



## Veterinary Health Center

MANHATTAN, KANSAS

OFFICIAL PROTOCOL

### **CLINICAL CARDIOLOGY ROTATION**

### **STUDENT ORIENTATION MATERIALS**

Welcome to the KSU-CVM Cardiology service! Your clinical rotation with us will begin on Monday at 8:30 AM. We are excited to have you join us for the next two weeks, and hope to provide you with some information that will make your time with us both productive and fun.

This rotation is designed to introduce you to patients with heart disease, improve your knowledge base regarding cardiac physiology and common cardiovascular diseases, and jump-start the development of clinical skills that will continue to be cultivated throughout your veterinary career. The benefit that you derive over the next 2 weeks will be a direct reflection of the effort you apply to this rotation.

By the end of your time with us, we hope that you will feel comfortable with the basics of clinical cardiology. To help you achieve this goal, please review the materials in this packet and keep in mind the objectives outlined below:

### **CLERKSHIP**

This represents the hands-on portion of your rotation. You will be working with many long-term clients and patients that are very dear to our hearts (pun intended), and we expect that they receive no less than excellent care. Take responsibility for these cases as if they were your own - this is a good time to start thinking independently. There are numerous resources available. READ, READ, READ!!!

This rotation is an excellent opportunity to strengthen your physical examination skills! Thoracic auscultation is harrowing for all of us at first; as most of the animals on this rotation will have

auscultable cardiac abnormalities, take the opportunity to hear many sounds you may not have appreciated before, and to have someone “check” after you. Improving your clinical skills requires practice - listen to as many hearts as you can. If your patient has a good murmur or arrhythmia, be sure to let your classmates know!

## SERVICE

As a veterinarian, you will be an important member of a hospital team, the success of which relies on each member to work diligently and/or assist others when needed. Offer to help your classmates! You may also need to perform duties (walking your patient, cleaning a cage, running samples to the lab, etc.) that simply help the service and hospital to run smoothly.

## DIDACTICS

There will be several learning opportunities throughout each case, so be sure to participate and ask questions! Formal topic rounds will be held in B-101 from 8:00-9:00 AM where we will cover the topics listed below. From 9:00-9:30AM, we will have case rounds where we will talk about each appointment prior to them arriving, so it is important to read up the night prior. After all patients are discharged, we will review each case from the day, and go over any final questions that may have arisen.

### Rounds Topics:

- Cardiac Physical Exam
- Congenital Diseases (PDA, VSD, PS, SAS)
- ECGs, arrhythmias, anti-arrhythmic medications
- Acquired heart disease
- Congestive heart failure
- Other rounds topics based on rotation’s interest

References/study aids that you may find helpful during the rotation:

**Interpretation and Treatment.** Larry Patrick Tilley

**Small Animal Cardiovascular Medicine.** Kittleson and Kienle

**Textbook of Canine and Feline Cardiology: Principles and Clinical Practice.** Fox, Sisson and Moise, editors

**Essentials of Canine and Feline Electrocardiography**

[www.vmeth.ucdavis.edu/cardio/cases](http://www.vmeth.ucdavis.edu/cardio/cases)

[www.heartwormsociety.org](http://www.heartwormsociety.org)

Please let us know if you have any questions or concerns prior to starting or during your rotation. We look forward to working with you!

*Updated 4/3/2023*

*Approved by M. Tanner*

Cardiology Team

### **KSU CARDIOLOGY PHONE LIST**

**Cardiology Room** (785) 532-4174

#### **Clinician**

Dr. Matthew Tanner, Assistant Professor Cell: (912)536-3192

#### **Staff**

Shannon Nicholson, Veterinary Assistant Cell: (610)790-4753

A DAY IN THE LIFE...

Please arrive in the Cardiology room by 8:00 am daily, unless otherwise instructed.

#### Appointments

Our service receives new cases and recheck appointments Monday-Friday.

Please sign up for the next day's cases before you leave each day. Patient records for the next day's appointments will be available in instinct and/or carestream- please review each of your cases ahead of time.

Begin by escorting the client into an exam room and taking a thorough history. If no rooms are available you may collect history in the lobby. Use the cardio history document in instinct to help guide your history questions. Once finished with history the client can return to the lobby to wait.

