

## Pet Nutrition

REBECCA STULL: Hi everyone, and welcome. Glad to see you here today. I'm Rebecca Stull and I have with me here Dr. John McNamara. And I just want to welcome you on behalf of Global Connections. This is our webinar today on pet nutrition, so welcome. Please feel free to use the chat box for questions or comments throughout the presentation. And if you have trouble hearing or seeing any aspect of the presentation, please send me a message in the chat box and I'll be able to respond to you individually.

John McNamara is a professor in the animal sciences and nutrition at WSU. His specific research interests include the biochemical regulation of nutrient, metabolism, and reproduction during lactation. He has been teaching at WSU since 1983, and enjoys advising the companion animal club, as well as the cooperative university dairy students archive program. He's been teaching that nutrition for 20 years, and as a general ed and [? youth ?] core bio science class for ten years. He's the author of Principles of Companion Animal Nutrition, now in the second edition, which is used all over the United States. So we're very excited and happy to have him here today.

So without further ado, we're going to go ahead and get started. And again, I encourage you to type any comments or questions in the chat box. And John will be stopping periodically to address those questions. So take it away. Thank you.

JOHN MCNAMARA: Thank you, Rebecca. And thank you for setting us up. Thanks for all the students for checking in. I see several of you are from Animal Science 205 so you get to hear me an extra time this week. But do feel free to ask questions. I'm going to go through these ideas relatively quickly but we will stop and I will probably ask you to ask a question. And then we'll have time toward the end for a little discussion.

And so some of you have seen these. One of the things about pets, obviously, is they're such an important part of our lives. Really, all over the world. Probably to the greatest extent in Europe and the United States. The human animal bond is very strong. And we tend to project ourselves, our philosophies, and our feelings onto our pets, and certainly the nutrition of our pets is part of that. And as I mentioned in classes, you can talk about nutrition without at least recognizing economics, and philosophies, and cultures, and religions. We're not going to get into those aspects today, but we are going to get into what we call myths and myth busting. What are all the different kinds of nutritional and animal myths that are out there that can sometimes lead us astray in feeding our pet?

So this overboard comic that I use quite a bit centers around these animals. And if you listen to your pet, your pet will tell you all the time they're hungry. And so we really need to be careful about that because we really are the people who control their intake, obviously. So we want to use the pet food label as a guideline here today and go through that and bounce back and forth a little bit between some of the things that are on there. And I've addressed five or six basic

issues that are all over the blogosphere as you say, or the internet, or in print media, or in casual conversation about nutrition.

And so the BARF diet, the bone and raw food diet. Or the large issue of what's wrong with pet foods and why are pet food filled with fillers and things like that. So we want to talk about that. We want to talk very briefly about organic foods. And then the whole issue of omega fatty acids. What is it about all these different fatty acids that people are talking about? And I don't have that on the slide but that really addresses the whole food allergy, food sensitivity issue. And then probably we'll have some time to talk about obesity and diabetes, and what the real issues there are. And as we've said, feel free to ask questions. You don't want to just sit there listening to me and have me talking to the screen. So let's have a little interaction.

Hopefully, really I'm going to be challenging a lot of what you probably think is correct. And so don't feel shy about asking questions. So really, when you look at it from a certain perspective, the pet food label is really a great culmination of science, facts, communication, marketing. Like any other labels they use colors and pictures and attention grabbers and that's all well and good.

But the pet food label is actually a legal document and there's specific things that have to be on there, and there's specific language that has to be on there. And it has to be able to be backed up in a court of law. And then there's other things that are basic marketing and that type of thing. And again, I'm not pushing any one brand, I'm going to use a few different ones here. But here's a well-known brand. And of course, you've got to have a happy animal on there, different food sources. The simple three things that have to be on there are the name of the product and the species is intended for, the net weight and the company contact. So those are pretty unexciting but they have to be on there.

But this is from a different product. And depending on how big the label is, if you're buying a 50 pound bag, they have a lot of space. If you're buying a little can, you know there's not that much but the wording here is very important. And so I'll have you just think about and if you want to type in. What do you see on here, on this particular slide, that's a legal claim? And what I mean by that is would it stand up in a court of law? OK?

