

# Fat Dogs & Coughing Horses



Be the Vet! Solve the Case!

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## Credits

### “Fat Dogs and Coughing Horses: Be the Vet! Solve the Case!”

**Written by:**

Jessica Schneider, BS, RVT  
Kauline Davis, PhD  
Henry Green III, DVM  
Thad Blossom, BS  
of Purdue Veterinary Medicine (PVM)

**Illustrated by:**

Carol Bain, DVM

**Designed by:**

Thad Blossom, BS

**PURDUE**  
UNIVERSITY



**Edited and reviewed by:**

Sandy San Miguel, DVM, PhD (PVM)  
C. Matthew Fugate, BS, MA, Purdue University College of Education

**Summary:**

This activity book highlights various careers in the veterinary profession and provides veterinary medical cases for the reader to solve.

**Special thanks to our Purdue Veterinary Medicine scientists:**

Laurent Couëtil, DVM, PhD  
Kauline Davis, PhD  
Jessica Engen, BS, RVT  
Henry Green III, DVM  
Donna Griffey, RVT  
Michael Hill, BVM, MS, PhD, MRCVS  
Kathleen Ivester, DVM, MS

Sophie Lelièvre, DVM, PhD  
Michael Mann, DVM  
Katherine Naughton, DVM  
Roman Pogranichniy, DVM, MS, PhD  
Debbie Stevenson, BS, RVT  
Ramesh Vemulapalli, BVSc, MVSc, PhD  
Tracy Vemulapalli, DVM, MS

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NIH . . . *Turning Discovery Into Health*

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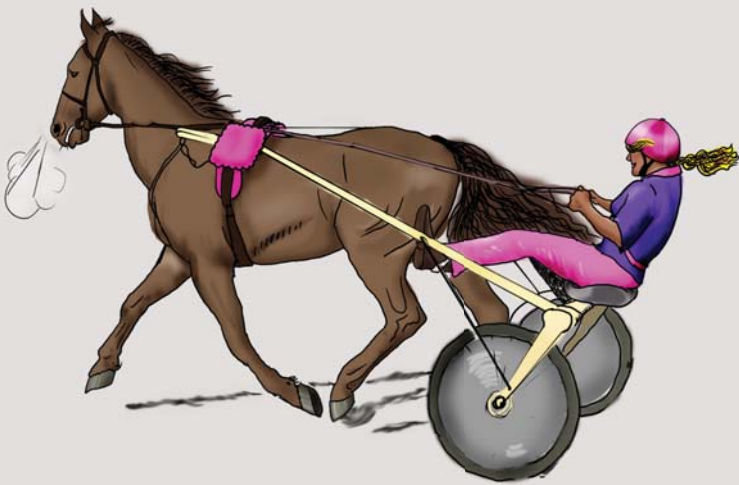
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## Meet Your Patients

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Snickers



Spring's Breeze



Comanche's Reign Storm

# Introduction

Dear Readers,

This is not a “regular” book where you read it in front-to-back fashion. This is an activity book, where you are actively seeking or researching information to find the answers you need. Each case has a title...but it’s not complete without the diagnosis! That will be your job. By the end of each case, you should be able to fill in the diagnosis that the veterinarian has determined using teamwork, thorough scientific research, and testing. Yes, veterinarians are scientists!

In real life, scientists cannot find all the information in one place. They find the information by talking to other people, reading different articles or books, and by working with others. Along the way, there will probably be terms that are unfamiliar to you - that’s okay! Look for the shaded boxes to find definitions for the underlined words. We have also included references for you in the back of the book to help you better understand your cases.

Problem solving is easier when team members come from different backgrounds because everyone looks at the problem from a different point of view. When everyone works together and shares what they have learned, that’s called collaborating. That’s what it takes to be a good scientist. Throughout the book, you’ll get introduced to some really great scientists who work at Purdue University. Maybe someday you will be a famous scientist too!

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Dear Teachers,

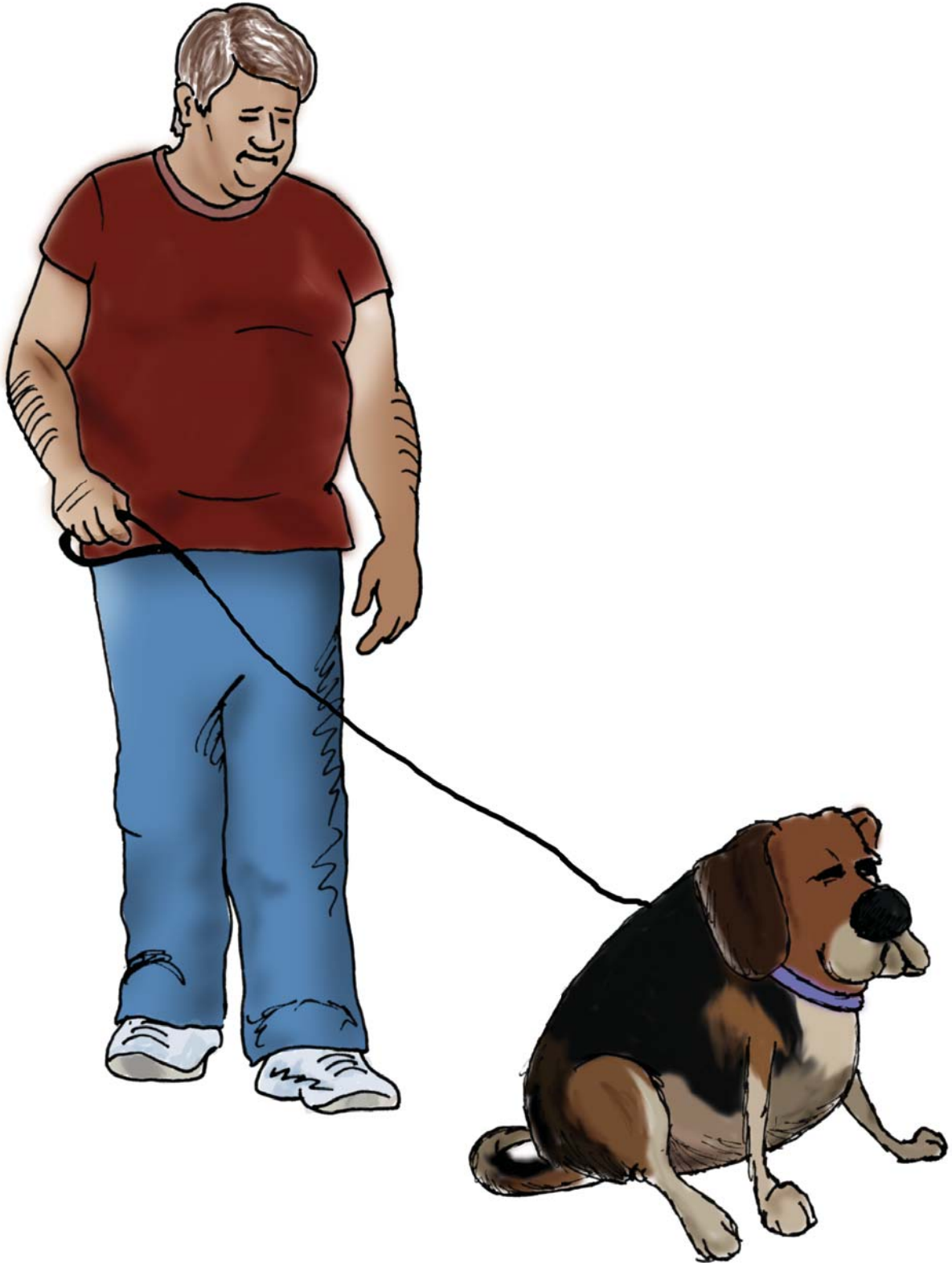
Please visit our website for academic standards associated with this book and other useful resources:

[www.vet.purdue.edu/engagement/sepa](http://www.vet.purdue.edu/engagement/sepa)

Readers - you can find definitions of underlined words in boxes like this one.

“Snickers has \_\_\_\_\_”

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Dr. Henry Green needs your help with a case! Mr. Adam Portly brought his dog into the Small Animal Clinic this morning to see Dr. Green. Dr. Green explains that he wants you to meet Mr. Portly and Snickers and get the signalment and history. He also asks you to perform a physical examination on Snickers.

(Tear out the blank Small Animal Medical Record form on page 55 and record your case information.)

After Dr. Green introduces you to Mr. Portly and Snickers, he leaves to take care of another patient and you are on your own! You learn from Mr. Portly that Snickers is a seven-year-old, castrated male, Beagle dog.

“I named him after my favorite candy,” says Mr. Portly. “He’s been my best friend for seven years!”

“Well, Mr. Portly,” you say, eyeing Snickers who is looking like he’s about ready for a nap, “what seems to be the problem?”

“He just doesn’t have any energy,” sighs Mr. Portly. “He used to wear me out when I took him for walks – he never wanted to go back home! Now, it seems like he is more tired than I am. I just don’t understand it!”

“Hmm...well we will check him out and find out what’s going on. Don’t you worry Mr. Portly!” you say with confidence. “Are there any other signs we should know about?”

“Well,” says Mr. Portly, “now that I think about it - he’s also been having these coughing fits, and usually they happen right before our walks. He also coughs as soon as I put the leash around his neck.”

“OK,” you say, “that’s important information we need to know! How long do these coughing episodes last?”

signalment: age, gender, and breed of animal

history: all the events leading up to the animal being brought to the veterinarian

physical exam: examining an animal closely from head to tail, including all limbs, skin and haircoat

castrated: a neutered male animal



“Oh sometimes they seem like they go on forever,” groans Mr. Portly. “Poor Snickers! He just coughs and coughs until it seems like he hacks something up – but I’ve never seen anything come out of his nose or mouth.”

You talk some more with Mr. Portly and you discover that Snickers is eating a normal canine diet. However, Mr. Portly is also feeding Snickers snacks from his meals, three or four times a day. Snickers is up-to-date on his vaccines, and is on heartworm prevention.

You perform a thorough physical examination on Snickers. You discover first that he is very overweight. Snickers has a body condition score (BCS) of 9/9. This BCS indicates severe obesity. Snickers is so big you cannot determine where his neck ends and where his chest begins! When you weigh Snickers, you find he weighs 45 pounds (lbs). You also find that Snickers has a heart murmur. You grade the heart murmur at 2/6 and record that in his chart. When you lightly press on Snickers’ airway, he starts coughing. All your other findings are pretty normal.

You page Dr. Green so you can discuss with him what you’ve found so far. You research the problems by reading pages 46 to 50 so you are prepared when Dr. Green arrives.

“OK, what do we have, Doctor?” asks Dr. Green.

**vaccine:** an injection or shot that helps prevent disease

**heartworm:** a parasite that can live in the heart of dogs and is spread by mosquitos

**body condition score (BCS):** a number value (1-9) assigned to an animal based on the animal’s weight; body condition score varies from underweight (1), to normal weight, to overweight, to obese (9)

**heart murmur:** an abnormal heart sound; grade 6 is the loudest

**cardiology:** the study of hearts

## Meet our Scientist: Dr. Henry Green



Dr. Henry Green is a veterinarian who specializes in cardiology. He loves every aspect of it! The clinical part allows him to treat species of all ages; anything from treating birth defects to managing long term care of older patients. He also gets to work with students and likes that they keep him motivated to have the most up-to-date information. Another aspect of his job involves research. Dr. Green gets to collaborate with world leaders in veterinary medicine, human medicine, and biomedical engineering. He finds this very rewarding. He grew up in the Ninth Ward of New Orleans, Louisiana. “I was fortunate to have a village of people to help raise me because I truly, easily could have become a negative statistic.” His inspiration to become a veterinarian started when he was young.

“Growing up in an inner city area didn’t provide me

many opportunities to be around veterinary medicine. However, my grandmother used to raise German Shepherd dogs and I would accompany her on occasion to the vet and I always admired how he treated her and her dogs. I know how much they meant to her, so I always held them in high esteem because of our interactions with the vet.”

Dr. Green really enjoyed school. Science and math were favorites, but he loved his writing classes, especially when they were told to make up stories and write plays. He often wrote plays and his mother would then be the editor of those plays. He also loved sports growing up. “I don’t remember a day when I didn’t play or practice some sport (football, baseball, or track) growing up. Even when it was raining out we’d find a way to make a sport-like competition inside. For example, we used to use wire clothes hangers and make basketball goals out of them. We would tear old shirts and tie strips to the hanger to give the appearance of the nets and hang the goals in the doorway. Then we’d use a pair of rolled up socks as the ball and have a “basketball” game inside with my sisters or my father. If we weren’t doing that we would be playing some type of sports video game on my computer.”

There were obstacles to his goal of becoming a veterinarian, but he was able to keep his eye on the prize and had extremely strong support from his family, extended family, and friends. “Find what makes you happy and don’t let anyone discourage you from being successful. The biggest thing my dad taught me is: “if you put your best effort forward in whatever it is that you do, you will not have any regrets, no matter what the results are.” Some additional advice from Dr. Green, “Just remember there is always someone around you that can use a smile and a hello. My dad was most proud of the fact that in every school I went to I was known just as well by the people considered low on the totem pole as those high up in administration.”

