**MODULE 1: ANATOMY, EXAMINATIONS, COMMON DISEASES, AND PROBLEMS**

**Lesson 1: Parts of the Body**

1) Where are the following organs located and what do they do?

[Note to Trainer: You may elect to use a medical dictionary, an anatomy book, radiographs, the Hill’s Atlas of Veterinary Clinical Anatomy, or a surgery textbook pictures in this lesson.]

A) Spleen

**Answer:**

B) Liver

**Answer:**

C) Pancreas

**Answer:**

D) Kidneys

**Answer:**

E) Thyroid gland

**Answer:**

F) Parathyroid glands

**Answer:**

G) Adrenal gland

**Answer:**

H) Anal glands

**Answer:**

I) Mammary glands

**Answer:**

J) Pelvis

**Answer:**

K) Jugular vein

**Answer:**

L) Aorta

**Answer:**

M) Diaphragm

**Answer:**

N) Larynx

**Answer:**

O) Trachea

**Answer:**

P) Cornea

**Answer:**

Q) Retina

**Answer:**

R) Pinna

**Answer:**

S) Prostate gland

**Answer:**

T) Prepuce

**Answer:**

U) Vulva

**Answer:**

2) What is the difference between an artery and a vein?

**Answer:**

3) Provide some examples of joints that have the same names in both humans and dogs and of those that have different names?

**Answer: The hip, elbow, and shoulder are the same in humans, dogs, and cats. The human wrist is called the carpus in a cat or dog. The human knee is called the stifle, and the human ankle is called the hock or tarsus.**

4) What is the technical term for the kneecap?

**Answer: Patella**

5) What does luxated mean?

**Answer: Out of joint or dislocated**

6) What does centesis mean and what are some examples of centeses?

**Answer: Centesis means to puncture or tap a body cavity. Examples are abdominocentesis and cystocentesis.**

7) What organ does gastric refer to?

**Answer: Stomach**

8) What organ does hepatic refer to?

**Answer: Liver**

9) What organ does renal refer to?

**Answer: Kidney**

10) Where is the flank?

[Note to Trainer: Consider showing the trainees this area with a picture or a live pet.]

**Answer:**

11) Where is the inguinal area?

[Note to Trainer: Consider showing the trainees this area with a picture or a live pet.]

**Answer:**

12) Where is the axilla?

**Answer: The axilla is the armpit.**

13) What do IM, IV, and IP stand for?

**Answer: IM = intramuscular, IV = intravenous, and IP = intraperitoneal (i.e., into the peritoneal cavity)**

14) What is the difference between the abdomen and the stomach?

**Answer: The stomach is a single organ within the abdomen and is part of the gastrointestinal system. The abdomen is the entire body cavity, housing many important body organs, and extends from the diaphragm to the pelvis.**

15) What do dorsal and ventral mean?

**Answer: Dorsal means towards the back; ventral means towards the stomach or underside. Think of the dorsal fin of a shark.**

16) What do medial and lateral mean?

**Answer: Lateral means on or toward the side. Medial means toward the middle.**

17) What do anterior and posterior mean?

**Answer: This is human medical terminology. Anterior means toward the head or front plane of the body and posterior means toward the back or behind.** T**hese terms are mostly used when referring to the front and back aspects of the limbs. Alternatively, the front and back aspects of the limb can also be referred to as dorsal and palmar or plantar, respectively.**

18) What do cranial and caudal mean?

**Answer: Cranial means towards the head and caudal means toward the tail.**

19) What do distal and proximal mean?

**Answer: Proximal means closer to the body core and distal means farther from the body core. The paw is more distal than the elbow.**

20) What are some of the abbreviations that you commonly use in your medical records?

[Note to Trainer: Have trainees list common abbreviations such as heart rate (HR); temperature, pulse, and respiration (TPR); no significant findings (NSF); history (Hx); diagnosis (Dx); polydypsia (PD); polyuria (PU); pharmacy abbreviations, such as once daily (SID or q 24 h) or every other day (EOD or q 48 h); and surgical procedures such as ovariohysterectomy (OHE). You may wish to refer to *Standard Abbreviations for Veterinary Medical Records*, Second Edition, by Robinson et al. (2000).]

**Answer:**

# **MODULE 1: ANATOMY, EXAMINATIONS, COMMON DISEASES, AND PROBLEMS**

**Lesson 2: Examinations**

[Note to Trainer: The purpose of this section is to ensure that all team members know what is involved in different types of appointments and how to schedule each type of appointment appropriately.]

1) What is included in a basic physical exam?

[Note to Trainer: What parts of the body are examined and why? Is an otoscopic or ophthalmic exam performed on every patient? Are the TPR, body condition score (BCS), pain score, or range of motion recorded for all patients?]

**Answer:**

2) How is a physical exam for puppies and kittens different than the exam for healthy adult patients?

[Note to Trainer: Discuss **congenital** problems and genetic defects such as **cryptorchidism**, **hernias,** and poor **dental alignment**.]

**Answer:**

3) How is a physical exam for sick or debilitated pets different than a wellness exam?

[Note to Trainer: Discuss hypotension, dehydration, capillary refill time (CRT), mucous membrane color, etc.]

**Answer:**

4) What is included in a standard physical exam for a pet that presents with vomiting and/or diarrhea?

[Note to Trainer: What should your receptionist ask the client who calls concerning a gastrointestinal problem and what instructions might the receptionist need to give the client? How long will an exam take for an animal with vomiting and/or diarrhea and what might the veterinarian need to diagnose and treatment this animal? For example, radiographs, intravenous or subcutaneous fluids, and laboratory tests (e.g., blood, stool) may be indicated. All of these procedures take extra time and manpower compared to a typical wellness exam. The CCRs will need to know to schedule a longer appointment that normal for these patients.]

**Answer:**

5) What will a physical exam include when the pet potentially has a neurological problem?

[Note to Trainer: Discuss the difference between **neurological** versus **orthopedic** disease and explain various **reflexes**. Is a gait analysis recommended in these cases?]

**Answer:**

6) What is a preoperative examination?

[Note to Trainer: What is the exam, who does these exams, when are they performed, and how do they work logistically with your admissions process?]

**Answer:**

7) When is a postoperative examination performed?

**Answer:**

8) Explain what the following terms mean and why these are measured.

A) Temp

[Note to Trainer: Discuss how and why we take a pet’s temperature. Does your practice use aural or rectal thermometers? What is a normal temperature? What can cause an increase in body temperature? Some examples are infection, pain, fear, and heat stroke. Causes of low body temperatures include low ambient temperature, anesthesia, shock, or measuring the temperature of the stool in the rectum rather than the temperature of the patient.]