So if we go back here, if they say this is 50 pounds, and people start actually measuring 45 pounds, and then the FDA steps in or the Consumer Protection Bureau steps in and they take several samples and the bags weigh 46 pounds, then obviously in a court of law they'd have to defend themselves. But on here, what do you think is going to be a legal claim? And as you read through this, do any of these sentences say that the actual product will do anything? And that's something that you want to be looking for rather than just a descriptive sentence, OK?

So with that, and I'll keep going, but you can type in your answers that I'll be looking at them as we go along, is anything on here you think is actually a legal claim? And you can just say yes or no or provide a sentence. Now here's something that's a little more straightforward. This is the chemical analysis. So they have to have, I've got up there the first four ingredients. Crude

protein, crude fat, crude fiber, and moisture. Those have to be on the label legally. The other things that are on this particular product, and there are a bunch of different nutrients as you can see, fatty acid, minerals, vitamins, we're going to talk glucosamine here in a minute. These are not required to be on a label. And as you might guess, most of the people who read the label aren't going to be able to judge whether 1.0% calcium is the exact right amount. But this is what a company wants you to take a look and say, hey look, we've got all these other great things we here as well. So that's obviously got to be on the label.

Now the ingredient list. And this is where it kind of gets scary. What are all these different things on this big long list? So some of the things are recognizable, lamb, brewer's rice. So brewers rice is named properly. This is the rice was left over after the brewing process. Corn gluten meal. And that probably doesn't mean anything to you. And we're going to talk about wheat here in a little while. But some people may look at this label and say, oh my gosh, I'm allergic to gluten, I shouldn't have this in my house. But what they don't know is that in fact an allergy to wheat gluten is really what the issue is, and that all plants have gluten.

So these are some of the more specific things that you want to be thinking about. Whole corn, poultry byproduct meal. So I have boxed this out. What is poultry byproduct meal? Well maybe one of you that's in class, we've had this can type in because we've already talked about it, and I can share it with the group. So what is poultry byproduct meal?

Now they say here there's two things that are natural sources of glucosamine. And just so you know, glucosamine is actually part of joint fluid and connective tissue. And we've known for quite some time that for some animals and some humans, they actually respond to glucosamine to reduce arthritis and joint pain. So this is true. There's data to back that up. Then a number of different ingredients. You get down here, and the reason I circled this is when you start seeing minerals and animal digest or if, for example, this had salt in it, once you get to that part of the label you're looking at things that really are in very tiny amounts. These things would be in tenths of a percent or even in parts per thousand. So all of these chemical sounding names are of course minerals and vitamins that are required. So when you look at a label like this and there's all sorts of scary looking chemicals, almost all of those are simple minerals and vitamins.

It has to have their contact information on there. And then this sentence here is what we call the nutritional adequacy statement, and that is required by law, how is this product tested? Does it meet the procedures required for animal nutrient requirements? And this has to be held up in a court of law, if needed. But they have followed the right guidelines of feeding animals and testing this product so that it backs up that it meets the nutrient requirements.

So I notice none of you have typed in anything yet, so we might want to ask a question or answer or question.

REBECCA STULL: There it says poultry byproduct meal is everything left over from poultry production.

JOHN MCNAMARA: OK so I guess I'm not seeing that.

REBECCA STULL: Bottom right. You've got to scroll down.

JOHN MCNAMARA: Oh, I see. Well thank you folks. That's right. Poultry byproduct meal is everything left over from poultry production. Bones, feathers, et cetera. So do we have a bowl full of numbers or do we actually have nutrients in there? And they really are nutrients.

So I just want to go through this definition. It is a scientific definition of what's required for normal performance. Oxygen, water, glucose, minerals, amino acids, vitamins, and essential fatty acids. So we obviously don't put oxygen in a bag of dog food. But that's a required nutrient. Water as well. And then these other ones, without going into the chemistry, these are what the animal requires for life. This carbohydrate, many minerals, about 15 minerals, 20 amino acids, and 15 vitamins, and three essential fatty acids. And those are all the nutrients.