You spend a few minutes reviewing your findings with Dr. Green, then you conclude, “I’m pretty confident that Snickers’ weight is a part of his problem, but I know that his coughing can also be a sign of advanced heart disease and respiratory disease. I think we should do some blood work, radiographs of the lungs and heart, and an echocardiogram.”

Dr. Green is nodding his head in agreement, “That’s very appropriate... please talk to Mr. Portly about it and see what he thinks.”

You speak to Mr. Portly about your concerns. You explain to him that in order to get the full picture of what may be going on with Snickers, you really need an echocardiogram. You also explain that blood work will enable you to find out if there are any hormonal imbalances, and that radiographs of the lungs and heart (thoracic radiographs) could also provide very useful information.

“Whatever you need to do, Doctor.” says Mr. Portly. “I want you to be able to help Snickers feel better, so please run any tests you think are necessary.”

Radiographs show that there are layers of fat beneath the skin around the outside of Snickers’ chest. Luckily, Snickers’ lungs are pretty clear. The airway leading to Snickers’ lungs is smaller than usual. The echocardiogram shows that Snickers’ heart is also pretty enlarged, and that there is a lot of fat around his heart. It also shows that Snickers’ mitral valve is leaking mildly.

You review all the results with Dr. Green and diagnose Snickers with a mildly collapsing trachea, early disease of the mitral valve, and obesity. Snickers’ extra weight can cause the heart to work harder and cause extra

**radiograph:** a picture of the inside of the body made with x-rays

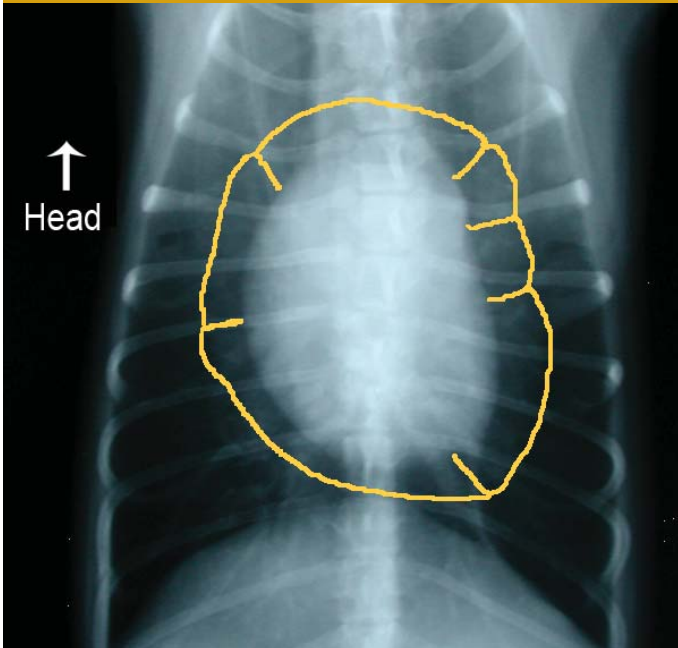
**echocardiogram:** used to help test for heart disease and show abnormalities including leaking valves; an ultrasound of the heart

**thoracic:** chest area

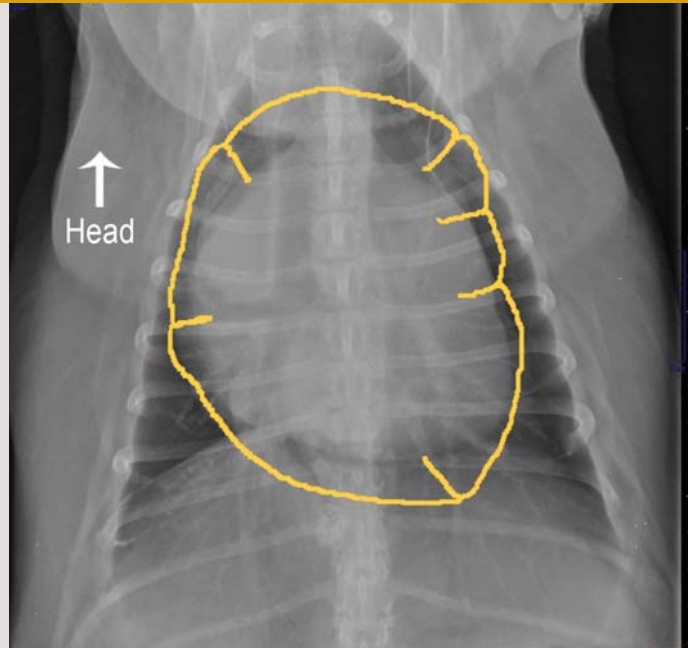
**mitral valve:** the valve in the heart that controls the blood flow from the left atrium in the heart to the left ventricle in the heart

**trachea:** the tube that carries air to the lungs

## Radiographs

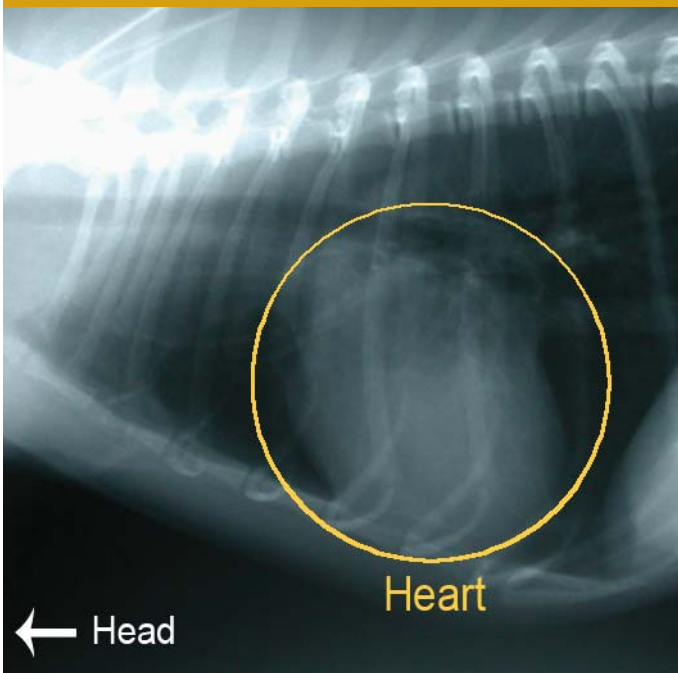


Normal heart

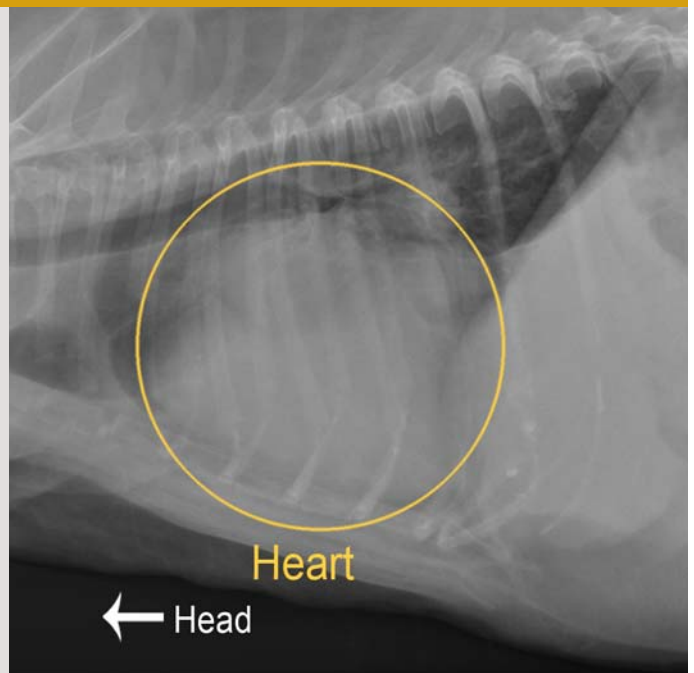


Snickers' heart

## Radiographs

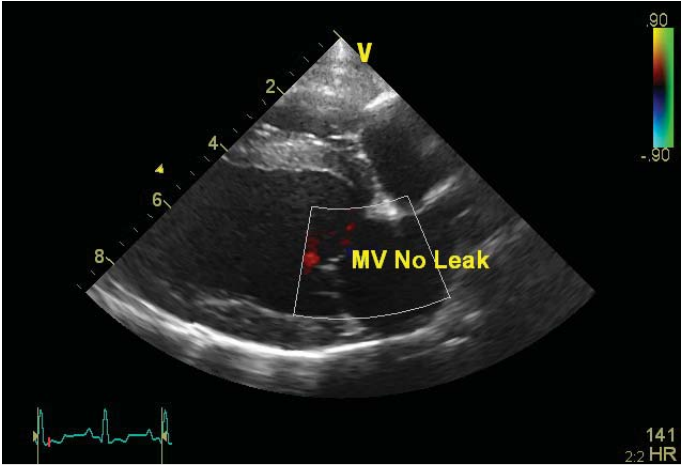


Normal heart

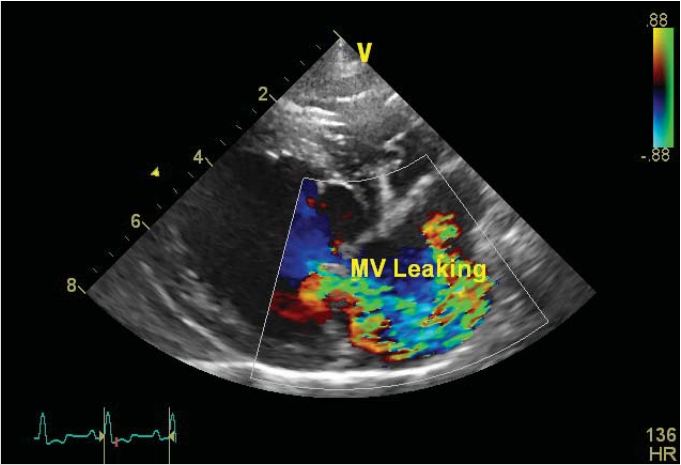


Snickers' heart

# Echocardiogram

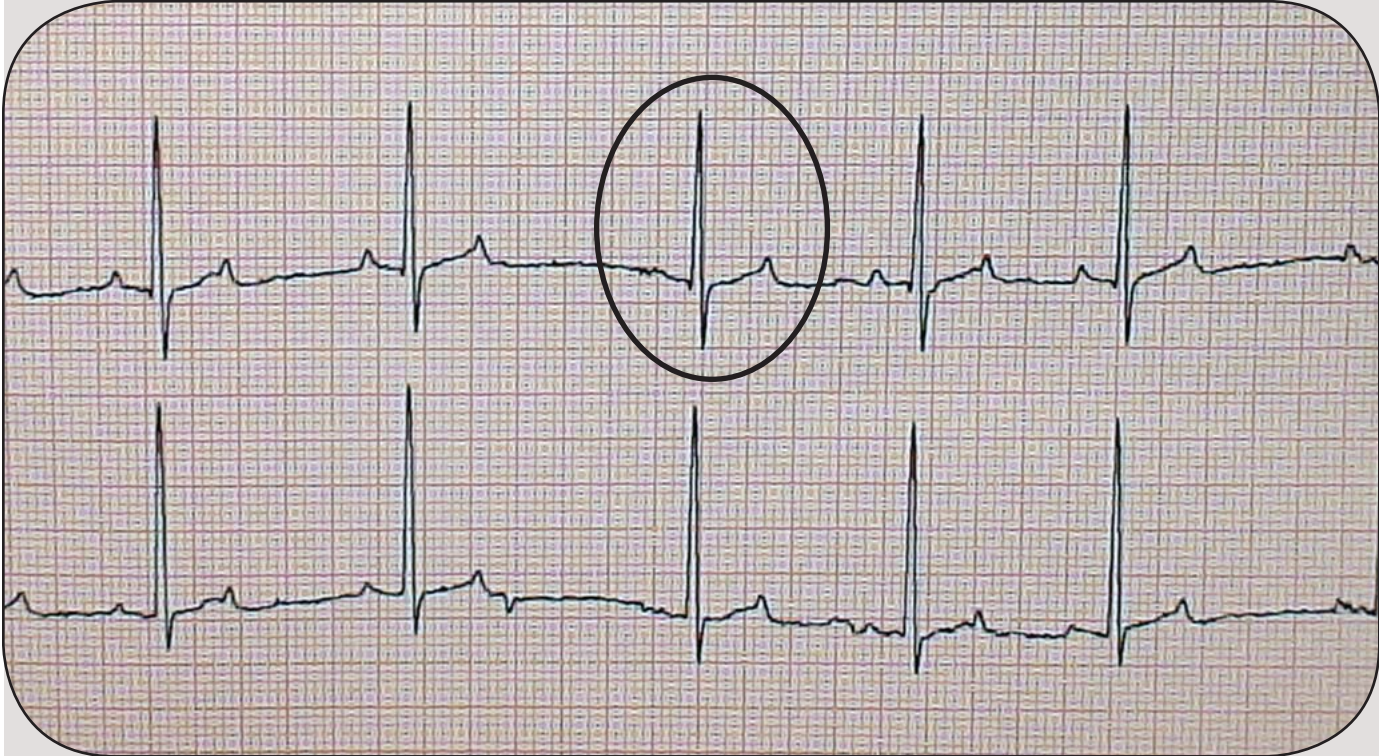


Normal heart



Snickers' heart

# Electrocardiogram (ECG) - one heartbeat is circled



pressure on his trachea. This could explain the coughing and tiring very easily. You decide with Dr. Green that the best plan would be to discuss with Mr. Portly how to reduce Snickers' weight.