**Answer: Temperature. This is often abbreviated as just T (as in TPR). A patient’s temperature should be measured during each examination, before and after surgery, and in all hospitalized patients.**

B) HR

[Note to Trainer: How do we actually obtain a heart rate? What factors can affect the heart rate? Some examples are exercise, size of pet, fear, pain, stress, shock, heart or respiratory problems, and anemia.]

**Answer: Heart Rate (measured in beats per minute or bpm). Again, the heart rate should be measured during each examination, before and after surgery, and in all hospitalized patients.**

C) RR

[Note to Trainer: How do we measure RR if the dog is panting?]

**Answer: Respiratory rate (measured in breaths per minute or bpm)**

D) TPR

**Answer: Temperature, pulse, and respiration (the three vital signs). A veterinarian might ask, “Please go and get a TPR on Sparky. I will be there in a minute.”**

E) BP

[Note to Trainer: Define **hypertension** and **hypotension**. How do you measure BP and who does it? Is it part of any routine exam at your hospital? Many hospitals do not incorporate blood pressure readings into their protocols, so if it is your standard at your hospital, make sure your team knows you provide an extra level of care.]

**Answer: Blood pressure. One example of when blood pressure is measured is animals with kidney disease.**

F) CRT

[Note to Trainer: Practice on a pet or use your own fingernails to demonstrate.]

**Answer: Capillary refill time. This is an indication of blood flow. A CRT < 2 seconds is considered normal whereas a prolonged CRT is suggestive of poor blood flow or perfusion (e.g., shock).**

G) MM

[Note to Trainer: Explain to your trainees that the mouth and parts of the respiratory tract and urogenital system are lined with mucous membranes. Discuss the value of checking the gums of sick pets to help detect jaundice, anemia, hypoxia, dehydration, etc.]

**Answer: Mucous membranes. The mouth and external regions of the urogenital system are lined by mucous membranes. These are evaluated (e.g., the gums) to assess hydration. If they are dry in a sick dog that has not been eating or drinking, the dog may be dehydrated.**

H) ROM

[Note to Trainer: Demonstrate range of motion on a patient if possible. Discuss ROM as a diagnostic tool for osteoarthritis and a potential postsurgical treatment modality (e.g., after repair of the anterior cruciate ligament.)]

**Answer: Range of motion. A decreased range of motion can be a result of pain (e.g., in animals with osteoarthritis).**

I) IOP

[Note to Trainer: Demonstrate how to measure IOP. Briefly explain **glaucoma**. Do you refer ophthalmologic emergencies to a specialist?]

**Answer: Intraocular pressure. IOP is increased in patients diagnosed with glaucoma and decreased in pets with uveitis.**

J) STT

# [Note to Trainer: If possible, demonstrate how to perform a STT and find some pictures of what keratoconjunctivitis sicca (KCS) looks like.]

**Answer: Schirmer tear test. This test measures the production of tears in each eye. Dogs with “dry eye” have a decreased production of tears and are at risk for the development of corneal ulcers (i.e., ulcers on the surface of the eye).**

## 9) When is a **Schirmer Tear Test** (STT) recommended?

## *Sample Response: A STT should be performed annually in dogs that have a higher risk of developing dry eye (e.g., Schnauzers, cockers, Dobermans) and in senior dogs “over 50.” An STT can also be performed as needed in dogs prescribed sulfa antibiotics or sulfasalazine for more than two weeks, dogs exhibiting symptoms of dry eye (KCS, keratoconjunctivitis sicca), and dogs and cats with corneal ulcers or chronic conjunctivitis.*

10) Is dental grading performed during every exam? How is dental grading performed?

**Answer:**

11) What is **skin turgor**?

**Answer: Skin turgor is when a small section of skin is pulled into a little tent to see how fast it snaps back down. If it goes down slowly or stays in a tent, the pet may be dehydrated (or thin with little subcutaneous fat).**

12) What is **pain scoring**?

[Note to Trainer: For more information, visit www.ivapm.org, www.acva.org/professional/position/pain.htm, or www.aahanet.org/Publicdocuments/Painmanagementguidelines.pdf.]

**Answer: Pain scoring involves assigning a grade to more precisely describe the pain level that a patient is experiencing. If a surgery, procedure, or illness is likely to produce a certain level of pain, scoring the patient’s pain level can assist the veterinarians in delivering an appropriate amount of pain medication.**

13) What pain scoring system does our practice use?

*Sample Response: There are several scoring systems that can be used. One option is to use a simple 0, 1, 2, 3 system, with 0 being no pain and 1, 2, and 3 being mild, moderate, and severe pain, respectively, or you can use a more complex 5 or 10 point scale.*

14) Which patients should be scored for pain?

*Sample Response: The International Veterinary Academy of Pain Management (IVAPM) and the American Animal Hospital Association (AAHA) recommend pain scoring for every patient. Osteoarthritis, dental disease, gastric ulcers, ear infections are all common conditions that cause pain. Pain scoring is not restricted to surgical or trauma patients.*

15) How would you explain what a Body Condition Score (BCS) is to a client?

[Note to Trainer: As with pain scoring, there is more than one system that can be employed to determine an animal’s BCS. In general, the lower numbers are assigned to thin or emaciated pets while the higher numbers are reserved for overweight or obese pets. Some clinics use a 5 point scale while others use a 10 point scale. What do you use in your clinic?]

*Sample Response: Body condition scoring is a way of quantifying whether a pet has a normal or abnormal body weight*.

16) Why is body condition scoring important?

[Note to Trainer: This question is meant to increase awareness about the health problems associated with obesity. For example, Purina’s 14-year study showed life expectancy in Labrador retrievers was two years shorter for overweight dogs (Kealy et al. 2002). Maintaining an ideal weight adds years to an animal’s life expectancy and reduces the risk of developing such diseases as osteoarthritis or diabetes. Weight management is an important topic in the exam room. One of the first steps in managing a patient’s weight is to assess the pet’s current weight so that changes in weight can be documented and monitored.]

**Answer:**

17) What is included in a physical exam for senior pets?

[Note to Trainer: Does your practice include BP, IOP, ROM, or other tests for a routine examination for a senior pet? Is the history that you need different? For example, do you use a senior history form that asks questions such as, “Have you noticed that your pet is slowing down since we saw him last” or, “Is your pet having any trouble going up or down the stairs or getting in the car?” Do you have any specific questions for senior cats?]

**Answer:**

18) At what age is a pet considered senior?

