications, unless required for management of underlying condition (for example, a low-salt diet)

## MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Various heart medications (such as digoxin, diltiazem, propranolol, or atenolol) may be used to treat clinically significant irregular heart beats (known as “arrhythmias”)
- Digoxin—treatment of choice
- Congestive heart failure (condition in which the heart cannot pump an adequate volume of blood to meet the body's needs) is treated with medications to remove excess fluid build-up from the body (known as “diuretics”) and angiotensin-converting enzyme (ACE) inhibitors; management of congestive heart failure may reduce frequency of atrial premature complexes

### Cats

- Cats with hypertrophic cardiomyopathy (disease characterized by inappropriate enlargement or thickening of the heart muscle of the left ventricle)—diltiazem or atenolol
- Cats with dilated cardiomyopathy (disease characterized by weak, flabby heart muscle)—digoxin

## FOLLOW-UP CARE

### PATIENT MONITORING

- Monitor heart rate and rhythm with serial electrocardiograms (“ECGs,” recordings of the electrical activity of the heart)

### POSSIBLE COMPLICATIONS

- Frequent atrial premature complexes may further diminish blood volume being pumped by the heart (known as “cardiac output”) in patients with underlying heart disease and worsen clinical signs

### EXPECTED COURSE AND PROGNOSIS

- Even with optimal treatment using medications to control irregular heart beats (known as “anti-arrhythmic drug therapy”), some animals have an increased frequency of atrial premature complexes or deteriorate to more severe irregular heart beats (arrhythmias) as the underlying disease progresses

## KEY POINTS

- Atrial premature complexes may not cause abnormalities in blood circulation; however, they may be precursors of serious irregular heart beats (arrhythmias)