Mr. Portly carefully reviews the weight loss plan for Snickers you present to him.

“You know what, Doctor?” he offers. “My doctor gave me a weight loss plan, too. She tells me that I am at risk for all sorts of ailments, like cardiovascular disease. I am going on a plan like Snickers! We will get our exercise together. I am going to ask my wife and son to come too and we will make this a family affair. A family affair that will make everyone healthier!”

You nod with encouragement, “That’s a wonderful idea, Mr. Portly. Exercise and a healthy diet are important for people as well as beagles!”

### Mr. Portly, Snickers & Family on a Walk



**electrocardiogram (ECG):** a graph of the heart’s electrical signals  
**cardiovascular disease:** disease affecting the heart

Here are some activities to help Snickers. Remember you can find more information in the back of this book.

## Activity 1

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1. Based on Snickers' breed, what should Snickers' healthy weight be? \_\_\_\_\_lbs

(Hint: see page 47)

Using the information and the tables given, figure out a diet plan for Snickers. Remember, a healthy diet is just as important as a consistent exercise program.

2. Calculate how many pounds Snickers needs to lose.

Current Weight - Desired Weight = Pounds to lose

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

3. Calculate how long it will take Snickers to lose the extra weight. (Hint: small breed dogs like beagles should lose about 1/2 a pound per week)

Pounds to lose ÷ Weight loss per week = Weeks needed to lose weight

\_\_\_\_\_ ÷ \_\_\_\_\_ = \_\_\_\_\_

**Table 1: Approximate Daily Energy Needed for Weight Management**

DESIRED BODY WEIGHT (POUNDS)	Kcal/Day
10	250
20	400
30	580
40	620
50	750
60	800
70	920
80	1000
90	1100
100	1200

Kcal = calorie

## Activity 2

Look at Table 2, or look at the label for other dog food brands (perhaps the food you feed your dog) and see how many Kcal/cup it contains. Remember, when switching diets, Mr. Portly should introduce the new diet slowly over a week to keep from upsetting Snickers' stomach.

Table 2. Foods for Weight Management		
DIET	Kcal/Cup (Dry Food)	Kcal/Cup (Canned)
Normal Diet	360	460
Low Calorie Diets	295	364
Restricted Vet Diets	220	296
Senior Diets	363	393

1. For the diet you picked above, record: Kcal in food \_\_\_\_\_/cup
2. Record how many Kcals/day Snickers should get based on his desired weight. (Hint: see Table 1) \_\_\_\_\_ Kcals/day
3. Snickers gets three meals per day. How many calories should he get per meal? \_\_\_\_\_ Kcal/meal. How many cups of food is that? \_\_\_\_\_ cups/meal.
4. Mr. Portly wants to give Snickers snacks. However, this can lead to excessive weight gain. Figure out how to give Snickers a snack. Do this by reducing his meal time calories so that you can add in the snack calories. Table 3 shows calories associated with some snack foods. Can you figure out other snacks to give and their calories? (See page 48 and add them to Table 3)

Snacks Permitted: \_\_\_\_\_ Kcals

Calculate Snickers' new Kcals per meal now that snacks have been added:

\_\_\_\_\_ Kcals/meal

Table 3. Snack calories		
SNACKS	Serving	Kcal/serving
Baby carrots	1 medium	4
Air-popped popcorn	3.5 cups	110
Apple	1 medium	80
Chicken Breast	½ breast	140



## Meet our Scientist: Dr. Tracy Vemulapalli

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Dr. Tracy Vemulapalli is a veterinarian who specializes in laboratory animals. She works to find new and better ways to help animals and people live longer, better lives. “I get to work with SO many different species of animals. No two days in my job are the same. There is so much variety.” Dr. Tracy Vemulapalli was in 5th grade when she first decided to be a veterinarian. Her favorite subjects in school were science (especially biology), math, history and art. Growing up, she loved photography and reading books - especially mysteries - that might have helped inspire her to become a veterinarian. “I like solving mysteries - both in books and in life.

A sick animal is like a mystery that you have to solve. What are the clues telling me? What is causing the animal’s sickness? What tools can I use to help the animal get better?” Dr. Vemulapalli says some of her biggest obstacles were some of the college science courses that she found really hard. “I found biology easy, but chemistry pretty difficult. When things got hard, I sought help from teachers and other students. I asked a LOT of questions. They coached me on how to study better and helped explain the difficult concepts to me. The nice thing, I realized, was after all that studying I could really understand a subject, like chemistry, that I was initially pretty freaked out about.”

Her number one advice for students interested in becoming a veterinarian or scientist: Don’t be afraid of “tough” subjects. Ask for help and work hard and you’ll see good results - and in the end, maybe the “tough” subjects won’t seem so tough anymore. Develop hobbies that you really like to do. Even scientists need to kick back and relax. Take a break by kicking a soccer ball around or drawing a picture, then you’re ready to tackle your next big scientific challenge.

## Meet our Scientist: Dr. Sophie Lelièvre



Dr. Sophie Lelièvre grew up in Normandy, France, near the “D-day Beaches”. She had a lot of different interests growing up. She liked animals in general, enjoyed horseback riding, and music. She played several instruments and sang in the choir. She wanted to be a veterinarian from as long as she can remember and so she job shadowed a mixed animal practice veterinarian throughout Junior High and High School. He taught her a lot about the importance of interacting with people and not just the animals in the veterinary world.

Dr. Sophie Lelièvre is a veterinarian in the Basic Medical Sciences Department at Purdue Veterinary Medicine who also does research that helps people.

She explains by stating, “When I was in the first year of veterinary school, I woke up one morning thinking that I wanted to do research on human cancer. This was disturbing to me since I didn’t know how I could do that as a veterinarian. At the time, people were going to veterinary school to practice veterinary medicine only. However, I decided to pursue both of these dreams: first, veterinary medicine and then, cancer research. I have found that having a veterinary background gives me a different mindset to pursue cancer research. Cancer is the same disease in animals and humans - and both of these populations need help. Researching human cancer will for sure also help treat cancers in animals in the long run. And, I can also act as a veterinarian whenever necessary and help my friends and family with advice. I would follow the same path again to achieve my goals.”

When asked about advice she would give students she says, “It is rare that all tasks associated with a particular career path strictly pertain to that particular career choice. Whenever you have to do something that you think is not directly linked to your career path, you should make the best of it and think of what this particular experience can bring to your chosen career path. In other words, if at all possible, always look for the positive aspects.”



## Meet our Scientist: Michael Mann

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Michael Mann is a 2011 graduate of Purdue Veterinary Medicine. Veterinary students go to school for an additional four years after they have completed their undergraduate course work. Dr. Mann grew up in Indiana around thoroughbred race horses and always loved the medical part. He plans on specializing in horses and would like to have his own practice in 5-10 years. His favorite subjects in school were math and science and he also enjoyed sports. He decided to go to vet school when he was in college working on his master's degree in organic chemistry.

Veterinary school can be tough, but he had his parents, a few teachers, and a few veterinarians who helped him get through. Dr. Mann says when there were difficult times, he would go back to the farm and work with his horses and remind himself that it would be worth it in the end!

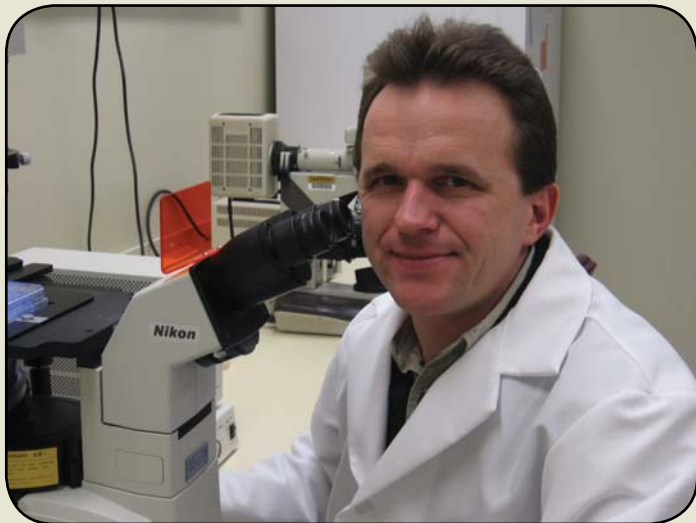
What he loves about his upcoming career is the challenge of solving the puzzle of a case - each one is different! He says it's a wonderful feeling when you can make a big difference in the quality of an animal's life. He believes the best part will be working with animals, people, and the outdoors.

What is his number one piece of advice? "Love what you do. Smile every day, at least a couple of times, and help someone else smile throughout the day."



On Graduation Day

## Meet our Scientist: Dr. Roman Pogranichniy



Dr. Roman Pogranichniy grew up in the city of Lviv, Ukraine. He liked to be around different animals and watch veterinarians at work. “I always liked medicine and wanted to be able to help animals.” His favorite subjects in school were biology, chemistry, and math. After veterinary school he decided to become a virologist. A virologist is a scientist who studies viruses and how they work. Dr. Roman and other veterinary diagnosticians are safeguards on any infectious

disease in Indiana. They help owners and other veterinarians identify causes of diseases. Every year they test thousands of different specimens for the presence of different viruses that cause diseases. He says the best part of his job is discovering ways that help improve animals’ lives and helping the owners of those animals. Dr. Pogranichniy believes his career to be unique and he explains it with a quote he heard in veterinary school, “If a medical doctor cures humans, veterinarians cure humanity.” Ukrainian veterinarian, S.S. Yevseyenko, 1894.

As professor at Purdue University in Department of Comparative Pathobiology he also teaches veterinary students and graduate students.

Another part of his career is research. “I conduct research on important viral diseases in animals and try to develop or evaluate new diagnostic techniques.” Other parts of his job include interacting with veterinarians across Indiana on a daily basis. “All faculty in the Animal Disease Diagnostic Laboratory have a very important role - to protect animal health in Indiana and the U.S.”

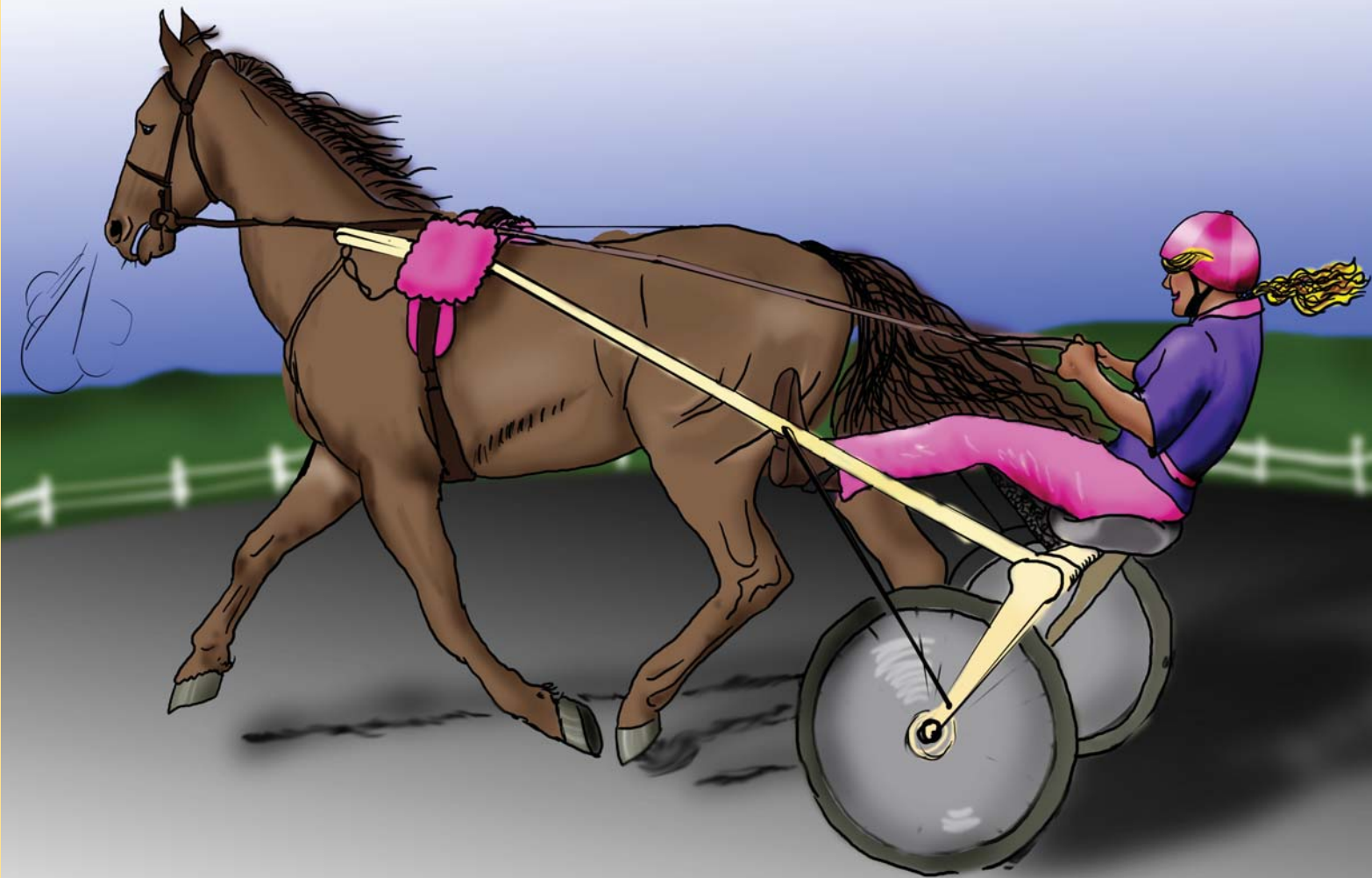
His goals for his career are to never stop learning or discovering, and to always face the challenges that lie ahead.