*Sample Response: There are many different aging systems that can be used. For example, some consider nine years of age to be “turning 40” for cats and small dogs, eight years for medium dogs, and seven years for large dogs. The giant dog breeds are often considered senior by age six. For every additional year of age, a dog can be considered a decade older in human years. For example, if a small dog is “over 40” at age nine, then it will be “over 50” at age 10, “over 60” at age 11, and so on.*

19) What care recommendations do you make for senior pets that are different than for younger patients?

[Note to Trainer: What testing does your hospital routinely recommend for aging pets?]

## **Answer:**

# **MODULE 1: ANATOMY, EXAMINATIONS, COMMON DISEASES, AND PROBLEMS**

## **Lesson 3: Common Tests and Procedures**

## 1) When are chest radiographs (X-rays) recommended?

## [Note to Trainer: It is important to advise your CCRs that pets presenting with coughing or vomiting may require radiographs. When the CCR schedules an appointment for one of these problems, extra time and personnel may be required for the appointment].

## *Sample Response: Chest radiographs might be indicated when a heart murmur is ausculted; if a pet has an abnormal ECG, lung sounds, or breathing; if a pet presents with* ***chronic*** *coughing or severe* ***acute*** *coughing; or if decreased activity level/exercise intolerance is reported. Chest radiographs may be indicated in dogs older than seven to nine years or cats over 12 (e.g.,* ***metastasis*** *screening), particularly prior to any procedure requiring a general anesthetic. (It is better to diagnose lung cancer or lung metastases before performing a splenectomy, for example.)*

## 2) When speaking with clients, does our hospital prefer the term “X-ray” or “radiograph”?

[Note to Trainer: According to an Institute of Medicine study, almost 50% of Americans are medically illiterate. Simple language is usually better.]

**Answer:**

3) When does our hospital recommend hip radiographs for assessing hip dysplasia?

[Note to Trainer: Does your hospital want the veterinarians or technicians offering hip radiographs for large breed dogs being admitted for dental cleaning or elective surgery? Does anyone at your hospital have PennHip certification or do you prefer to refer patients to a specialist for hip certification? You will likely need to explain what OFA and PennHip certifications are.]

*Sample Response: When screening for hip dysplasia, radiographs are taken at or after 24 months of age for* ***Orthopedic Foundation of America (OFA)*** *certification, or earlier using* ***PennHip certification****.**If the pet is not being bred, standard hip radiographs may be offered with a spay or neuter as an early screening tool for hip dysplasia in at risk breeds, or later on with a dental cleaning or other anesthetic procedure. Hip radiographs are also taken whenever a pet has symptoms such as hind leg weakness or pain.*

4) How would you explain what an **ultrasound** is to a client?

[Note to Trainer: This is a good opportunity to discuss the “etiquette” of shaving. It is generally a good idea to warn the client if their pet will be shaved, even if it is just for obtaining a blood sample or placing a catheter.]

*Sample Response: An ultrasound is a procedure that uses high-frequency sound waves to view internal organs. This is the same imaging technique used to visualize a baby in utero. An ultrasound can provide more information regarding the structure and function of the internal organs than radiographs. In addition, an ultrasound can be used to assist in obtaining biopsy samples of various internal organs. It is not a painful procedure. Depending on the temperament of the patient, sedation may be required and the animal will most likely need to be shaved.*

5) When is an abdominal ultrasound recommended?

[Note to Trainer: Do you have ultrasound at your hospital? If so, who performs the ultrasound examinations? If not, where do you refer patients for this procedure? How much does an ultrasound cost and how long does it take? This would be a good opportunity to present some cases in which ultrasound examinations have been performed.]

*Sample Response: An ultrasound may be indicated in cases where liver, kidney, splenic, pancreatic, adrenal, or bladder disease is suspected. Ultrasounds can also be used to obtain biopsies of internal organs, abdominal masses, and fluid samples. Other indications for performing an ultrasound are: suspected* ***lymphoma****,* ***hemangiosarcoma****, or other* ***neoplastic conditions****, cancer staging, pregnancy testing, and cystocentesis.*

## 6) How would you explain what an **electrocardiogram** (ECG) is to a client?

## *Sample Response: An ECG is a test that measures the conduction of electricity through the heart. An electrical impulse produced by the heart’s pacemaker tells the heart to contract. The ECG allows us to see the electrical signal as it travels through the heart. ECGs are useful for detecting abnormal heart rhythms.*

## 7) When is an ECG recommended?

[Note to Trainer: Show what an ECG looks like and explain or demonstrate how an ECG is performed. How are ECG reports recorded in the medical record?]

**Answer:**

8) How would you explain what an **echocardiogram** (“echo”) is to a client?

*Sample Response: An echocardiogram is an ultrasound of the heart. Just as we can see the baby moving when we do an ultrasound on a pregnant woman, we can actually see the heart beating on an echo and we can measure the thickness of the heart walls and how much blood is being pumped through the heart. An echocardiogram provides veterinarians with more information regarding the function of the heart than a radiograph, which only shows us the shadow outline of the heart.*

9) When is an echocardiogram recommended?

[Note to Trainer: Does your hospital perform echocardiograms? If not, where can your clients have this performed? Do you have a **cardiologist** nearby to refer to? How much does it cost?]

*Sample Response: Echocardiographs are recommended for patients with a new or progressing heart murmur, abnormal rhythms, or other symptoms of heart disease. Echocardiograms may also be indicated for animals with abnormal chest radiographs suggestive of either heart disease or* **neoplasia***, for monitoring pre-existing heart disease, and for screening at-risk breeds.*

10) What is a PCV? What are some other names for PCV?

[Note to Trainer: Which abbreviation does your practice use? Do you have a special centrifuge for obtaining PCVs? Explain how a PCV is used to indicate if a pet is anemic or dehydrated.]

**Answer: Packed cell volume. The PCV is a measure of the number of red blood cells (RBCs) in a blood sample. If the PCV is 45 then 45% of the blood is made of RBCs.**

11) How would you explain what a complete blood count (CBC) is to a client?

**Answer: A CBC measures the different types of blood cells in a patient’s blood sample. The CBC is one of the most common tests we perform. Knowing the number of red and white blood cells will help the veterinarian determine if the animal has an infection, anemia, neoplasia, and many other conditions.**

## 12) When is a CBC recommended?

## *Sample Response: A CBC is indicated in animals with tumors or lumps, pale mucous membranes, a history of auto-immune hemolytic anemia, immune-mediated hemolytic anemia, or immune-mediated thrombocytopenia (****AIHA****,* ***IMHA****,**and* ***IMTP****, respectively), or as a baseline or preanesthetic or routine wellness screening procedure in healthy animals*.