Notice what's not on here. Protein is not on here. Fiber is not on here. Carbohydrate is not on here. Those are foods, those are not nutrients. So an animal does not have a requirement for protein, per se. It doesn't have a requirement for fiber. Those are what the delivers the nutrients.

So just quickly to put it in perspective, we spent a century determining all of the future requirements for all these animals and we know those now. And so we don't need to do that kind of research anymore really in the most part. What we're doing now is really getting into much more detail about health, the health effects of nutrition, longevity effects of nutrition, how nutrition and genetics work together. So are there in fact need for different breed type diets? What are some of the very specific things you might be able to do to help prevent diabetes or prevent food sensitivities or to provide for greater or less arthritis, and those types of things.

Just a real quick history. Really, we haven't had pet food for historically that long of a time. It's been about 150 years that we have had pet food. And we've had some for about 100 years. And after World War II, it really got scientific with Dr. Mark Morris's Science Diet, which is now a whole line of products. And now we're really very specific in having puppy chow and kitten chow and growing chow and adult chow, and those types of things.

All right so this is what we're doing now, and it's a huge field. Lots of different things going on in nutrition. All right so real quickly going through here. So you have this stage for any animal, and this is mammals, so today we're really concentrating on dogs and cats. Of course, early on they need that high quality nutrition. The lactose, the proteins, minerals, the vitamins, the fats from the milk. That supplies all the nutrition that animal needs for four or five weeks.

You may have seen on the news today, there was a big report on the news today, of problems with human babies. Mothers who start feeding human babies solid food too soon and they don't get all the benefits of that milk. So this is still very relevant. Now for growth, for those of

you that have been through that class, really we're going to assume you're feeding the animal a proper diet, that you've purchased a proper diet. So you really want to give them proper eating habits. When are they going to eat, how much are they going to eat, where in the house are they going to eat so it's a consistent thing? Where they know when they're going to get fed, you know when they're going to get fed. How much so you're not overfeeding or underfeeding? That's really the key here for that young puppy or kitten. So you establish those eating habits. And as I've joked in class, that's what your mom and dad tried to do for 18 years, then they send you off to college. But that dog, we're to keep it through the entire life. And we really want it to get off to the right start.

And then in adulthood, regular exercise is critically important, as you know. And then what we call limit feeding. And what that means is you are not generally going to have all the food out there that the animal will eat. Most animals will overeat. Some won't, but most will. So we really want to zero in on how much we feed that animal. And here in a few minutes we'll talk about that.

So here's some scary numbers. But really, all I want to show here is these growth curves. So for example, we could be comparing a dog or a cat here. We could compare different organs. Or we really could be comparing a large breed dog here with a small breed dog. All right? And they grow at different rates. So a Great Dane, a mastiff is still going to be an adolescent out here after three years, whereas in a Pekingese, a chihuahua is going to be full adult within about 13 to 14 months. And so that's important how we're going to feed that animal.

I am curious if an animal that has been overfed and established a habit of overeating can be put on a diet and lose weight successfully, and if that would require a major change in food. And the quick answer to that, Susan, is yes, you can repair it later. It's difficult. And I'm going to, in fact, get to it here towards the end of what we need to do. You really want to avoid doing that in the first place.

Now we're not going to spend much time on reproduction. If you need to know more about this, I can give you some references. But we don't want to start feeding that animal a lot of food early in pregnancy. They don't need it. The fetuses are very small. You can see here, just a small percentage increase in intake, even by late pregnancy. Then, when they're lactating is when they're going to be eating a tremendous amount of food. So one of the myths, for people who are in the breeding world, is that you start to have to make radical changes in diet or overfeeding animals in pregnancy and you definitely do not want to do that, nor do you want to put an animal who is pregnant or lactating on a diet because you will hurt fetuses and the neonates that way by reducing the nutrition or intake of the mother.