His advice to students following in his career path: “Have goals that you would like to achieve and put your best effort toward these goals and your dreams.”



Dr. Pogranichniy and swine veterinarian, Dr. Darryl Ragland

“Spring’s Breeze has \_\_\_\_\_”



Dr. Couëttil calls you in as a consulting veterinarian on an ADR harness racing horse that came to the Large Animal Hospital just this morning.

Once you speak with Dr. Couëttil about the case, you decide you would like to meet the owner and the horse. You also would like to do your own physical examination and then maybe run some tests. But first, you need to get the signalment and history from the owner.

(Tear out the blank Large Animal Medical Record form on page 57 and record your case information.)

Dr. Couëttil introduces you to the owner, Ms. Ima Wheezin and her horse, Spring's Breeze.

You find out from Ms. Wheezin that Spring's Breeze is an 8-year-old, Standardbred, gelding. He is a harness racing horse who was born in the Spring of 2003. You write this in the medical record.

Ima says, "Breeze", as she likes to call him, "years ago, had been on track to being the next winner of the Triple Crown of Harness Racing for Pacers, but didn't quite get the job done. Now we just enter races for fun, to see how Breeze holds up with the young'uns."

"The "young-what's?" you ask.

**ADR:** "Ain't Doin' Right" - slang for not feeling very well

**harness racing:** horse racing using a Standardbred horse and a sulkie or bike; the horse race is either at a pacing gait or a trotting gait

**Standardbred:** a race horse that pulls a cart and driver

**gelding:** a castrated male horse

**Triple Crown of Harness Racing for Pacers:** Three different races that Standardbred horses race in the U.S.; they are the *Cane Pace*, *Little Brown Jug*, and the *Messenger Stakes*.

“The young’uns. Pardon me, I mean, the younger racing horses...three- and four-year-olds.”

“Oh, right,” you say, thinking to yourself that it’s always good to get clarification.

“But this year, his performance has been off,” she states.

Ima hands you two recent race track records.

You examine them and notice last year’s performance is significantly better than the start of this year.

On the following page, record the racing times of the horses for both years.

**Think Like a Scientist:**

Veterinarians have to convert weight into kilograms in order to prescribe the proper dose of a drug.

Convert the weight in pounds of the horses to kilograms.

**Hint: 1 kilogram = 2.2 pounds**

### Race Track Record 2010

Length of Track: 1/2 Mile; Length of Race: 1 Mile

Horse	Age (yrs)	Weight (kgs)	Weight (lbs)	Time
<i>Chill Jill</i>	4		1100	1:48:09
<i>Pick of the Day</i>	3		1090	1:51:01
<i>Long Day’s Knight</i>	4		1080	Scratch
<i>Almost Paradise</i>	3		1100	1:53:00
<i>BooWhoo</i>	3		1150	1:49:02
<i>The General</i>	5		1080	1:48:07
<i>Buttercup</i>	4		1085	1:47:42
<i>Dusty Creekside</i>	3		1065	1:52:06
<i>Superstitious</i>	3		1070	1:47:05
<i>Spring’s Breeze</i>	7		1100	1:45:00
<i>Southern Pasture Run</i>	3		1090	1:48:03

### Race Track Record 2011

Length of Track: 5/8 Mile; Length of Race: 1 Mile

Horse	Age (yrs)	Weight (kgs)	Weight (lbs)	Time
<i>Gettin’ An Itch</i>	4		1120	1:52:04
<i>Regal Daze</i>	4		1116	1:47:08
<i>Love ‘Em &amp; Leave ‘Em</i>	4		1150	1:48:59
<i>Spring’s Breeze</i>	8		1050	1:55:00
<i>Long Day’s Knight</i>	5		1080	1:54:00
<i>Chill Jill</i>	5		1101	1:52:10
<i>Buttercup</i>	5		1070	Scratch
<i>My Dogs Are Burnin’</i>	4		1060	1:45:09
<i>Miracle Mile</i>	3		1100	1:51:06
<i>Almost Paradise</i>	4		1100	1:50:02
<i>Pick of the Day</i>	4		1130	1:49:02

## 2010 - 2011 Time Comparison Chart

Year	2010	2011	2010	2011	2010	2011	2010	2011
1:45:00								
1:46:00								
1:47:00								
1:48:00								
1:49:00								
1:50:00								
1:51:00								
1:52:00								
1:53:00								
1:54:00								
1:55:00								
Time	Pick of the Day		Almost Paradise		Chill Jill		Spring's Breeze	

**Think Like a Scientist:**

Based on *Spring's Breeze's* 2010 time, In what time should he have been able to run 5 ½ furlongs?

Would he have won?

**Think Like a Scientist:**

There are 3 types of racing horses: Standardbreds, Thoroughbreds & Quarter Horses.

Standardbreds typically race for 1 mile, pulling a cart & driver. Thoroughbreds race with a jockey on their back and distances are measured in furlongs. Quarter Horses run a much shorter race, usually ¼ mile, with a jockey on their back.

How many furlongs are in a mile,  
if 1 furlong = 1/8<sup>th</sup> of a mile?

**Think Like a Scientist:**

When comparing these two race records, what are some of the variables? Are there any constants?



You start to form a hypothesis, or in veterinary terms, a differential diagnosis. But first, you need more information about Breeze. You ask Ms. Wheezin about Breeze's living arrangements.

"Does Breeze stay in a stall most of the time or does he spend quite a bit of time out in the pasture?"

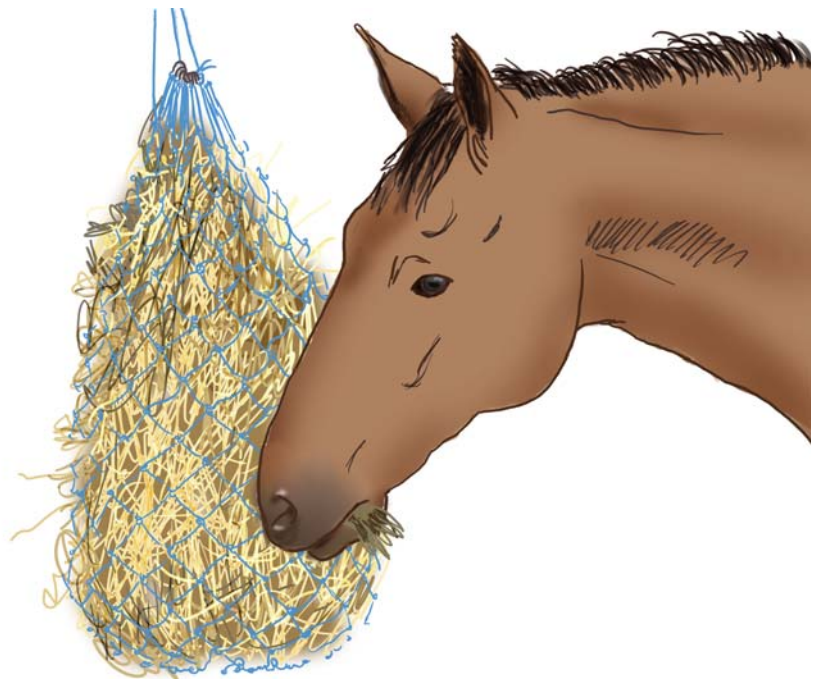
Ima says, "He spends most of his day, indoors, in a stall."

"What about exercise? About how much exercise does he get?"

"Well," she says, "he does get some exercise, but it's just Breeze hacking through the pasture with my other horses. Oh, and then he also gets breezed around the track right before a race. In the colder months, he jogs around the shedrow in the race barn."

You make a note of the amount of exercise Breeze gets and where he is housed.

"What about Breeze's diet? Do you feed any grain or hay?"



**hypothesis:** an educated guess on how things work

**differential diagnosis:** a way to list out all potential possibilities of disease or condition that may be the cause of an animal's problem; by listing out all known possibilities, a veterinarian hopes to systematically rule out each one until there is only one left

**stall:** an indoor walled area in which a horse might be kept

**hacking:** slang for running around the pasture

**breezed:** a term that is used by the racing industry which means briskly running the race horse around a track before a race

**shedrow:** a barn built to house individual stalls for horses

**grain:** oats, corn, and barley are some grains fed to horses

## Meet our Scientist: Dr. Laurent Couëttil

25



Dr. Laurent Couëttil is a veterinarian who specializes in horses. He works with all types of horses with lots of different jobs like racing and working, as well as pet horses. Dr. Couëttil decided at a young age that being a veterinarian was for him. Growing up in France, he was interested in sports, science, and horseback riding. In school, his favorite subjects were chemistry, physics and foreign languages. Even today Dr. Couëttil is still interested in the same things as he was growing up. He gets to apply information he learned in school while working as a veterinarian.

Dr. Couëttil works at Purdue University where he has three parts to his job. The first job is a veterinarian where he helps sick and injured horses feel better. His second job is a teacher where he helps students to become veterinarians. His third job is a researcher where he looks for new and better ways to help horses feel better. Many times he does all three jobs in a single day!

The number one piece of advice he said he could give students is to “set the bar high and work hard, in the end there is nothing more satisfying.”

“Well, typically, he eats twice a day. He gets about 6 pounds total feed a day with dry molasses or sweet feed. He gets a vitamin supplement-that’s with the grain. And he has a hay net which he can eat from-more or less, anytime he wants,” Ima says.

She tells you she has some on the trailer and leaves to go get it.

When she comes back, you make a note that the feed is 12% protein with a vitamin supplement added along with the dry molasses. As is typical, the vitamin supplement makes the feed a bit dusty.

She also brought some of the hay. You note in Breeze’s record that it looks

**dry molasses:** put on horse feed to sweeten the taste, sometimes dusty

**sweet feed:** feed that has molasses in it

**hay net:** a device used to hold hay for a horse so the horse can eat it (pictured on page 24)

to be 50% alfalfa and 50% timothy grass. It also is dusty.

Ms. Wheezin excuses herself as she starts to sneeze. Looking a little weary, she returns after a few minutes and apologizes, “I’m sorry about that! Whew! Thought I wasn’t ever gonna catch my breath! See, I have asthma; and well, sometimes when things are a bit dry outside and then when I’m around that feed and hay, an attack will just kind of sneak up on me and take me by surprise! But I carry my inhaler with me and usually it helps.”

“That’s all right,” you say. “Are you sure you’re okay? Would you like some water to drink?”

“You know, that just might be what I need! Doc says staying hydrated can help me with my asthma.” You run to the reception area and grab a bottle of water from the refrigerator.

“Here you go,” you say, hoping it helps.

“Thank you,” she says starting to look a bit more relaxed.

You get back to asking questions about Breeze, “So, would you say he’s an easy keeper?”

“Well, he was until this past year. Now it seems I can’t keep him at a good weight,” Ima states.

He does look a little thin, like he could use a few more groceries. You ask Donna, the veterinary technician, what Breeze’s current weight was when she weighed him on the scales earlier.

**Think Like a Scientist:**

How tall, in feet, is  $15\frac{1}{2}$  hands?

Hint: 1 hand = 4 inches

“950 pounds,” Donna says. “He’s fairly tall, 15.5 hands.”

**easy keeper:** a horse that doesn’t have problems maintaining its weight

**veterinary technician:** a nurse for animals

**hands:** a measurement of height for horses

**heaves:** a chronic disease that affects the respiratory system of horses, making it hard to breathe; like asthma in humans

## Meet our Scientist: Donna Griffey, RVT

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Donna Griffey is a Registered Veterinary Technician who works at the Large Animal Hospital at Purdue University. As a Registered Veterinary Technician, she is a highly trained part of the veterinary team. She works closely with the veterinarians to take care of the animals. Veterinary technicians, like Donna, have several jobs, and act as a nurse would in human medicine, but with animals. They get to perform a wide range of veterinary skills such as anesthesia, client education, nursing care (including pre- and post-surgical care), radiology, and dentistry, just to name a few! She helps Dr. Couëttil with various research projects – several have involved researching heaves in horses. Her favorite animal is the horse. As a part of her job, she trains horses to run on a treadmill! When asked about what makes her passionate about her career she says that there are several things. One is working with the animals. The other is the mental challenges that are presented from the science part of her job, like research on various conditions, such as heaves. She values learning new procedures. “The field of veterinary medicine continues to grow,” she says. And with that, new opportunities arise enabling her to learn new ways of getting information for cases in the hospital, adding to the challenge of her profession which she enjoys. It was early on in grade school, that she was inspired to work in veterinary medicine by the animals that make her passionate about her field. Her mentor was her father. She grew up on a farm in Indiana, raising hogs and beef; and helped with the farrowing sows and their litters of pigs. She also had horses and enjoyed riding them. Her number one piece of advice for students following her career path is to “get good at math!” Her favorite subjects in school were math and chemistry - and she has had lots of opportunities to put that knowledge to use!