## 13) How would you explain what a chemistry panel is to a client?

*Sample Response: A chemistry panel includes a dozen or so individual tests and indicates the function of many of the internal organs, such as the liver and kidneys. Abnormal chemistry panel results can be observed in animals with many diseases, including kidney and liver disease, diabetes, and other* ***hormonal diseases****, e.g.,* ***Cushing’s syndrome****. The chemistry panel also provides information regarding the* ***hydration*** *of an animal or any* ***electrolyte*** *imbalances that might exist. The chemistry panel also provides clues that might prompt us to look for underlying problems. For example, a high cholesterol level in a dog might make us think about hypothyroidism, and a high calcium level could indicate the presence of certain types of tumors.*

14) When is a chemistry panel recommended?

[Note to Trainer: This is a good opportunity discuss how and when chemistry panels are performed and by whom. Does your hospital perform these tests in-house or send them to a lab? Who collects and analyzes the blood samples? If the tests are performed in-house, what equipment do you use? If you send them out, when do you get results back and how? How are the results passed on to the doctor? How are they recorded in the patient’s medical record? Does the client get a written explanation or a copy of the results?]

*Sample Response: A chemistry panel might be recommended for sick animals to help obtain a diagnosis, in animals presenting with weight loss, to monitor the progression of kidney or liver disease, to monitor medication side effects, or as part of a preanesthetic or wellness examination.*

15) Explain what the following tests are and what they mean as if you were speaking to a client.

A) Glucose

**Answer: Glucose is blood sugar. Glucose is****the****body’s fuel that powers all the cells. High glucose levels are commonly observed in cats during periods of stress (i.e., a routine physical examination) and in animals with diabetes mellitus.**

B) BUN

**Answer: Blood urea nitrogen (BUN) and creatinine levels are both commonly used to assess kidney (renal) function. BUN can be increased in animals with kidney disease or with dehydration.**

C) Creatinine

**Answer: Creatinine is another measure of kidney (renal) function. Creatinine is a more accurate indicator of renal function than BUN.**

D) ALT, AST, GGT

**Answer: ALT (alanine aminotransferase), AST (aspartate aminotransferase), and GGT (gamma-glutamyltransferse) are all enzymes that leak out of damaged liver cells and can be measured on a chemistry panel.**

E) Alkaline phosphatase

**Answer: Alkaline phosphatase, also known as AP or Alk Phos is produced by a number of different cell types including liver and bone. An elevated AP can be due to liver disease, but high AP levels can also be observed in animals with dental infections, Cushing’s disease, epilepsy (secondary to phenobarbital administration), or other diseases. In cats, AP is a more specific indicator of liver disease than in dogs.**

F) Albumin, globulin, total protein

**Answer: Total protein measures all of the proteins in the blood. Protein levels may be elevated in dehydrated animals and can potentially be decreased in animals with cancer or liver disease. Albumin and globulin are two kinds of proteins found in blood. Albumin is made by the liver and antibodies (used to fight disease) are made of globulins.**

G) Ca2+, P, K+, Na+, HCO3-

**Answer: These are electrolytes: calcium, phosphorus, potassium, sodium, and bicarbonate (or bicarb).****The electrolytes give us information about dehydration, hormone imbalances, toxemia, and many other problems. They can either be increased or decreased, depending on the disease. Electrolytes are included in and/or added to intravenous (IV) fluids that are administered to sick pets during hospitalization.**

16) How would you explain to a client what the thyroid gland is, what is does, and what a T4 is?

*Sample Response: The thyroid gland makes several hormones that are involved in regulating metabolism. Thyroid disorders can lead to changes in the heart, skin, brain, and other organs. Alterations in the thyroid hormone levels can cause changes in weight and energy level, as well as skin problems and other symptoms. The most common thyroid hormone that is tested for in veterinary medicine is T4 (also known as total T4 or TT4).*

17) What are TT4 and FT4?

**Answer: The TT4 is the “total T4”, which is a measure of the total amount of T4 thyroid hormone in the bloodstream. FT4, or free T4, is the amount of T4 that circulates in the blood freely rather than bound to protein molecules. TT4 measures both the bound and free T4. Many times we can tell is a pet is hypo- or hyperthyroid by measuring just the TT4, but some animals will have normal TT4 levels but abnormal FT4 levels.**

18) When is a T4 test or thyroid panel recommended?

# [Note to Trainer: Explain the difference between hyperthyroidism in cats and hypothyroidism in dogs. What tests does your practice routinely use? Do you do in-house testing or are the samples sent to a lab?]

# *Sample Response: T4 or thyroid panels are recommended if the animal is exhibiting signs of thyroid disease such as changes in energy level, changes in weight, and* ***PU/PD (polyuria and polydypsia)****. In general, dogs develop hypothyroidism, with some degree of exercise intolerance and weight gain, while cats develop hyperthyroidism and may become hyperactive and lose weight. The risk of developing thyroid abnormalities increases with age. Genetics also play a role as hypothyroidism is more common in some breeds of dogs than others.*

# 19) How is hypothyroidism in dogs treated and monitored?

# **Answer:**

# 20) When is a FT4 recommended?

**Answer:**

## 21) How is hyperthyroidism treated?

[Note to Trainer: This is a good opportunity to discuss the basics of this disease, how it is diagnosed, treated, and monitored, and what radiation treatment entails. Where do you refer patients for radiation treatment?]

**Answer:**

22) How many hours after a thyroid pill is administered should a blood sample from a hypothyroid dog be tested to monitor thyroid hormone levels?

[Note to Trainer: AAHA standards require veterinary hospitals to possess clear laboratory testing protocols that include this information, along with where the test is sent, what tube the blood is put into, etc.]

**Answer:**

23) How many hours after a thyroid pill is administered should a blood sample from a hyperthyroid cat be tested to monitor the thyroid hormone levels?

**Answer:**

24) What are **bile acids**?

**Answer: Bile acids are substances that help the body metabolize fat. Normally, bile acids are stored in the gall bladder and are released into the intestines via the bile ducts after an animal consumes a fatty meal. The bile acids are absorbed through the intestines into the bloodstream. The circulating bile acids bind to fat particles and help the body metabolize the fats. The liver filters the bile acids out of the bloodstream and sends them back to the gall bladder. If an animal has elevated bile acids levels then we know that liver function is impaired.**

25) When are bile acids measured?

*Sample Response: We may want a blood sample after the pet has fasted for 12 hours, or two hours after eating a meal, or both. Check the record carefully when you schedule an appointment for bile acids testing.*

26) What is **bilirubin**?

**Answer: Bilirubin originates from the degradation of heme-containing proteins. The majority of this is from blood cells that are broken down in the liver so that the bilirubin can be recycled and used in new red blood cells. Elevated levels of bilirubin may be caused by the liver being overwhelmed with degraded red blood cells and can’t keep up (e.g., IMHA), the liver may not be functioning properly, or there may be a problem with the clearance into the intestines.**

26) What is **hepatitis**?