You will bring the patient back to cardiology for a physical exam. Use the cardio physical document in instinct to help guide you. If you are concerned about the patient's condition or if the patient is too fractious to examine, please notify a clinician on service with you immediately. Cardiology's patients are sometimes delicate and in need of careful handling! Don't be afraid to ask for help.

Although most clients will wait in the lobby be sure to verify the owner's contact number and if the owner is planning to leave the hospital.

Similar to other services in the hospital, discharge instructions should be entered into Instinct.

If possible, try to review your patient's bloodwork and radiographs as they become available- this is a good opportunity to improve your skills in interpretation.

#### Inpatients/Transfers

Most of Cardiology's inpatients are housed in the ICU. You are responsible for completing your patient's treatments by 7:00 AM. The owner should be called every morning and evening with an update (coordinate calls with your clinician). You are responsible for the care of your inpatient until the time of discharge – if he/she is still hospitalized on the morning of a block change, you remain responsible for Monday morning treatments. If you feel that your patient's condition is unstable, please wait for your clinician or notify the ICU clinician before performing a physical exam and treatments. This is especially true for animals housed in one of ICU's oxygen cages – **do not walk** these patients outside unless directly instructed to do so by your clinician.

As mentioned, discharge comments for cases are your responsibility. Start working on these instructions early in the day, so that they may be reviewed by your clinician prior to meeting with the owner. The portion of the discharges addressing assessment and treatment recommendations should be written in a manner easily understood by the owner.

### Consultations

Throughout the day, other services within the hospital will request cardiology consultations. You will be asked to assist with these cases but they do not require an assigned cardiology student.

### Grading Procedures

The goal of this service is to teach veterinary students the appropriate skills and knowledge they will require to appropriately manage cardiovascular disease in practice. Students that perform exceptional patient care, case responsibility, round preparedness, outside reading and control an excellent grasp of cardiovascular medicine will receive an "A". Students that perform above average throughout all aspects of the rotation will receive a "B" while students that perform average will be given a "C". If a student appears to be below a "C", we will inform them during the first half of the rotation. At this time we do not assign emergency shifts so there is an expectation that all students will be on time and fully prepared for rounds each day. Please note that abuse or neglect of a patient is immediate cause for a failing.

ECG Analysis

Determine heart rate: \_\_\_\_\_

Analyze the rhythm: • Is the rhythm regular? If irregular, is it regularly irregular or irregularly irregular?

• Is there a P for every QRS? \_\_\_\_\_ • QRS for every P? \_\_\_\_\_

Rhythm diagnosis: - \_\_\_\_\_

Measure the ECG complexes in lead II (if applicable):

P wave \_\_\_\_\_ sec \_\_\_\_\_ mV

PR interval \_\_\_\_\_ sec

QRS \_\_\_\_\_ sec

R wave \_\_\_\_\_ mV

ST segment \_\_\_\_\_ mV

QT interval \_\_\_\_\_ sec

Determine the mean electrical axis:

\_\_\_\_\_

List the abnormalities:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

List your ECG diagnosis:

\_\_\_\_\_

List diseases that would be compatible with the ECG diagnosis:

\_\_\_\_\_

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List treatment options (if indicated):

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### Normal Small Animal Electrocardiographic Parameters

Parameter	Dog	Cat
Heart rate (bpm)	Adults: 60-160 Toy breeds: up to 180 Puppies: up to 220	160-240 in hospital
P wave	<0.04 seconds, <0.4 mV	<0.04 seconds, < 0.2 mV
PR interval	0.06 to 0.13 seconds	0.05 to 0.09 seconds
QRS complex	Large dogs: <0.06 seconds Small dogs: <0.05 seconds	<0.04 seconds
R wave	Large dogs: <3.0 mV Small dogs: <2.5 mV	<0.9 mV
ST segment	<0.2 mV depression <0.15 mV elevation	No depression/elevation
QT interval	0.15 to 0.25 seconds	0.12 to 0.18 seconds
Mean electrical axis	+40 to +100 degrees	0 to +160 degrees