“That’s a little less than what he should be.” You reference the Equine Body Condition Scoring Chart on page 54. The body condition scores run from a score of 1 to a score of 9. Breeze looks to be a score of 3, maybe a little less. “Hmmm...what kind of bedding do you have in his stall?” you ask.

“We use straw, that way, he’ll lie down more. It gets cleaned out once a day. Every once in awhile we’ll turn him out, but usually we just leave him in there while we’re cleaning it out.”

“Okay. Does he cough at all or does he seem to breathe easily?”

“Well,” she thoughtfully says, “it’s like he can’t quite catch his breath, like he’s trying to get his breath, but it’s hard for him to get a good, deep breath.”

“When would you say you notice him having trouble breathing?” you question.

“It seems to be worse after exercising.” Then Ms. Wheezin adds, “But then, sometimes, on nice days, when we let him out in the pasture, it seems that after being outside for a day or so, he breathes easier.”

You record these observations from the owner in the medical record.

“Have you noticed any drainage from his eyes or nose?”

Equine Vaccination Record				
Horse Name: Spring’s Breeze			Veterinarian: Dr. Couëttil	
Disease/Vaccine	Year 2009	Year 2010	Year 2011	Year 2012
EWT-3 way	May 13th	April 27th	May 4th	
Rhino/Flu-2 way	May 13th	April 27th	May 4th	
West Nile Virus	May 13th	April 27th	May 4th	
Potomac Horse Fever (PHF)	May 13th	April 27th	May 4th	
Rabies	May 13th	April 27th	May 4th	
Strangles	May 13th	April 27th	May 4th	

“Not really.” She states plainly.

“Is he current on his vaccinations?” you ask.

“Yes sir! Really wouldn’t want to take that risk, going to the races and not protecting him by not vaccinating him. He also gets dewormed three times a year.”

She hands you Breeze’s current vaccination record (pictured on left).

**Think like a scientist:**

What is the respiration rate for Breeze per minute? Is it normal?

You finish your physical exam on Breeze.

You write down the TPR. His temperature

is 100°F. You calculate the respiration rate while he stands there. It is 6 breaths every 15 seconds. (Learn more by reading the website on page 53.)

You start by examining Breeze’s head, looking at the general overall appearance, making sure that his skin, muscles, skeleton, and circulatory system are normal. You check his circulatory system by performing a capillary refill test by pressing the gums inside the mouth and then counting how long it takes the color to return. It’s right at 3 seconds. The color of the gums seems to be a healthy pink. (Make a note of all of this.)

Moving on, you check the inside of the mouth, noting that there does not appear to be anything blocking his airway. During Breeze’s physical exam, Dr. Couëttil and you take turns listening to the lungs. You heard some wheezing and this was confirmed by Dr. Couëttil. You then notice that there seems to be a faint line “drawn” diagonally from his hip to the bottom of his rib cage. You make a note of this, finish up the exam, and excuse yourselves to discuss the case.

After some consultation with Dr. Couëttil, you list your differential diagnoses and then plan to run some tests.

**TPR:** stands for temperature, pulse, and respiration

**capillary refill test:** press briefly on the gums of the horse and time how long it takes for the color to come back; refill time in a horse should be 3 seconds or less

These are the top 4 on your differential diagnoses: heaves, influenza, pneumonia, and choke - choke is unlikely, but you check just to make sure!

Horses breathe through their nostrils, and there was no bulge that you could feel, based on palpating Breeze's throat. You also had no problem passing a tube through his nostrils - nothing seemed to be blocking his airway. And although he's not keeping weight on, he is still eating. So you can rule out choke. He's obviously not choking on anything.

As far as influenza goes, you've decided to swab Breeze's nostrils and have a colleague, Dr. Ramesh Vemulapalli, run a PCR test, or polymerase chain reaction, to see if it tests positive for flu. It will take six hours before the results from a PCR test are received. While you are waiting for the PCR results, you decide to see if a chest radiograph might help out in the diagnosis of this condition. Dr. Couëttil sends Breeze to Large Animal Diagnostic Imaging, where they will take some radiographs of Breeze's lungs.

Dr. Couëttil and you receive a page from the front desk. Another case is waiting for you. You show Ms. Wheezin to the waiting room so she can sit while Breeze is in Diagnostic Imaging, then, you politely excuse yourselves. Biosecurity is a very important matter so you and Dr. Couëttil wash your hands, clean your boots, and change your exam coat in between the two patients.

**influenza:** a respiratory disease caused by a virus; flu

**pneumonia:** a respiratory condition affecting the lungs. Signs include cough, fever, tiredness, going off feed, and faster breathing.

**choke:** a condition where a horse is choking on something

**palpating:** feeling with your hands

**PCR test:** a test used to detect specific sequences of DNA or genetic material

**biosecurity:** procedures used to prevent the spread of disease

## Meet our Scientist: Dr. Ramesh Vemulapalli

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Dr. Vemulapalli grew up on his parents' agricultural farm outside the village of Kancharlapalem in the state of Andhra Pradesh in India. He liked to explore the natural wilderness surrounding the farm. In school his favorite subjects were math, physics, and chemistry. Now, as a veterinarian, he studies better ways to test for diseases. He also researches how to make better vaccines to prevent diseases. "I learn new things with every experiment I do. I get paid for that too!"

Dr. Vemulapalli is in charge of the Molecular Diagnostics Laboratory. This is one laboratory that is part of the larger Animal Disease Diagnostic Laboratory. The Animal Disease Diagnostic Laboratory is a state lab where veterinarians can send samples to see if animals have certain diseases. One of the diseases that Dr. Vemulapalli's lab tests for is influenza, or flu for short.

Just like people, animals can get the flu. "My goal is to find solutions to control and prevent animal diseases, especially infectious diseases, through my research and teaching activities."

What is his number one piece of advice for students? "Be passionate about what you do, and never EVER give up! I'm passionate about being a veterinary scientist because it provides me with so many opportunities to find solutions to solve animal health problems."





“Comanche’s Reign Storm has \_\_\_\_\_”



After meeting up with the other horse and owner, introductions are made and you begin to take down the history on this new case on the second Large Animal Medical Record form on page 59.

Comanche just finished up a reining event and ever since, he has been acting a little puny.

“He’s developed a harsh, kind of dry, cough” says Buck Cooper, the 2-year-old Appaloosa’s owner.

You also notice that Comanche has some nasal discharge.

The owner says, “He’s not been eating well for the past week, and I’ve tried EVERYTHING! Why, I even tried putting a little extra molasses on his feed in the morning. Comanche just won’t have a whole lot to do with it! At first I thought he might be colicky, but he really doesn’t seem to be in any pain. He’s just not all that active.”

You make a note of the decrease in appetite, the clear runny nose, and the apparent lethargy and depression.

You and Dr. Couëttil finish the physical exam and then discuss the case.

Meanwhile, Donna, the Registered Veterinary Technician, performs a TPR. Comanche’s temperature was 103°F. She also says that his pulse was 48 beats/minute. You believe this is a little elevated, or high, since Comanche is considered an athletic horse - Mr. Cooper stated that he regularly competes at various events. As Donna finishes up the TPR, she says his respiratory count or respirations are 18 breaths/minute.

**reining event:** an equestrian competition where the horse performs various tasks such as circling, spinning, and stopping with guidance from the rider

**nasal discharge:** a runny nose

**colicky:** a painful stomach or irritation in the intestines

**lethargy:** depressed attitude; not having much energy

**depression:** lack of desire to do anything

From your discussions, Dr. Couëttil decides he would like to see this horse in action. You ask Donna to run the horse up and down the Large Animal Breezeway a couple of times. There is some initial reluctance from Comanche, but he soon steps into a rhythm with his gait. When he finishes his brief trot, he begins to cough.

Hmmm...it looks like you could have another respiratory case on your hands. What's your differential diagnosis?

List four potential conditions you might be dealing with:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

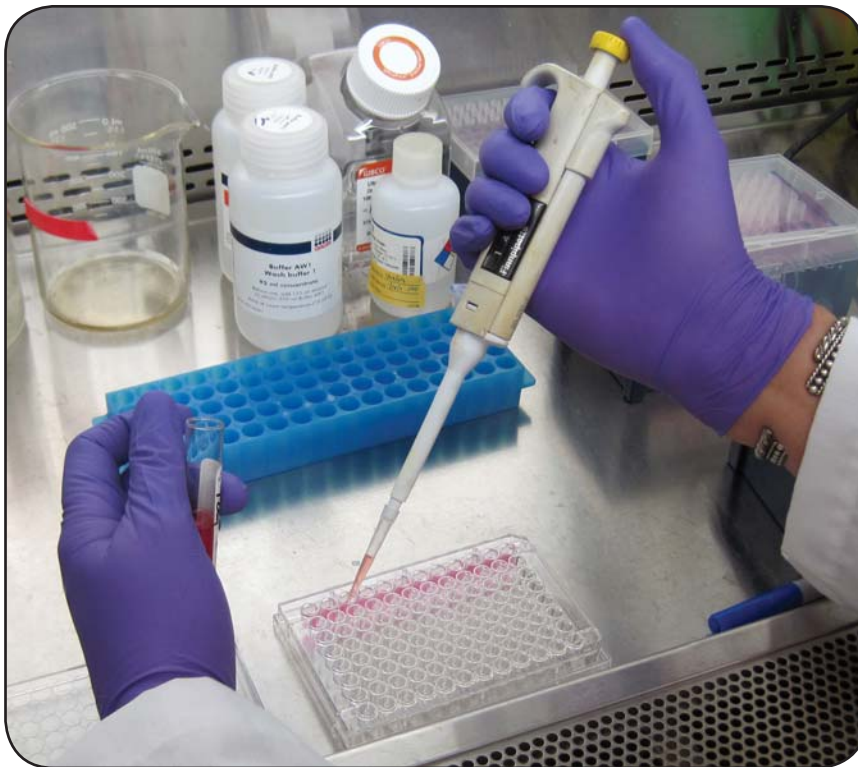
Another thought comes to mind and you ask the owner whether or not Comanche was up to date on all of his vaccinations.

Mr. Cooper hesitantly replied, "Well, you see, we thought we might cut



back a little, here and there, seeing as he hasn't ever had any of that kind of trouble – so he hasn't been vaccinated recently.”

You then ask when the exact dates of his last vaccinations were. He then sheepishly tells you that Comanche has never been vaccinated (see the Vaccine Schedule for Show Performance Horses on page 51).



You make a note of this in the horse's medical records. Dr. Couëttil makes a decision. He asks Donna to get a nasal swab and collect a sample so you can have Dr. Vemulapalli's lab run a test for influenza. You also have her swab Breeze's nostrils and send that sample to the lab as well. It will take six hours before the results from running a PCR or polymerase chain reaction test are received.

When Dr. Vemulapalli's lab calls, he says he has the results for both Breeze and Comanche. It looks like only one of the horses has tested positive for influenza.

To see if the horses were exposed to influenza, a special test is done to look for antibodies to influenza virus. Antibodies are a weapon that the body uses to help fight infection. The special test has a very long name-Enzyme-Linked Immunosorbent Assay (try to say that three times fast) so you usually just say ELISA test.

To perform the ELISA test, each sample is put into a separate well on a special plate. This plate has 96 wells and can test samples from 96 horses. Two of the 96 samples belonged to the horses in this case. Spring's Breeze sample is C9. Comanche's Reign Storm sample is H4.

If a sample is positive, the well turns purple. If the sample is negative, the well stays clear.