[Note to Trainer: This is a good opportunity to discuss some of the functions of the liver.]

**Answer: Inflammation of the liver**

27) At what age are kittens tested for feline leukemia virus (FeLV)?

[Note to Trainer: What diseases does your local humane society test for before adopting out kittens? If the adopted kitten is very young and was tested for FeLV, do you retest?]

**Answer:**

28) What cats/kittens should be tested for FeLV?

[Note to Trainer: Do you follow the Feline Practitioners Association guidelines for testing?]

**Answer:**

29) What are heartworms?

**Answer: *Dirofilaria immitus* is the common heartworm species infecting dogs. Left untreated, it is routinely fatal yet almost 100% preventable. Adult heartworms live in the heart and adjacent blood vessels where they cause significant damage to the heart and lungs.**

30) How are heartworms spread?

[Note to Trainer: Review the life cycle with your trainees.]

**Answer: Through the bite of infected mosquitoes.**

31) What species can get become infected with *Dirofilaria immitus*?

**Answer: Dogs and other canids (e.g., cats, sea lions, ferrets). In people, the larvae can cause lung nodules that look like tuberculosis nodules on radiographs and may prompt a lung biopsy. They cannot grow to adult form in humans. Male dogs are affected by heartworm disease two to four times as often as females.**

32) How do we test for heartworms?

[Note to Trainer: Do you do the testing in house or send the blood out? If performed in-house, who does the testing?]

**Answer:**

33) What kind of blood tube is used to collect the sample for heartworm testing?

**Answer:**

34) Does the heartworm test also test for other diseases?

**Answer:**

35) If the blood samples are sent to an external laboratory, how long does it take to get heartworm test results back?

[Note to Trainer: If testing is performed in-house, is each test done right away or are the samples stored in the fridge and analyzed once or twice daily?]

**Answer:**

36) Are all owners notified with the results or only those with a positive result? Who contacts the owners?

**Answer:**

# 37) What is a fecal float/**centrifugation** and when do we perform them?

[Note to Trainer: Which type of fecal testing, float, or centrifugation, does your hospital do and why? Do you send any or all of your samples to a laboratory or do you do them in-house? This topic is covered in depth in the Laboratory module but you may wish to cover some of this information now.]

**Answer: A fecal float or centrifugation test is used to help determine if a dog or cat is infected with internal parasites such as roundworms, hookworms, or coccidia. All adult animals should provide a fecal sample at least once a year and all puppies and kittens should provide a sample at least twice during their vaccination series. Animals that were infected with internal parasites should be re-checked after treatment.**

# 38) What is an **ear swab** and when do we perform them?

**Answer: An ear swab is used to obtain material and debris from the ear canal. The exudate** **is then smeared on a microscope slide and examined for parasites, bacteria, yeast, etc.**

# **MODULE 1: ANATOMY, EXAMINATIONS, COMMON DISEASES, AND PROBLEMS**

**Lesson 4: Common Medical Problems**

## 1) Define the following diseases. How are they diagnosed? How are they monitored, and what medical progress examinations (rechecks) are needed? How often are patients reexamined?

## [Note to Trainer: Keep your answers simple. The goal of this section is simply to introduce and define these common diseases and problems so that when a client is booking a recheck, the CCR will have a basic understanding of what is needed. This is a good opportunity to discuss the logistics of the recheck. Who contacts the owner to remind them it is time to book a recheck? Who collects the blood sample? Where is the sample analyzed? Who calls the owner with the result?]

## A) CRF/CKD

## [Note to Trainer: Chronic Renal Failure nomenclature is changing to Chronic Kidney Disease now that we are diagnosing it at an earlier stage (before renal failure occurs). Throughout this training program, CKD has been used. Do you have clients who give SQ fluids at home? If so, where are the fluids and IV lines kept? Do you order fluids by the case for these clients? Who demonstrates how to give SQ fluids to the client?]

## **Answer: CKD is chronic kidney disease. CKD can be diagnosed by urine testing (i.e., a low urine specific gravity or proteinuria). CKD is also diagnosed on the chemistry panel when elevated BUN and/or creatinine levels are present.** **There are four stages of CKD and more treatment and monitoring are needed as the disease progresses. Treatment usually includes a special diet and may also include medications and fluid support. Follow-up examinations usually entail rechecking BUN/creatinine. The frequency of rechecks** **will** **depend on the severity of the disease.**

## B) FLUTD

[Note to Trainer: This training manual uses the terms FLUTD or IFLUTD for chronic inflammation (for which we do not know the cause) and FUS for **cystitis** caused by **crystalluria**. Some text books or articles use the term FIC for feline **idiopathic** cystitis instead of FLUTD.]

**Answer:**

C) FUS

[Note to Trainer: Describe what a **urethral** obstruction is, what is done for it, and the most common clinical signs. It is important that the trainees know common clinical signs and recognize that this is a potential emergency. It is extremely important for the CCR to ask the sex of the cat in these cases!]

**Answer:**

## D) UTI

[Note to Trainer: How is a UTI different from FLUTD or FUS? Does your practice culture all urine samples or only in specific cases?]

**Answer:**

## E) CHF

## [Note to Trainer: You may wish to describe the two stage heart disease terminology (i.e., prefailure and congestive heart failure) or the four stage model. How often do you monitor CHF patients and how? Briefly discuss a few basic heart disease medications and **mitral valve insufficiency** (MVI).]

**Answer:**

## F) Diabetes mellitus (DM)

[Note to Trainer: This is a good opportunity to discuss insulin, explain diabetes diets, monitoring blood sugar/glucose levels and blood sugar, and urine sugar and **ketones**. What kind of insulin does your hospital use? What foods do you stock? How often are diabetic animals reexamined? How are they reexamined? Does your hospital perform glucose curves? If yes, how?]

**Answer: To recheck blood sugar (glucose) levels in diabetic animals, the sample is collected at the nadir: the time of day when the blood sugar is at its lowest point. This is usually about six hours after the pet received its last insulin injection, but the exact time of the nadir varies from pet to pet. If the owners are early risers and administer the insulin at 6 a.m., the blood sugar should usually be checked about 12 p.m. Sometimes a glucose curve is performed instead. This involves collecting multiple blood samples over the course of a day to track changes in blood sugar levels. This requires special instructions to the client.**

G) Tonsillitis/URI/kennel cough

[Note to Trainer: Explain how an URI is different between cats and dogs and the difference between tonsillitis and kennel cough. This is a good opportunity to discuss procedures used to prevent the spread of disease in your hospital.]