And then here on senior animals, this is a beautiful thing, beautiful set of research that has been done over the last several years. You want to keep them as active as they possibly can. You want to switch them to a senior diet, look for higher quality protein. Talk with your veterinarian, talk about the mineral content of the diet. Kidney function normally declines with age. You can't do anything about it, other than help reduce the rate of decline. And so a lot of

these senior products are very well balanced with more minimal amounts of minerals, better amino acid balance, and that type of thing.

So that's a real quick brief facts. The growth cycle, the basic nutrient requirements, some of the basic feeding management schemes. Now let's have a little bit of fun. Obesity and diabetes, we're actually going to wait to the end. But be thinking about what do you think is the incidence of diabetes? So I'd like to see a bunch of typing coming up here. Right now, if you just talk about dogs or cats, what you see or what you think or what you hear. What percentage of dogs and cats have diabetes? So let's see some answers on that. Please.

What about fillers? Why are we feeding corn to dogs and cats? They're carnivores and they need meat. What about BARF diets, bones and raw food diets, or homemade diets? Because everybody knows those pet foods are full of preservatives and they're full of processed foods. OK, good. You're awake out there. I see 12%, 10%, 10% to 15%, 25%, 5%. Good, good. Range out there from 5% to 25%. So we're about to come back to that here in a minute.

What about food sensitivities? So I briefly mentioned wheat gluten allergies. So in humans, celiac disease is a serious disease. It can be life threatening. And most patients have a sensitivity to wheat gluten. So it's a very specific protein in wheat. However, corn, oats, barley, rice, they all have gluten too. I showed my class earlier this semester a bag of corn chips, human corn chips with a big banner on it that says gluten free. Well number one, that's not right because it has corn gluten in it. But corn chips never had any wheat in them. So that's a myth that's sometimes used. The incidence of human celiac disease is about 1% of the population. Not 10%, not 20%. So you really don't need to worry about wheat unless you know you have a wheat allergy.

What about food sensitivities? And what the omega fatty acids do? So these are the topics we're going to concentrate on for about the next 20 minutes or so. I've given you some basic facts and now we're going to go into these.

So we're not going to get into this real deeply but I want to put this up here to make a point that biology is chemistry, and chemistry is physics. My class has heard that before. Everything we do about nutritional science and feeding can be quantified, it can be measured, and it can be proved. So we can account for all of these things. And I really want to stress that point, that even though there's still a lot of variation among animals, what we know about foods and food chemistry and nutritional requirements is very, very sophisticated. There really isn't much guesswork there anymore.

So BARF diets. We started reading about this about 15, 18 years ago. Really coming out against processed pet food because it's chock full of fillers. It has corn, and wheat, and rice. Dogs and cats don't use that. They are carnivores. They must only eat meat. Processed foods cause allergies, they cause diabetes. So I'm just going to come out and say right now that this is all incorrect. And we spend hours going through this in class. And you can go out to websites from the American Veterinary Medical Association to prove that in fact, none of this is really true.

Dogs and cats are classed as carnivores based on their body structure, their teeth structure, and a historical diet. Dogs have always been omnivores. Dogs have eaten plants and seeds. And just because they evolved eating meat, doesn't mean they can't eat grain. That's something that you really need to understand. Animals and humans have been eating grains for tens of thousands of years and there's no reason why we can't today.

Then down here, what's the truth about pet food causing obesity or diabetes or allergies? We're going to get into that. So this, for those of you in that class are probably having flashbacks, I just want to make a point here that glucose is a carbohydrate. Glucose is a required nutrient for life. So the seeds of plants carry carbohydrates as starch. So corn, wheat, those types of things, they provide the key nutrient that's required for life. There's nothing wrong with that.

Protein quality, this is another thing that you see people writing about. That these grains that companies put in there are lower quality proteins. Well in that they're correct because protein quality is a function of digestibility and the amino acid balance. What kind of protein is it, and how digestible is it? And we can actually do research and quantify this in what we call the net protein value. So we measure what goes in, we measured what the animal keeps, and we can come up with a calculation.