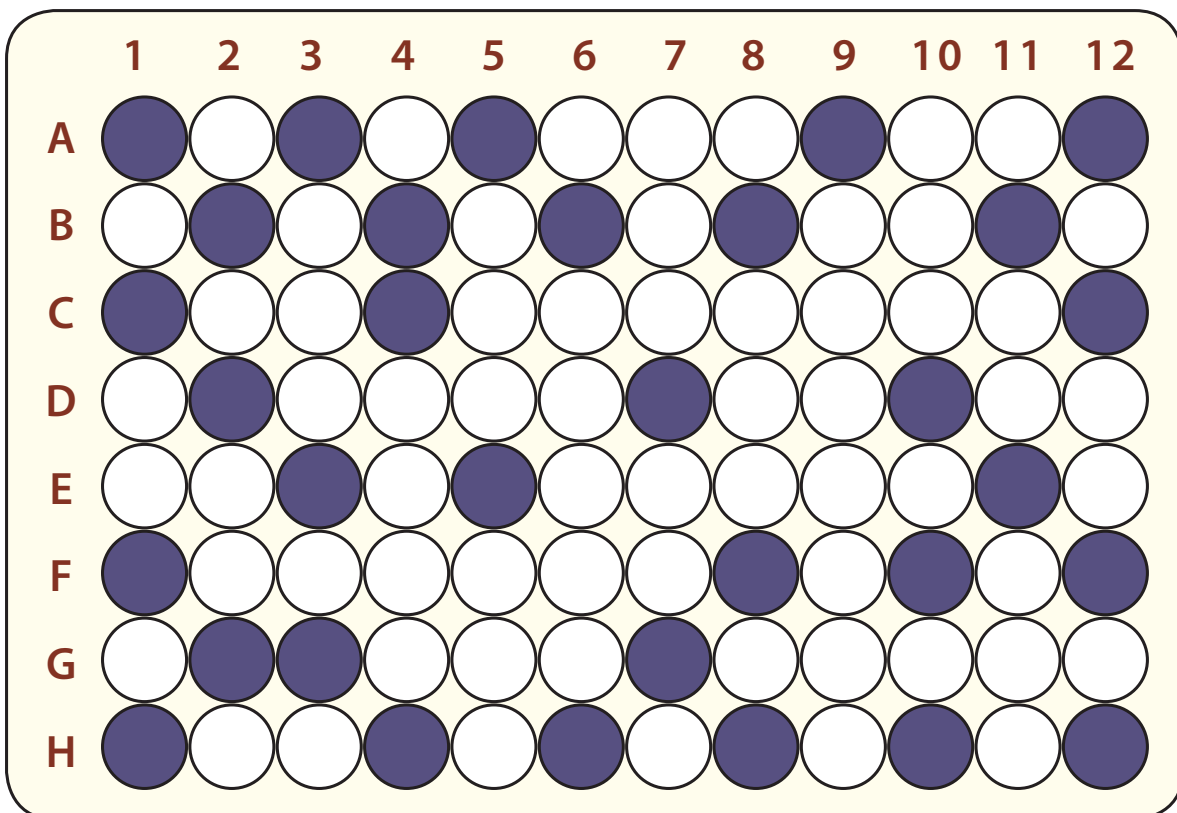
Look at the 96 well plate below.

What percentage of the samples showed a positive result? \_\_\_\_\_

Show this percentage as a fraction: \_\_\_\_\_

What horse has tested positive for flu? \_\_\_\_\_

Based on this diagnostic test, Dr. Couëttil recommends that Comanche is most importantly, isolated and gets plenty of rest, and water. Also, due to the fact that influenza is highly contagious, Mr. Cooper would need to do a thorough decontamination of his stall and anything Comanche had used or is using. He should be kept in the stall, and only get moderate exercise,



**isolated or isolation:** keeping an animal separated from other animals so it cannot spread disease to other animals

nothing too strenuous. Then gradually, he can begin to train again, when the signs of the respiratory flu have passed.

“Comanche might have been exposed to the flu from being around other horses. Didn’t you say he was just at a reining event?” Dr. Couëtil asks.

“Yep, he really had a great performance! Knocked the socks right off the judges,” Buck says with pride, “I sure hope our new horse can do just as well!”

“You say you just brought in a new horse?” you question.

“And how has he been feeling?” Dr. Couëtil asks.

“Come to think of it, when we first got him a week or so ago, he kind of acted like he was just getting over something. We really didn’t think anything of it! Do you suppose he might have had the flu?” Buck said bewildered.

“It is very possible,” you state.

Dr. Couëtil then explains that this very case is why it is necessary to keep horses up to date on their vaccinations. He then hands Mr. Cooper a recommended list of vaccines for the area.

“Well, that’s a mistake I’ll never make again with any of my horses!” says Buck. “Sure wouldn’t want to lose you,” he says to his horse. “From now on, we’re going to stick with this plan and take great care of you, Comanche!”

“That’s great to hear,” you say. “If you have any questions at all, or if you feel he’s not getting any better, please give us a call.”

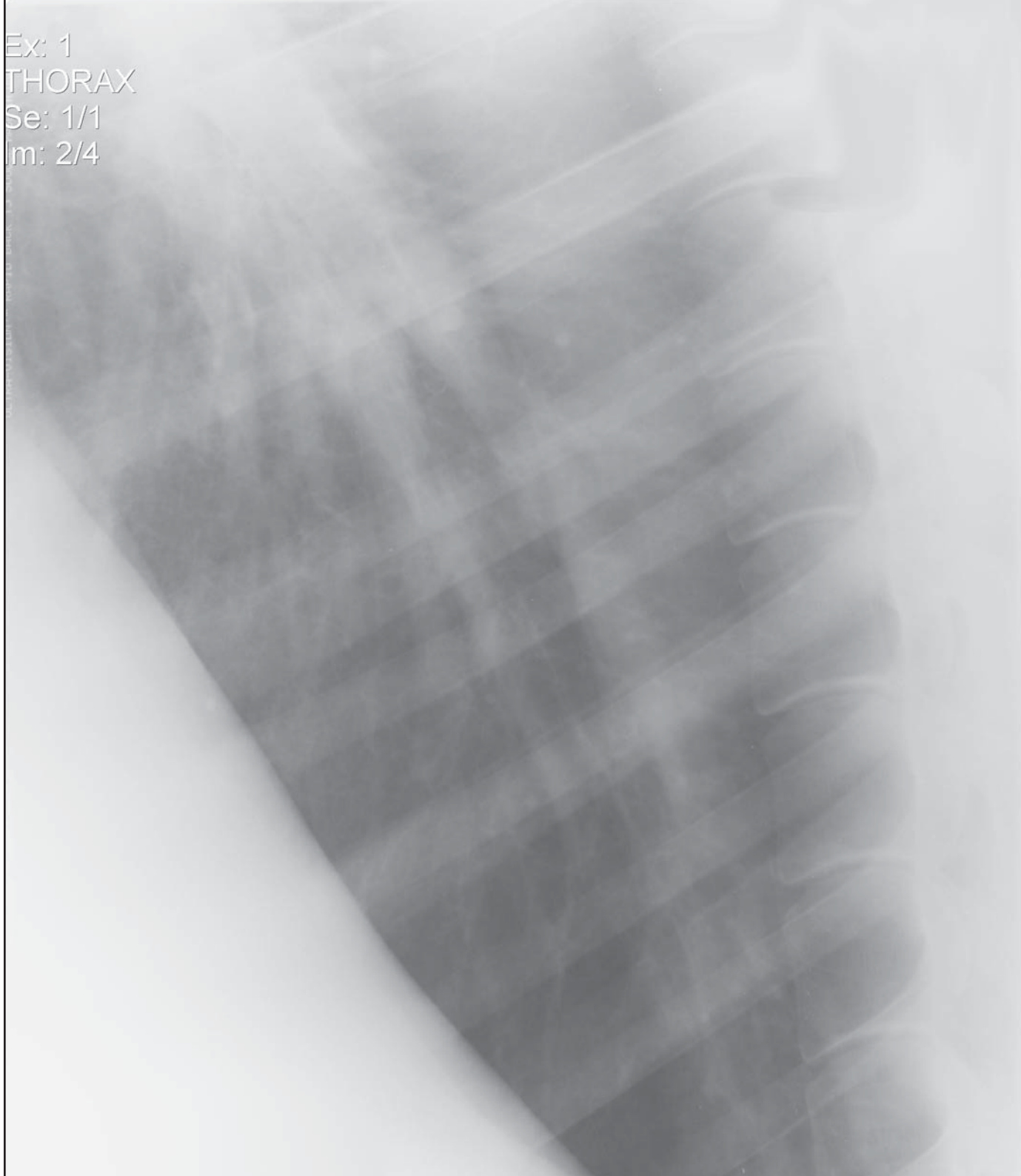
“Will do!” Buck says, as he takes Comanche to the trailer to go home.

You and Dr. Couëtil receive a page from Diagnostic Imaging; Breeze’s radiographs are ready for your evaluation.

## Lung Radiograph of Comanche's Reign Storm

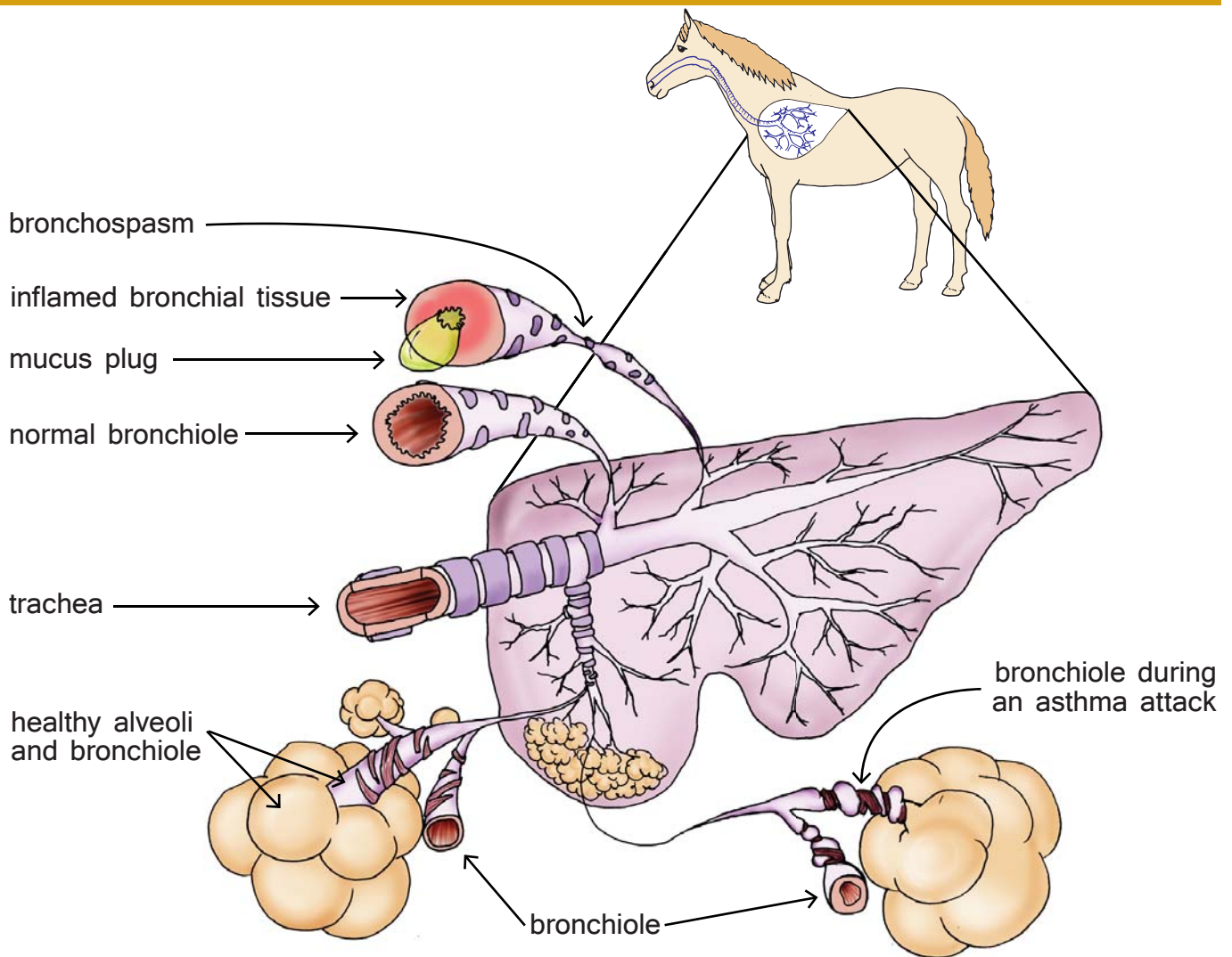
Ex: 1  
THORAX  
Se: 1/1  
m: 2/4

38



The image on page 38 is what you see. As you and Dr. Couëttil look at the radiograph on the left you see that the bronchial walls are visibly inflamed. You notice this by the thickening of the walls. In a normal and healthy lung the walls would not be so prominent or visible. This could be a sign of heaves, but not pneumonia.

## Drawing of a Horse Lung





If Breeze had pneumonia you would not be able to see the lung's bronchiole walls or tree. When a horse has pneumonia the lung would appear to be opaque or very white. In addition to being lethargic, Breeze would also have a fever.

So this leaves heaves for your diagnosis. Heaves is a respiratory condition-but everything you know about heaves is that it usually occurs in much older horses. And although Spring's Breeze is 8 years old, he has a way to go before he is considered old!

Dr. Couëttil suggests another diagnosis. There is another very similar condition called Inflammatory Airway Disease or IAD. He says it can affect a horse at any age. It is similar to heaves and human asthma because it also affects the airway, the horse's performance during exercise, and sometimes it affects the horse when the horse is resting. The signs of this condition can also include coughing and drainage from the nostrils just like heaves. But as is the case for Spring's Breeze, the signs sometimes are less noticeable.

You decide that at this point IAD is the most accurate diagnosis for Breeze. You develop a treatment plan for Breeze to give Ms. Wheezin.

"We believe that Breeze's condition is manageable through his environment

## Bedding Options



Straw



Wood Shavings



Shredded Paper

and with the use of medications. The medications will help to decrease the inflammation in his airways and the potential for airway obstruction.”

“What kind of things can I do at home?” Ima asks.

You say, “Some things will be easier to put in place than others, but the first thing you can do is to start with turning him out to pasture on a more regular basis. In the winter, this could be an issue, but do try to get him out as much as possible. By being in a stall for long periods of time he is being exposed to airborne irritants such as his bedding, hay, and feed. This brings me to the next change, his bedding. It would be best to replace the straw with either wood shavings or shredded paper. This will decrease the dust. Another way to decrease the dust and potential for mold spores would be to quit feeding hay, and switch to hay cubes and/or feed pellets. The current hay, grain, and vitamin supplement are creating more of a problem because of the dryness. If you do decide to continue to feed these you can decrease the dryness by wetting it down with water. However, the best solution here would be to just switch.”

