



# VET NOTES

APRIL 2009

## Previous VET NOTES

- March 2009 - Resistance to anti-parasitic drugs
- November 2008 - Periodontal Disease
- October 2008 - Interstitial pneumonia - a different kind of lung disease
- September 2008 - The yearling sales
- August 2008 - Eastern Equine Encephalitis—have you vaccinated
- July 2008 - Castration complications
- June 2008 - The use of acupuncture as a diagnostic aid in the equine lameness exam
- April 2008 - Current parasite control recommendations
- March 2008 - The use of Oxytocin in the post-partum mare
- January 2008 - Preparing your mares for the breeding season
- January 2008 - Proximal hind limb suspensory desmitis: (PSD): Part II: Treatment
- December 2007 - Pleuropneumonia - when shipping fever turns into a nightmare
- November 2007 - Proximal hind limb suspensory desmitis (PSD): Part I: Diagnosis
- August 2007 - Intramuscular injections
- June 2007 - A hard pill to swallow

## Equine Cardiology

Heart problems in horses can be a cause of poor performance, exercise intolerance, cough, edema, ill thrift or sudden death. Many of the more physically demanding equine disciplines have experienced their share of catastrophic cardiac related deaths. Is there a way to prevent this? Advanced cardiac diagnostics have been and are being developed to better recognize these conditions before they end badly. This month's vet notes will highlight the Cardiology Services available at Peterson & Smith Equine Hospital. I'd like to emphasize that many of the cardiac services are designed for use in the equine athlete and are not just for sick horses. We hope that by providing athletic horses with cardiac evaluations, we can identify, treat, and prevent cardiac disease.

### Indications for Cardiac Evaluation

- Pre purchase or Screening exam for elite physical activity: This is similar to the exams human athletes get prior to competing in professional sports. It seeks to detect abnormalities before there is risk to the patient.
- Exercise Intolerance or Poor Performance: A horse may tire easily or not recover from a workout the way it previously did. A drop in performance will accompany significant cardiac pathology
- Abnormal Heart Sounds: A murmur or arrhythmia may be heard during a routine physical examination, pre-purchase exam or exam performed during competitions as required by the discipline (i.e. Endurance riding or Eventing). A murmur is actually hearing abnormal blood flow in the heart. An arrhythmia is an abnormal pattern of heart beats.
- Other Clinical Signs of Heart Disease: Horses may be presented for a cough or increased respiratory rate, swelling of the limbs or ventral abdomen, fainting, persistently elevated heart rate, weight loss

### Cardiology Services

- Echocardiography: imaging of the position, motion of the heart wall and internal structures of the heart using ultrasound. This procedure is a non-invasive way to evaluate heart function and structural deformities of the heart. Doppler echocardiology allows evaluation of the blood flowing through the heart to investigate causes of heart murmurs.
- Electrocardiogram (ECG or EKG): Electrical impulses in the heart are picked up by electrodes attached to the chest of the horse and are transmitted to the electrocardiograph (the machine). A tracing is produced which shows the electrical rhythm of the heartbeat.
- Ambulatory (Continuous) 24-hour ECG: This is sometimes referred to as a Holter monitor. Electrodes are attached to the horse and a small recording box is worn via a surcingle. The horse is confined to a stall while the ECG is being recorded. Clinically significant arrhythmias may only sporadically occur and thus be more likely to be found on a continuous ECG. This procedure is especially indicated for poor per-

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Carol K. Clark, DVM, DACVIM.