**Answer: With upper respiratory tract infections, dogs cough more; cats sneeze more and are more likely to have conjunctivitis. These diseases are all contagious, so special precautions need to be taken to avoid spreading them from one patient to the next.**

H) GDV

[Note to Trainer: What would the owner say on the phone that might suggest to the CCR that the dog might have a GDV? What should the CCR do if it she or he thinks the dog might have a GDV?]

**Answer: Gastric dilation and volvulus or “bloat”. This means that the stomach fills with air and then twists on itself. It is very painful and is quickly fatal (sometimes within hours) if left untreated. This is a critical emergency that must be seen and treated immediately.**

I) IBD

**Answer: Inflammatory Bowel Disease is an autoimmune disorder in which the immune system cells present in the stomach or intestinal walls start to overreact to food or bacteria or other particles in the ingesta. The lining of the intestine becomes invaded by more and more white blood cells, and becomes thickened, inflamed, and sometimes ulcerated. In cats, the disorder can spread to the pancreas and liver as well, which is called Triad Disease.**

J) Lymphoma

# **Answer: Lymphoma is a type of cancer common in older cats and also in dogs. Some breeds, such as golden retrievers, are particularly prone to it. The intestinal form of lymphoma has symptoms similar to those of inflammatory bowel disease (IBD) and in fact IBD can progress to lymphoma. Lymphoma can also occur in many other parts of the body, including the spleen, liver, lymph nodes, skin, and neurologic system (the brain and spinal cord).**

# **MODULE 1: ANATOMY, EXAMINATIONS, COMMON DISEASES, AND PROBLEMS**

**Lesson 5: Common Skin and Ear Problems**

[Note to Trainer: The suggested reference for this lesson is *A Color Handbook of Skin Diseases of the Dog and Cat* by McKeever and Harvey (1998).]

1) What is **atopy**?

**Answer:**

2) How would you explain what an allergy or atopy is to a client?

*Sample Response: Atopy is an allergy to inhaled substances such as pollens, molds, mildews, and dust mites. In people, this type of allergy causes hay fever symptoms. In contrast, dogs and cats usually have itchy faces, feet, and ears.*

3) When and why is allergy testing recommended?

## [Note to Trainer: Do you use skin testing, blood testing, or both? What is your protocol for ordering, receiving, and dispensing allergen, especially for the initial treatment set?]

**Answer:**

4) When and why is thyroid testing recommended for animals with skin or ear problems?

**Answer:**

## 5) When and why is a **hypoallergenic** diet trial recommended?

**Answer:**

## 6) What types of medications are commonly used to treat allergies? Where are these drugs kept in the pharmacy?

[Note to Trainer: Show your trainees where these medications and supplies are kept. In your practice, who is a responsible for refilling prescriptions? Does the CCR need to schedule an exam or can the owner simply pick up the prescription medications for their pet? Do all of the doctors recommend the same medications and shampoos? Do you have a master drug log in each file to record refills?]

**Answer:**

## 7) What earointments does our practice use and where are they kept?

**Answer:**

## 8) What ear cleaners does our practice recommend for clients and how do we teach clients how to clean their pet’s ears?

## [Note to Trainer: Discuss the difference between an **ear flush** and an ear cleaning.]

**Answer:**

9) When is an ear swab/**cytology** recommended?

[Note to Trainer: Spend a little time discussing yeast **otitis**, bacterial otitis, and ear mites. Does your practice perform gram stains or do you use Diff-Quick stain for ear **cytologies**? Who performs the swabs and microscopic analysis, and where are the results logged?]

**Answer:**

## 10) What is an **aural hematoma**?

**Answer: Aural means ear and hematoma refers to a bloody swelling. An aural hematoma is the collection of blood between the two cartilage layers in the pinna. It is a painful condition.**

11) Under what circumstances might a veterinarian recommend bothan oral and **topical** medication to treat **otitis**?

[Note to Trainer: If you have a new associate in the practice this is a good opportunity to discuss otitis protocols.]

**Answer:**

12) When are animals diagnosed with an ear infection rechecked?

[Note to Trainer: Recurrent otitis, especially yeast otitis, can indicate that the dog has an underlying allergy. Ninety percent of dogs with food allergies have otitis and 20% have otitis as their only symptom. Fifty percent to 80% of **atopic** dogs have otitis (Rosenbaum 2006).]

**Answer:**

13) What is **skin scraping**?

**Answer: A skin scraping is similar to an ear swab to test for ear mites except that instead of using ear wax or discharge, we use a scalpel blade or edged tool to scrape off some superficial skin cells. A skin scraping can be used to look for mites, but the kind of mite found on skin instead of in the ears.**

14) What is **pyoderma**?

**Answer: Puss in the skin is the literal translation. It is a skin infection, usually caused by *Staphylococcus intermedius*. It may also be referred to as *Staph* pyoderma or a *Staph* infection.**

15) How is pyoderma treated?

[Note to Trainer: Does your hospital stock or recommend any particular antibiotic for animals with pyoderma? Do the owners also bathe their pet with a special shampoo? Do you recommend any other products?]

**Answer:**

16) What shampoo does our practice recommend for pyoderma?

**Answer:**

17) What shampoo does our practice recommend for **seborrhea**?

**Answer:**

18) How long are antibiotics prescribed for when treating *Staph* infections (e.g., *Staphylococcus pseuditermedius*)?

[Note to Trainer: Antibiotics are prescribed at least 21 days or two weeks past the resolution of the lesions. The goal of this question is to relay that skin infections may take a long time to resolve and antibiotic refills and rechecks may be required.]

**Answer:**

19) What is ringworm? How is it diagnosed?

[Note to Trainer: The trainees should be advised that ringworm is a **zoonotic** **fungal** disease (i.e., can be spread between people and animals) and is not actually caused by a worm.]

**Answer: Ringworm is a fungal infection of the skin that presents with areas of hair loss (alopecia) and less often, redness and inflammation. Ringworm is not usually itchy (pruritic).**

20) What is **FAD**?

[Note to Trainer: It is important to note that even animals with no obvious fleas can still have FAD.]

**Answer: In some animals, flea saliva causes a severe skin irritation that is extremely itchy. Animals with flea allergy dermatitis scratch and groom excessively and have areas of inflammation (i.e., redness, heat, pain, and swelling) on the lower back and ventral abdomen.**

# **MODULE 1: ANATOMY, EXAMINATIONS, COMMON DISEASES, AND PROBLEMS**

**Lesson 6: Osteoarthritis**

[Note to Trainer: *An Illustrated Guide to Orthopedic Conditions* (Novartis Animal Health, Inc. 2005) is a good reference for this section. If you do not have one, your Novartis representative can likely obtain one for you. Novartis Animal Health US, Inc., together with the International Veterinary Academy of Pain Management also has a CD-ROM titled *An Animated Guide to the Multimodal Management of Canine Osteoarthritis*.]