Plant proteins, they use that protein in about 50% to 60%. Animal proteins from 70% to 80%. With egg and milk being up there around 95%. So if you just think about it evolutionarily, milk and eggs are there to provide for the neonate, who can't get any food itself. So it makes sense that those are going to be very high quality proteins.

But for adults, we don't eat only milk and eggs. We eat all sorts of plants and we can get amino acids from plants, they're just not as many of them in the plants, nor do they cost as much. And so just because the cats and dogs are called carnivores, and they can definitely eat meat, doesn't mean that they should only eat meat.

And here's an example of what happens if in fact you feed a very high meat diet, so a 60% to 70% meat diet. What you see here is if you match the calories that they need, and this is their requirement for calcium, they're not getting any calcium. Meat does not contain calcium. They're getting way too much protein. They're getting four times the amount of protein they need, and that's wasteful. It's wasteful to grow that protein. It's hard on their kidneys. And they're lower in a lot of the vitamins. So obviously, muscle meats are a great source of protein, but they do not by themselves provide all the nutrients that an animal needs.

Now I don't have a slide on here, but let me tell you a quick story. Some of you in class have heard this. And it's in the public domain so I can name names. When there was pet contamination scare about eight or nine years ago, Oprah Winfrey had a segment on that with a veterinarian. And she had these little bowls of food out there and she was going to show the world how she fed her dog. She had ground lamb, cooked potatoes, shredded carrots, and I believe it was rice. She mixed them all together in a little bowl and said here, here's what I feed

my dog. And here's this guy standing there saying, yeah this is natural. We need to go back to nature. Combination of muscle, potato, carrots, which are primarily water, and rice. So I wrote to her. I think probably along with a thousand other nutritionists to say, thank you Oprah, for showing the world how to provide a calcium deficient diet to your dog. Because there's not enough calcium in there. You would need to feed a lot of beans to get enough calcium in the dog's or bones. So again, the myth there is that these animals do not need to have a high meat diet.

OK, next topic. So what about food allergies? So I'm going to ask you the same question, so I hope I get the same kind of response. Right now, what do you think is the incidence of food allergies in dogs and cats? What percentage of animals do you think actually have a food allergy? So let's see some numbers there, whether you've read it or you're just kind of guessing. What do you think that problem is, all right? So your diabetes answers range from about 5% to 25%.

So there's a lot of different symptoms of food sensitivities and food allergies. One of the problems that you deal with is that animals can be sensitive to a number of things, just like we can. So getting into the spring, some of you may have pollen allergies or dust allergies. You may be allergic to grass pollen but not to tree pollen or vice versa.

Dogs and cats, of course, can also have fleas. So what really is the truth about food allergies? Because if you read enough websites, you'd think that it's a real serious problem. So let's get some-- there you go. You got some answers down there. I don't know how to work this technology. All right. So 15%, 15%, 20%. OK.

REBECCA STULL: There was a [INAUDIBLE] of 35.

JOHN MCNAMARA: OK. Oh, yeah. I see Andrew, thank you, 35%. OK. Now this might get a little confusing, but do foods cause allergies, or do animals have allergies to foods? Because I could eat corn all my life and never have a problem. I could eat wheat all my life and never have a problem. But my friend may not be able to. What about like, for example, milk? Some people are allergic to milk. That doesn't mean that milk caused the allergy, that means the genetics of that person has a specific response to a protein in milk. And that's a very, very critical point because you can't take that information and then tell everybody not to drink milk because milk causes allergies. That's just not how it works, right?

Now allergies can be deadly. I'm not trying to make light of that. Some allergies can cause deaths if not rapidly treated. They can be debilitating, they can be terribly painful. But let's not take that and then try to put this out on all people or dogs or cats to say this thing causes an allergy. Now one of the other myths that's out there is that pet food causes allergies because it's so highly processed. In fact, it helps reduce the allergies because it cooks the proteins, which in many cases will destroy their allergen, what we call the epitope of what the animal responds to.

So we got it from Andrew. What is the correct answer? We're getting there, hang on. But thank you for asking. So really, allergies are genetic. Some people can develop allergies, some dogs can develop allergies over time. Some are born with them.