“That all sounds very doable. In fact, it seems like Breeze and I will have a lot in common!” Ima exclaims. “Like I said, I have asthma. And Doc told me that I can manage it a lot better if I pay attention to my surroundings. Things like dust and mold spores, perfumes and others seem to get me a coughin’ and breathin’ not so easy! But I also have an inhaler that I use. Do they have such things for horses?”

“Yes, actually, we do! Breeze will need some aerosol therapy that will be delivered by an inhaler, specifically made for horses. This will take some getting used to for both of you, but I’m confident you’ll be able to get into a routine,” you affirm.

“Well I sure appreciate all the care and effort that you’ve given Breeze! I’ll be sure to give you a call on his progress. Thanks so much!” Ima Wheezin says, shaking your hand.

## Equine Inhaler

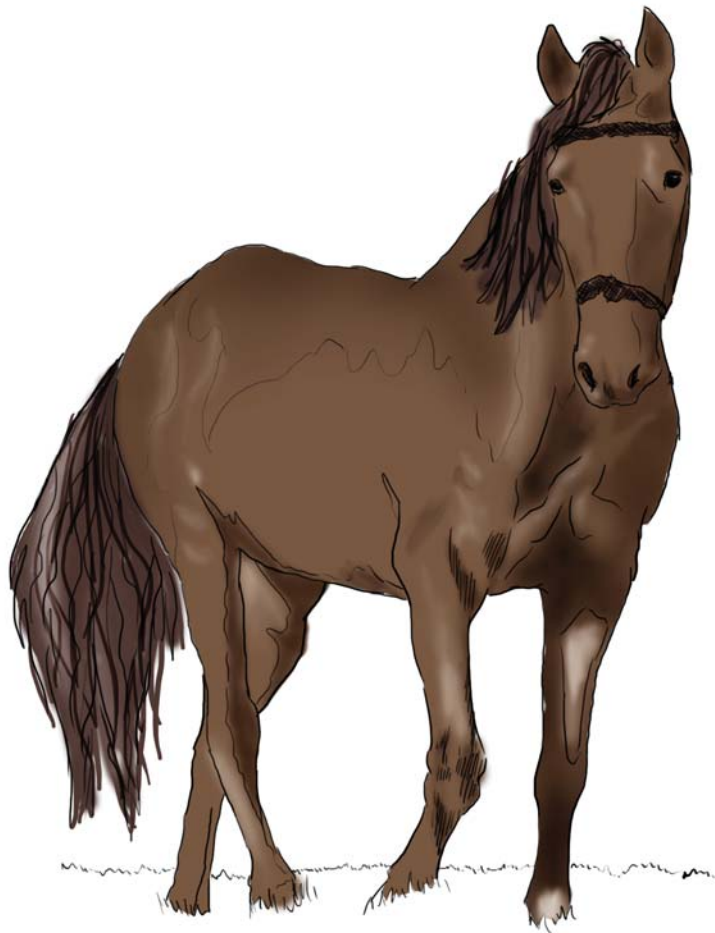


Review basic facts about human asthma on page 52.

Now that you know ...

Compare and contrast heaves in horses to asthma in humans.

42 What are some of the “triggers” they share?





## Bonus Activity

44

Veterinarians often make educational brochures for their clients about various health issues of animals. Now that you have learned about heaves in horses and obesity in dogs, choose one topic and make your own client brochure. Be creative!

We'd love to see your brochures! If you mail us a copy of your brochure and include permission from your parent or guardian, we could put it on our website.

Purdue University  
College of Veterinary Medicine  
Office of Engagement / LYNN Hall  
625 Harrison St.  
West Lafayette, IN 47907

# Information Sheets

# CANINE OBESITY

## The Issue

- Obesity exists when body weight is 20% or more over the optimum weight for your dog.
- Even if your dog seems happy and healthy, excessive weight can predispose dogs to diabetes, arthritis, cancer, heart conditions, and other health problems.

**33% - 44%**  
of pet dogs  
and **68%** of  
Americans are  
overweight or  
obese

Lund et al., 2006  
The Lancet, 2011

## The Cause

The most common and controllable causes are too much food, too little exercise, or both.





## Remember

Talk to your physician about healthy weights for you and your children.

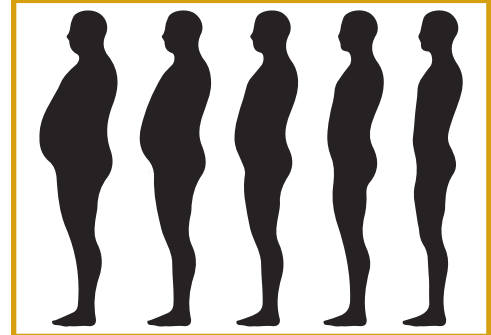
## The Solution

- Just as for people, weight loss programs in dogs take time and commitment. Rapid weight loss is not healthy. A 15% weight loss can take 6 months or more. We recommend that you work closely with your veterinarian for the best results.
- Your veterinarian can eliminate any medical causes for excess weight and help you select a healthy feeding and exercise strategy for your dog.

## Check your dog's body condition

Under weight	Ribs and/or backbone are visible	
Healthy weight	Ribs are easily felt and the last rib is visible	
Overweight	You can feel fat between the skin and ribs	
Obese	Ribs are difficult to feel	

## Human Body Conditions



### References and Resources:

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Buffington CAT et al (Eds.). (2004). Manual of Veterinary Dietetics. St. Louis, MO: Saunders.  
Authors: Dr. Sandy San Miguel, Dr. Lori Corriveau, Purdue Veterinary Medicine (PVM)  
Designer: Thad Blossom, PVM  
Reviewer: Dr. Nolie Parnell, PVM



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NIH . . . *Turning Discovery Into Health*

Its contents are solely the responsibility of the authors and do not necessarily represent the official views of ORIP or NIH.

# DOG WEIGHT BY BREED

A dog is obese when it weighs 20% above its optimal body weight. Some breeds of dogs are genetically predisposed to obesity. This table is a quick reference to see average weight ranges for some common dog breeds. Please note that these are just averages and healthy weights for individual dogs can vary. Your veterinarian can help you determine the healthy weight and plan a feeding and exercise strategy for your dog.

Breed	Healthy Body Weight	
	Male (lbs)	Female (lbs)
Basset Hound	65-75	50-60
Beagle	13-22	13-20
Boxer	55-70	50-60
Bulldog	40-50	40-50
Cairn Terrier	14	13
Cavalier King Charles Spaniel	13-18	13-18
Chihuahua	2-6	2-6
Cocker Spaniel	25-30	20-25
English Springer Spaniel	50	50
German Shepherd	75-90	65-80
Greyhound	65-70	60-65
Miniature Dachshund	8-11	8-11
Miniature Schnauzer	16-18	12-16
Pomeranian	3-7	3-5
Pug	14-18	14-18
Rottweiler	80-95	70-85
Shetland Sheepdog	16-22	14-18
Shih Tzu	9-17	9-15
Yorkshire Terrier	4-7	3-6

**Breeds predisposed to obesity are in white**



References and Resources:

www.akc.org  
 Hand et al (Eds). (2000). Small Animal Clinical Nutrition. Topeka, KS: Mark Morris Institute  
 Buffington CAT et al (Eds.). (2004). Manual of Veterinary Dietetics. St. Louis, MO: Saunders.  
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 Author: Dr. Sandy San Miguel, Purdue Veterinary Medicine (PVM)  
 Designer: Thad Blossom, PVM  
 Reviewers: Dr. Nolie Parnell, PVM and Dr. Karen Zotz, College of Health and Human Sciences

The project described is supported by a Science Education Partnership Award (SEPA) from the Office of Research Infrastructure Programs (ORIP), a component of the National Institutes of Health (NIH).

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# TREAT YOUR DOGGIE

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90% of owners give their dog treats, snacks, or table food.

Low fat treat choices can help your dog maintain a healthy weight while poor treat choices can lead to weight gain.

This list estimates calorie levels for some common treats and snacks. Your veterinarian can help you decide how many, how often, and what types of treats are best for your dog.

Remember!

No more than 5-10% of daily calories should be treats, snacks, and table scraps or people food.



## Healthy Choices

Popcorn (no salt or butter) 31 calories/cup	Apple pieces 14 calories/oz
Green beans 9 calories/oz	Broccoli 10 calories/oz
Carrot pieces 12 calories/oz	Bananas 25 calories/oz
Peas 22 calories/oz	Lettuce 5 calories/oz
Blueberries 14 calories/oz	Cheerios 101 calories/oz

## Unhealthy Choices

Pretzels 107cal/oz + 384mg sodium	Jerky treats 31 cal/piece
Peanut butter 190 cal/2 tbls	Beggin' Strips 39 cal/piece
Hamburger patties(90% lean) 217 cal/broiled	Milk bones 40 cal/medium biscuit
TBonz 42 cal/piece	Whole wheat bread 70 cal/slice

## Do Not Feed

Chocolate	Raisins / Grapes
Onions	Xylitol (natural sweetener)

### References and Resources:

Hand et al (Eds).(2000). Small Animal Clinical Nutrition. Topeka, KS: Mark Morris Institute  
Case LP.(2005). The Dog: Its Behavior, Nutrition, and Health. 2nd edition. Ames, IA: Blackwell Publishing.  
Becker M and Kushner R. (2006). Fitness Unleashed! New York: Three Rivers Press.  
www.calorieking.com  
Authors: Dr. Sandy San Miguel and Dr. Nolie Parnell, Purdue Veterinary Medicine (PVM)  
Designer: Thad Blossom, PVM

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# DOGGIE FITNESS

## Do you exercise with your dog?

Exercise along with a healthy diet can keep both you and your dog in shape! Please consult with your physician and your veterinarian before starting a fitness program. Your veterinarian can ensure that your dog has no medical conditions that would restrict exercise and help you plan a healthy exercise strategy.

## Want to go for a walk?

Dogs make great walking companions. Remember to start slowly and gradually increase the amount that you walk. Walking your dog for 20 minutes, 3 times a week is a good way to build up to daily exercise. Even if you are a seasoned walker, don't overdo it. It's time to stop or take a break if your dog starts lagging behind or breathing hard.

## Fun ways to exercise your dog

Play Frisbee	Your dog can run and jump while playing frisbee.
Play Fetch	Throw a ball or toy for your dog to retrieve. For extra challenge, throw the toy up a staircase.
Swim	Swimming is low impact and fun, especially for dogs with orthopedic problems.

## Tips to remember before starting a walking program with your dog:

- Find a comfortable leash and collar that won't slip off your dog.
- Trim your dog's toenails.
- Choose a safe route.
- Bring plastic bags in case your dog has to make a pit stop.
- Bring water for both you and your dog.
- Take precautions when walking in both hot and cold weather.
- See: [www.purdue.edu/svmengaged/sepa/fitness](http://www.purdue.edu/svmengaged/sepa/fitness)



### References and Resources:

- Buffington CAT et al (Eds.). (2004). Manual of Veterinary Dietetics. St. Louis, MO: Saunders.
- Case LP et al (Eds.). (2000). Canine and Feline Nutrition. St. Louis, MO: Mosby.
- Becker M and Kushner R. (2006). Fitness Unleashed! New York: Three Rivers Press.
- Author: Dr. Sandy San Miguel, Purdue Veterinary Medicine (PVM)  
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# EATING HEALTHY!

Dogs need a balanced diet just like people. A good diet for your dog balances energy, protein, fat, carbohydrates, vitamins, and minerals. The amount and type of food that your dog needs is based on many factors:

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Factor	Example	Description
Age	puppy, adult, senior	Dogs between one and seven years old are most at risk for obesity. Proper nutrition and exercise is important.
Breed	Chihuahua vs. Great Dane	Some breeds have a greater risk of obesity or medical conditions that can be managed with proper nutrition
Neuter Status	neutered or intact male/female	Obesity is more frequently a problem in neutered dogs.
Body Condition	underweight, healthy weight, overweight, obese	Body condition is one factor used to determine health status and therefore portion size.
Lifestyle	kenneled, lap dog, working dog, athlete, breeding dog	Active dogs such as working dogs and athletes need more energy than dogs that like to sleep on the sofa all day.
Environment	indoor vs. outdoor, climate	More energy is required if dogs live outdoors in cold climates. More water but not as much energy is needed if dogs live in hot environments.
Medical Conditions	diabetes, kidney problems	Medical conditions can require a special diet. Prescription pet foods are available in some cases.