1) What other names are used for osteoarthritis?

[Note to Trainer: What abbreviations do your doctors use in the medical records?]

*Sample Response: OA, DJD*

2) What are some signs of osteoarthritis pain in dogs?

[Note to Trainer: Does your practice use standardized senior history forms such as those provided by Pfizer or Novartis at the time of a senior wellness visit?]

**Answer: Classic signs of osteoarthritis include difficulty rising after lying down, difficulty with stairs, not actively seeking out play anymore, inability to walk or run as fast or as far as they used to, difficulty jumping onto furniture or into the car, inability to curl up in a bed or basket, inactivity or depression, muscle atrophy, dragging or scuffing toes, and poor appetite. There may be an overt lameness, or the animal may simply be inactive and the owner notices the pet is “slowing down.”**

3) How does a veterinarian make a presumptive diagnose of osteoarthritis during a physical examination?

*Sample Response: Recent studies reported that force plate studies that included a subjective owner assessment showed that owner assessments correlated better with force plate evaluations than veterinarian assessments. A diagnosis of painful DJD should be based primarily on owner-assessed activity impairment, supported by painful joints on examination that may or may not have radiographic signs of DJD (Hielm-Bjorkman et al. 2003; Wiseman-Orr et al. 2004; Wiseman-Orr et al. 2006).*

4) How do we diagnose osteoarthritis in cats?

[Note to Trainer: The goal here is to relay that the questions veterinarians ask cat owners are different than the questions that dog owners are asked. Can the cat still jump onto a bed or countertop? Is it grooming itself or does seem to hurt the cat to twist or bend? Is the cat avoiding the litter box? It may hurt to climb over the sides and to squat to urinate or defecate. The cat may be reluctant to use a litter box if the box is either up or downstairs and the cat is no longer comfortable navigating stairs (Peterson 2007).]

*Sample Response: Overt lameness is not the most common clinical sign of osteoarthritis in cats. Changes in activity and behavior such as a reluctance or inability to jump up and down, a change in the height of their jump, “grumpiness” during handling, and seeking seclusion are common signs observed in arthritic cats. It is more difficult to assess range of motion in cats so veterinarians rely on the owner’s description of their cat’s behavior. This may require some careful probing.*

5) Name three orthopedic injuries that could lead to the development of osteoarthritis.

**Answer: Luxated hip, torn anterior cruciate ligament (ACL), and fracture involving a joint**

6) What simple test can be performed during a physical examination to help make a diagnosis of osteoarthritis?

*Sample Response: Range of motion (ROM). Usually when we perform the annual physical exam, we find that it is no longer possible to extend the hips or shoulders as far as we used to. There may be lameness, or there may just be inactivity—the owner notices the pet is “slowing down.” Inactivity is often a glaring sign of pain.*

7) What percent of dogs have osteoarthritis?

**Answer: One in five dogs in North America has osteoarthritis (i.e., 20% of our canine case load).**

8) What percentage of cats over the age of 12 years has visible signs of osteoarthritis on radiographs?

**Answer: 90% (Hardie, Roe, and Martin 2002; Clarke and Bennett 2006)**

9) What percentage of these older, arthritic cats are painful?

**Answer: 20%. The older or heavier the cat, the more likely it is to have pain associated with** **osteoarthritis.**

10) How do we diagnose osteoarthritis on radiographs?

[Note to Trainer: Show a radiograph or picture of arthritic joints. Radiology is the standard technique for diagnosing osteoarthritis; however, osteoarthritis is usually not evident on radiographs until it is at an advanced stage. In addition, there is little correlation between radiographic changes and the degree of lameness in the pet.]

**Answer:**

11) Do the veterinarians in the practice stage animals with osteoarthritis?

**Answer:**

12) Why is it difficult to treat osteoarthritis in the early stages and how do we educate clients about osteoarthritis?

*Sample Response: Osteoarthritis can be challenging to diagnose early and some owners may be reluctant to believe their active, healthy pet may be developing a serious health concern.*

13) What factors influence the development of osteoarthritis?

**Answer: Breed and size of dog, body weight, conformation, history of previous injuries or trauma**

14) How does weight control influence the development of osteoarthritis?

[Note to Trainer: Purina’s 14 year study in Labrador retrievers showed that overweight dogs develop signs of osteoarthritis two years earlier than dogs with a normal body weight. In addition, a 10%-15% reduction in body weight results in improved clinical signs of osteoarthritis and, according to owners, as little as a 5%-10% weight reduction improves mobility. Maintaining a healthy body weight is a key factor in either preventing or slowing the progression of osteoarthritis (Impellizeri, Tetrick, and Muir 2000).]

**Answer:**

15) What does NSAID stand for?

**Answer: Nonsteroidal antiinflammatory drug. Examples include aspirin, meloxicam, and carprofen.**

16) What NSAID drugs does our practice prescribe and why?

*Sample Response: We use BRANDS X, Y, and Z. We carry more than one kind of NSAID because some pets respond better or experience fewer side effects when prescribed one NSAID over another. It is important to inform clients not to administer human products to their pet.*

17) What percentage of dog owners have given aspirin to their dog?

**Answer: Forty percent (Fox 2006)**

18) What is **multimodal** therapy?

*Sample Response: Multimodal therapy is when a combination of drugs or therapies is recommended to improve outcome. For osteoarthritis, a multimodal approach involves prescribing a NSAID, recommending dietary supplements (e.g., glucosamine), modifying the diet (i.e., adding omega three fatty acids to the diet), and recommending weight loss and canine rehabilitation*.

19) How would you explain what glucosamine is to a client?

*Sample Response: Glucosamine is produced in the body and is found in joints, tendons, ligaments, skin, and blood vessels. It is a fundamental building block of* ***articular cartilage****, which lines the joints. As osteoarthritis progresses, there is a loss of articular cartilage, loss of glycosaminoglycans (GAGs) from the cartilage, and thus, a loss of shock absorbing capacity. Glucosamine supplements help to stimulate new GAG production and alter inflammation in the joint. Pets administered oral joint health supplements early (even before clinical signs of osteoarthritis develop) will have fewer degenerative changes in their joints as they age. Most pets that already have osteoarthritis are likely to experience less pain and stiffness on these supplements (Lust et al. 1992; Millis et al. 1999; Grant 2001; Clegg 2006).*

20) What glucosamine products does our practice recommend, and what do you say to clients regarding over-the-counter/human preparations of glucosamine?