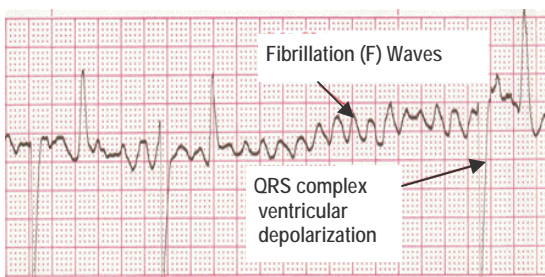
- performance and post arrhythmia correction.
- **Exercise ECG:** Evaluation of the heart at rest yields limited information. For horses that are presented for exercise intolerance or poor performance, an exercise ECG may be necessary to determine the cause. The test can also be used as a “stress” test to look at the heart under maximal conditions which may elicit abnormal rhythms in the mildly affected horse. The Televet 100 ambulatory ECG system uses Bluetooth technology to transmit a signal to a computer up to 100 meters away while simultaneously recording the information internally. This system allows evaluation of the heart while breezing on the racetrack, running on the treadmill or galloping around a cross-country course. In many cases it is appropriate to use continuous ECG after the stress test to look for exercise induced arrhythmias.
- **Fetal heartbeat monitoring:** Use of an ECG and a special configuration of electrodes to measure the heartbeat of an unborn fetus in a high-risk pregnancy. Mares that are hospitalized for high risk pregnancy may need continuous monitoring of the fetal ECG and / or repeated ultrasound evaluations of the fetus and placenta. Abnormally high or low fetal heart rates reflect fetal jeopardy which can influence the management of the pregnancy.

**Treatment of Arrhythmias:** Atrial Fibrillation is a common arrhythmia affecting horses and most frequently associated with exercise intolerance. Ventricular tachycardia is usually a sign of primary heart muscle disease but it can occur after non-cardiac insults such as severe hemorrhage, electrolyte deficiency, or lightning strikes. These are just two examples of arrhythmias we treat but regardless of the type of arrhythmia, a full cardiac exam is indicated. Echocardiography, ECG, complete blood count, serum chemistry including electrolyte tests, and cardiac troponin I (an enzyme that reflects heart muscle damage) are evaluated. Then the appropriate medication used to convert the heart beat back to normal rhythm is administered under close observation and ECG monitoring. Once a normal rhythm is obtained, the heart is rechecked by ultrasound. Ambulatory 24-hour ECG and exercising ECG is often indicated post correction to check the suitability for athletic endeavors.

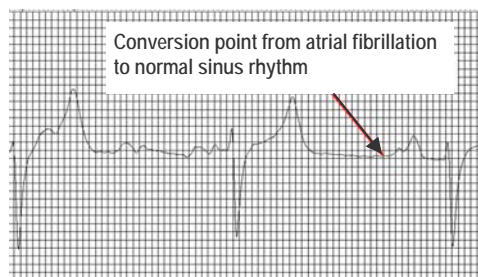
If you feel your horse needs one of our cardiac services, please contact Dr. Carol Clark at the main hospital (352) 237-6151. A customized diagnostic plan will be made to evaluate your horse’s cardiac health.

**Case Study:**

3 year old Thoroughbred colt with a history of racing well, then a sudden drop-off in performance. Lameness exam revealed chip fractures in both front fetlocks. Upon presentation for arthroscopic surgery an irregular heart rate was detected on the pre –op exam. An electrocardiogram (ECG) showed atrial fibrillation, the echocardiogram showed no abnormalities. Lab work was normal (included: cardiac troponin I, CBC, serum chemistry, electrolytes). It was recommended to treat the horse with Quinidine to convert him to normal sinus rhythm. The horse converted after 3 doses of Quinidine. He returned for arthroscopic surgery 2 weeks later and went on to a successful racing career.



ECG showing atrial fibrillation



ECG showing normal sinus rhythm

- April 2007 - The advantages of high fat/low carb diets
- March 2007 - Bandaging
- February 2007 - Single screw compression V. Screws and wire (Transphyseal bridging)
- January 2007 - The dental health of young performance horses
- December 2006 - Neonatal Isoerythrolysis in foals
- November 2006 - Upper respiratory infections of young Thoroughbreds in training
- October 2006 - Eastern equine encephalitis—time to vaccinate!!
- September 2006 - Gastroscopy
- August 2006 - Rhodococcal pneumonia

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[www.petersonsmith.com](http://www.petersonsmith.com)



4747 SW 60th Avenue  
 Ocala, FL 34474

Phone: (352) 237-6151  
 Fax: (352) 237-0629  
 Email: [PSEH@petersonsmith.com](mailto:PSEH@petersonsmith.com)

*A Tradition of Leadership and  
 Excellence in Equine Medicine*