## Team Up!

Your veterinarian can help with:

- Selecting a healthy feeding and exercise strategy for your dog
- Ensuring that your dog has no medical conditions that would restrict diet or exercise



### References and Resources:

Hand et al (Eds).(2000). Small Animal Clinical Nutrition. Topeka, KS: Mark Morris Institute  
 Author: Dr. Sandy San Miguel, Purdue Veterinary Medicine (PVM)  
 Designer: Thad Blossom, PVM  
 Reviewers: Dr. Nolie Parnell, PVM and Dr. Karen Zotz, College of Health and Human Sciences

## Know Your Doggie's Diet

Here are a few questions that your veterinarian might ask before recommending the best nutrition plan:

- Who feeds your dog?
- What kind of dog food do you feed? Commercial (brand) or homemade (bring recipes)? Dry or moist?
- How often and what kinds of treats, snacks, vitamins, or other supplements do you give your dog?
- How often does your dog get table food?
- Do you feed your dog set meals? If yes, how much food is in each meal?
- Do you measure the amount of food given? If yes, what do you use?
- Does your dog have access to food all day? Can your dog access the food of other animals?
- Does your dog have access to other food sources? Is your dog unsupervised outdoors?
- Have there been any changes recently? Types of food? Eating more or less food? Becoming a picky eater? Stress and medical conditions can sometimes affect your dog's eating habits.

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# Vaccine Schedule for Show Performance Horses

Vaccines are an important tool to prevent disease in horses and people.

Disease Vaccine Helps Prevent	Description	Guidelines
Tetanus	Tetanus is caused by toxins released by bacteria that infect wounds. People can get tetanus too.	Vaccinate horses annually or after an injury
Eastern/ Western Equine Encephalomyelitis (EEE/WEE)	EEE and WEE are diseases caused by viruses that can infect the brain of horses and sometimes people through insect bites.	Vaccinate horses every six months to every year before mosquito season
West Nile Virus	West Nile Virus is also spread through mosquito bites and can infect horses and sometimes people.	Vaccinate horses every Spring or more often if in an area known for this disease
Rabies	Rabies virus is deadly and is spread by getting bitten by an infected animal. People can get rabies too, but many animals are vaccinated so the disease is rare in people.	Vaccinate every year
Potomac Horse Fever	Potomac Horse Fever is caused by a bacteria. Horses at risk of infection live near water and usually get infected in the summer.	Vaccinate at least every year - more often in areas where the disease occurs
Equine Herpesvirus	Equine Herpesvirus is caused by a virus. Horses usually get infected after contact with other infected horses, but they can also get the disease from contaminated objects.	Vaccinate every year
Strangles	Strangles is caused by a bacteria. Horses can get strangles if they contact an infected horse or a contaminated object.	Vaccinate at least every year - more often in areas where the disease occurs
Influenza	Horses can get infected with the flu virus just like people.	Vaccinate at least every year - show horses can get vaccinated every Spring and Fall

Vaccination Guidelines from [www.aaep.org](http://www.aaep.org)

Sellon, D.C. and Long, M.T. 2007, Equine Infectious Diseases: St. Louis, Missouri: Saunders.

### Basic Facts about Asthma and How it Affects Human Lungs

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Asthma is a condition that can affect the lungs of children and adults, making it difficult to breathe. Specifically, the airways or bronchiole tubes begin to constrict due to inflammation and then mucus lines the inside of the bronchiole tubes. Some symptoms of asthma include your chest feeling tight, coughing, difficulty breathing or not being able to get a full deep breath, and wheezing.

Types of irritants or triggers for people with asthma:

- Allergens such as dust, dust mites, cockroaches, animals or pet dander, food, mold or mold spores, pollen, scents, perfumes or other odors
- Pollution caused by fire, smoke, smoke from cigarettes, smog created by vehicles, factories, etc
- Infections and illnesses can trigger problems as well. Colds, sinus infections, pneumonia, bronchitis, and respiratory influenza are a few of these. Many doctors recommend people affected by asthma get influenza vaccinations.
- Weather also can play a factor when the weather changes or when the air is cold.
- Exercise can sometimes trigger an attack.

References:

“The Respiratory System and Asthma” by Lipson

“Understanding Asthma” by Scheuerman & Lipson

”What is Asthma?” by HealthyChildren.org



## JOSE GOTTA KNOW

### “What’s Normal for a Horse? A closer look at what makes a horse tick, literally.”

By: Jose Gottaknow

There’s an old saying and it goes like this; “He’s as healthy as a horse!” Well what does that actually mean? What is healthy for a horse? You know me, I gotta know, so let me share with you the answers I found.

For starters, horses can vary in size, according to their particular breed. Their height can range from 14-17 hands tall. A hand is the measurement they use and equals 4 inches. When it comes to weight this also varies by breed, but typically a horse can weigh 900-1200 pounds. Your draft breeds can be much heavier at 1400-2000 pounds and taller, typically 16-19 hands tall.

When you get to the heart of a horse, literally, their normal heart rate is anywhere from 32 to 48 beats per minute. That’s a lot slower than the average human adult heart rate which is 60 to 80 beats per minute when at rest.

What about the very breath horses take, you ask? Well, the respiratory rate of a horse is 8-16 breaths per minute.

Do they ever get hot under the collar, um, I mean saddle? Yes, horses can have a fever, but their normal temperature is 98-101° Fahrenheit. Of course this, along with the horses heart rate, and respirations can be raised due to exercise.

How quick does the color return to their cheeks, I mean gums? Their capillary refill time should be 3 seconds or less. When you press on the gums the color should return that quickly. The mucous membranes of a horse, the gums and lips, are usually a pink color.

When you look at the horse he or she should have a healthy mane & tail of hair. Glossy and shiny are great indicators of health in a horse. It reflects the proper nutrition a horse gets along with the good health it is in. If it’s not healthy looking, chances are the horse is not feeling that well either.

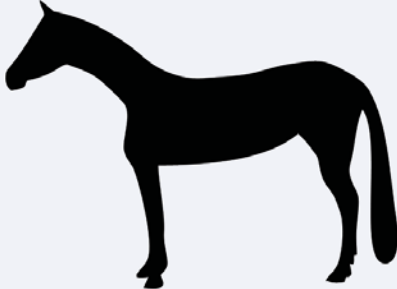
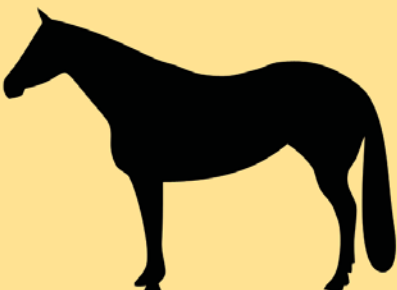
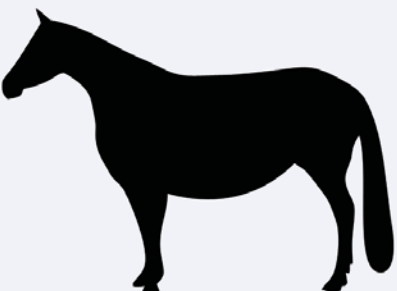
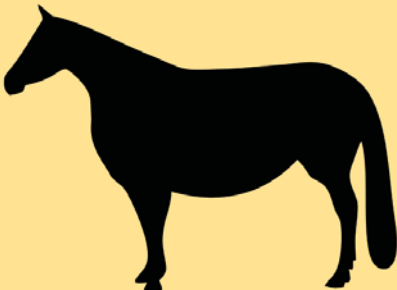
#### References:

“Equine Body Condition Scoring” by C.M. Brady, J.A. Sojka, A. Stevenson, M.A. Russell Created by Purdue Department of Agricultural Communication

## Equine Body Condition Scoring Chart

You can give horses and other animals body condition scores just like Snickers was scored. We score horses from 1 to 9. A score of 1 means that the horse is extremely thin. A score of 9 means the horse is obese. A healthy body condition score is 5 or 6.

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<p><b><u>Underweight</u></b></p> <p>These horses range from extremely thin (score 1) to just being able to see the ribs (score 4)</p>	 A black silhouette of a horse in profile, facing left. The horse is extremely thin, with its ribs clearly visible through its skin.
<p><b><u>Healthy weight</u></b></p> <p>These horses are at a healthy weight. There is a little bit of fat covering their ribs but you cannot see their ribs (score 5-6).</p>	 A black silhouette of a horse in profile, facing left. The horse has a healthy weight, with a slight layer of fat covering its ribs, making them not visible.
<p><b><u>Overweight</u></b></p> <p>You can feel and see fat on these horses. The ribs can be hard to feel through the fat (score 7-8).</p>	 A black silhouette of a horse in profile, facing left. The horse is overweight, with a noticeable layer of fat covering its ribs and neck.
<p><b><u>Obese</u></b></p> <p>These horses have a lot of fat over their ribs, shoulders, neck and legs (score 9).</p>	 A black silhouette of a horse in profile, facing left. The horse is obese, with a thick layer of fat covering its ribs, shoulders, neck, and legs.

# Small Animal Medical Record



**CHIEF COMPLAINT:**

CONDITION: \_\_\_\_\_ T: \_\_\_\_\_ OWNER: \_\_\_\_\_  
 TEMPERAMENT: \_\_\_\_\_ P: \_\_\_\_\_ ANIMAL'S NAME: \_\_\_\_\_  
 WEIGHT: \_\_\_\_\_ R: \_\_\_\_\_ DATE OF BIRTH: \_\_\_\_\_  
 GENDER: Male / Female / Neutered BREED: \_\_\_\_\_

1. General Appearance ( ) Not Examined ( ) Normal ( ) Abnormal 6. Digestive ( ) Not Examined ( ) Normal ( ) Abnormal  
 2. Skin ( ) Not Examined ( ) Normal ( ) Abnormal 7. Nervous ( ) Not Examined ( ) Normal ( ) Abnormal  
 3. Musculo-Skeletal ( ) Not Examined ( ) Normal ( ) Abnormal 8. Ears ( ) Not Examined ( ) Normal ( ) Abnormal  
 4. Circulatory ( ) Not Examined ( ) Normal ( ) Abnormal 9. Eyes ( ) Not Examined ( ) Normal ( ) Abnormal  
 5. Respiratory ( ) Not Examined ( ) Normal ( ) Abnormal 10. Mucous Membranes ( ) Not Examined ( ) Normal ( ) Abnormal

<b>HISTORY</b> (Order of Recording)	
<b>PRESENT ILLNESS</b>	
DURATION	
ONSET	
FIRST SIGNS	
PROGRESSIVE SIGNS	
TREATMENT	
<b>PAST HISTORY</b>	
OWNERSHIP	
ILLNESS	
ACCIDENTS	
<b>SYSTEM REVIEW</b>	
(KEY WORDS)	
DEPRESSION	
APPETITE	
DIET	
TYPE	
QUANTITY	
FREQUENCY	
CHANGE	
BOWELS	
THIRST	
COUGH	
VOMITION	
URINATION	
PRODUCTION	
REPRODUCTION	
LAMENESS	
ENVIRONMENT	
OTHER ANIMALS	
CURRENT	
MEDICATION	
<b>DATE OF LAST:</b>	
VACCINATIONS	
HEARTWORM CHECK	
FECAL EXAM	

**Student Signature:** \_\_\_\_\_

**Clinician:** Dr. Henry Green





# Large Animal Medical Record



**CHIEF COMPLAINT:**

CONDITION: \_\_\_\_\_ T: \_\_\_\_\_ OWNER: \_\_\_\_\_  
 TEMPERAMENT: \_\_\_\_\_ P: \_\_\_\_\_ ANIMAL'S NAME: \_\_\_\_\_  
 WEIGHT: \_\_\_\_\_ R: \_\_\_\_\_ DATE OF BIRTH: \_\_\_\_\_  
 GENDER: Male / Female / Neutered BREED: \_\_\_\_\_

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<p><b>HISTORY</b>  <i>(Order of Recording)</i>  <b>PRESENT ILLNESS</b>                  DURATION                  ONSET                  FIRST SIGNS                  PROGRESSIVE SIGNS                  TREATMENT  <b>PAST HISTORY</b>                  OWNERSHIP                  ILLNESS                  ACCIDENTS  <b>SYSTEM REVIEW</b>  <i>(KEY WORDS)</i>                  DEPRESSION                  APPETITE                  DIET                      TYPE                      QUANTITY                      FREQUENCY                      CHANGE                  BOWELS                  THIRST                  COUGH                  VOMITION                  URINATION                  PRODUCTION                  REPRODUCTION                  LAMENESS                  ENVIRONMENT                  OTHER ANIMALS                  CURRENT                  MEDICATION  <b>DATE OF LAST:</b>                  VACCINATIONS                  FECAL EXAM</p>	

**Student Signature:** \_\_\_\_\_ **Clinician:** \_\_\_\_\_ Dr. Laurent Couëtill



# Large Animal Medical Record



**CHIEF COMPLAINT:**

CONDITION: \_\_\_\_\_ T: \_\_\_\_\_ OWNER: \_\_\_\_\_  
 TEMPERAMENT: \_\_\_\_\_ P: \_\_\_\_\_ ANIMAL'S NAME: \_\_\_\_\_  
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**Student Signature:** \_\_\_\_\_ **Clinician:** \_\_\_\_\_ Dr. Laurent Couëtill



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American Association of Pediatricians Section on Allergy and Immunology. "Health Issues: Asthma Triggers and What to do About Them". <http://www.healthychildren.org/English/health-issues/conditions/allergies-asthma>

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Sellon, D.C. and Long, M.T. 2007, Equine Infectious Diseases: St. Louis, Missouri: Saunders.

# Fat Dogs & Coughing Horses

Would you like to be a veterinarian?  
Veterinarians are scientists who are doctors for animals. In this book, you get to be part of the veterinary team by using science to solve cases, learning about careers in veterinary medicine, and seeing how advances in animal health can help people too.  
Be the VET! Solve the Case!



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