*Sample Response: Nutritional supplements are not well regulated by the government so many of the available products do not contain the type or amount of glucosamine listed on the label. The doctors have carefully researched the products manufactured for animal consumption and have selected a quality product.*

21) What do you recommend to clients who say they are feeding a pet food that contains glucosamine?

*Sample Response: In general, the amount of glucosamine contained in commercial diets is not high enough and the dog or cat is not being fed a therapeutic level. An extra supplement is often required for animals with osteoarthritis.*

22) How do diets designed specifically for joint disease work?

*Sample Response: These specialized diets have high levels of EPA, which is a type of omega-3 fat that has antiinflammatory effects in joints. Fatty acid supplements, as with glucosamine, are nutritional supplements, not drugs. Some of these products also contain other ingredients thought to be beneficial for animals with osteoarthritis such as glucosamine, chondroitin sulfate, Perna mussel, other omega-3 fatty acids, etc.*

23) How would you explain what MSM (methylsulfonylmethane) is to a client?

*Sample Response: MSM is another antiinflammatory substance that is inexpensive and can be used in addition to other osteoarthritis drugs. It can be given by itself in a capsule or with glucosamine in a dual product. It has very few side effects and may be used in both cats and dogs.*

24) How would you explain to a client what Adequan™ is?

[Note to Trainer:Many surgeons recommend the use of Adequan™pre- or postoperatively (for orthopedic surgeries, such as an ACL repair).]

*Sample Response: Adequan™ is a polysulfated glycosaminoglycan similar to glucosamine except Adequan™ is an injectable product instead of an oral supplement. Unlike oral glucosamine supplements, Adequan™ has been tested and approved by the United States Food and Drug Administration (FDA).*

25) How many doses of Adequan™ are administered and on what schedule?

[Note to Trainer: If you are using this product what is your protocol? Do you use it on cats as well as dogs? Do you allow/teach clients to administer this product subcutaneously at home?]

**Answer:**

26) Does our practice recommend acupuncture for osteoarthritis?

[Note to Trainer: If you do, does someone in your practice do it or do you refer? If you offer acupuncture in-house, who does it, how long are the sessions, how often is it performed, etc.?]

**Answer:**

27) What other products does our practice recommend for osteoarthritis?

*Sample Response: When all of the above treatments are no longer enough, there are many pain medications that can be added to the treatment plan. Most of these are human drugs. If needed, they can be formulated into smaller capsule sizes or liquid preparations for cats and small dogs. Tramadol, gabapentin, amantadine, buprenorphine, pentazocine, and oral morphine are all possibilities. Many times more than one drug can be used in conjunction for better effect. These drugs help keep pets mobile and comfortable in the severe late stages of arthritis.*

28) What role does exercise play in the management of osteoarthritis?

*Sample Response: Low-impact exercise is best. Healthy cartilage is maintained by exercise, whereas damaged cartilage is further damaged by repeated impact. If we know the pet is at risk for joint problems, playing Frisbee is probably not a good idea but long walks are just the ticket. We can help owners to develop an exercise program for their dog that reduces risk of injury and joint stress.*

29) What are our treatment recommendations at each stage of osteoarthritis?

*Sample Response:* ***Stage 1:*** *We recommend**a diet specifically designed to work for joint disease; weight control; oral glucosamine supplementation to reduce joint inflammation; Adequan™ injections postoperatively for a joint injury; and exercise.* ***Stage 2:*** *The treatment may include all of the recommendations for Stage 1 plus antiinflammatory drugs at the low end of the dosage range or intermittently. For example, if you know a dog will be rough housing with the neighbor’s dog or swimming at the cottage this weekend, an NSAID may be in order starting on Friday.* ***Stage 3:*** *Add very low-impact exercise, strength-building, and range of motion exercises at home, as well as daily administration of NSAID drugs at moderate dosages. We would continue all the treatments listed above that the owner is willing to do. We might add acupuncture or perhaps intermittent use of stronger pain medications for pain flare-ups. MSM may be helpful in addition to the oral glucosamine. Adequan™ injections may still be useful.* ***Stage 4:*** *Rehabilitation such as underwater treadmill exercise can be very beneficial. High dosages of NSAIDs plus stronger drugs such as tramadol, amantadine, or opioids may be needed. Owners often are put in a position of deciding if the pet’s quality of life warrants continued care—a position we like to avoid whenever possible.*

30) How are cats with advanced osteoarthritis managed?

*Sample Response: Glucosamine may work well in cats if you can find a product they are willing to eat. Fatty acids may also be beneficial, just as in dogs. NSAIDs may be administered or other drugs such as tramadol or gabapentin.*

31) Why is osteoarthritis treatment so important?

*Sample Response: Osteoarthritis is extremely common in pets, affecting almost all cats and dogs over 12 years of age. Joint problems such as hip dysplasia or a history of injury can lead to osteoarthritis, even in very young animals. Once present, osteoarthritis always progresses and is a painful, debilitating condition.*

32) What is the main goal of osteoarthritis treatment?

**Answer: The goal of treatment is to slow disease progression and control pain.**

33) How often are animals diagnosed with osteoarthritis reexamined?

[Note to Trainer: Do you do callbacks to see if the medication or other treatment is working? Do you recommend an NSAID panel in these patients? How often are laboratory tests performed on animals administered NSAIDs chronically?]

**Answer:**

34) What is hip dysplasia and which pets are most commonly diagnosed with this condition?

**Answer: Hip dysplasia is an abnormal hip joint where the ball part of the ball-and-socket hip joint does not correctly fit into the hip socket, causing discomfort and osteoarthritis. Large breed dogs are most commonly affected although some smaller breeds, such as Shelties, can also develop hip dysplasia.**

**Module 1 Suggested Reading**

American Animal Hospital Association. 2008. *Medical Records Standards. AAHA Standards*. Lakewood, CO: AAHA.

American Animal Hospital Association. 2008. *Patient Care Standards. AAHA Standards*. Lakewood, CO: AAHA.

American College of Veterinary Ophthalmologists. http://www.acvo.org/frames/publicframe.htm

College of Veterinary Medicine and Biomedical Sciences at Texas A&M University Body Condition Score Chart.

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School of Veterinary Medicine at the University of Pennsylvania. Canine Hip Dysplasia (CHD) and the University of Pennsylvania's Hip Improvement Program (PennHIP)

<http://cal.vet.upenn.edu/projects/pennhip/index.htm>

School of Veterinary Medicine at the University of Wisconsin at Madison Veterinary Ophthalmology. http://www.vetmed.wisc.edu/Comparative\_Veterinary\_Ophthalmology.41.0.html