So here's the facts, and this has been backed up with thousands and thousands of case studies. When you look at veterinary clinic cases, about 10% to 15% of all animals presented at a vet clinic are originally thought to come in with some kind of allergy. That's what the owner said or what the original diagnosis might have been. Most of those, so if you do the math here 80% of 10%, only leaves 2% of the animals coming in that actually have a food allergy. Most of them are seasonal allergies just like we get. Pests, pollens, dust.

So what will happen, someone comes in May and their animals are exhibiting signs of allergies. So they go to the veterinarian or maybe they don't go to the veterinarian and they're going to fix this by changing the food. Well, most pet foods, for good reason, are made from the same ingredients. Beef, chicken, corn, rice. So you're not really changing the food. In animals that actually do have food allergies, you really have to make a major change.

The other thing that's happening is time is passing. Now maybe it's July and August and the pollen season is over and the animal clears up. And so people will perceive that it was the food that fixed the problem, when in fact it was a complete coincidence. That, in fact, the pollen or the pests went away. So allergies can be very, very difficult when an animal has them but they're a very small, 2% to 5% of the population of animals has food allergy.

Now let's go to the truth. Omega fatty acids and inflammation. So we now know a lot about this topic. And way back in the beginning, I talked about-- And thanks for your comments. So that's very low, wow and yeah, it's surprising. But if you go out and double check on scientific websites, not by my dog food website, but scientific websites, you'll get that corroborated. All right.

So essential fatty acids. Linolenic, and I'm going to go forward here for a minute, a little more chemistry. Fatty acids have structure. So when you hear about omega 3 fatty acids or omega 6 fatty acids, that's really applying to the structure of the fatty acid. So these scary sounding names, docosahexanoic acid and eicosapentaenoic acid, you can go and buy at the grocery store in fish oil. They're very high and fish oil, DHA and EPA. And in very good clinical studies in humans and animals this has been shown to reduce inflammation, help arthritis in animals that have that problem. If you don't have that problem, if you don't get sensitive to things, if you don't have arthritis, or your dog doesn't have arthritis, you don't need to be feeding them a bunch fish oil, OK?

You won't find it in corn oil, you won't find it in animal fat. You need to have fish oil or linseed oil. And linseed oil is really not nice to eat. Do not feed your dog linseed oil, OK? Because it has some compounds in it the dogs and cats cannot digest. But it is true, now that basically, these fatty acids have specific properties. And here's a graphic I use in class and it's called the dancing bakers. So this is a graphic of a lipid membrane. And if you have a lot of saturated fats, it's not

very fluid. But if you have a lot of these omega 3 and omega 6 fatty acids, with like a bent pipe cleaner is what it's like, then you have a more fluid membrane. So you help in their general health.

And then a lot of big long words here. But basically, the difference between omega 6 fatty acids and omega 3 fatty acids are how they help with inflammation and immunity. Omega 6 fatty acids help with inflammation, or a part of the inflammatory process. Let's skip ahead here a little bit and I'll come back. So these are the things you're going to see. Linoleic, linolenic, and arachadonic. And I just want to say here that omega 3 fatty acids are the ones that help lower inflammation. So I've got one more slide on that, if I can find my pointer here.

So here's the bottom line on that. Omega 3 type fatty acids diminish inflammation. Omega 6 enhance inflammation. We have to have some inflammation to fight off problems. But for animals that are overly sensitive, we know that a small amount of fish oil, and talk to your veterinarian about that is, do not self diagnose, go to talk to your veterinarian if you think there's an issue. But they can be very, very helpful, OK?

So let me show you an example. This is a prescription diet, folks. So this is if you and your veterinarian can't figure out the problem, you're going to put an animal on a very specialized diet. If you look at the ingredients here, these are not things you'd normally see as the major ingredients. So no beef, no lamb, no chicken, no corn. So brewers rice, which is rice that's had most of the proteins chewed up. Dried eggs, and eggs are very non allergenic. Pork, which we won't normally feed. Vegetable oil. So this is an extreme diet for an animal that has a very serious allergy.

Ah, Rachel, what is the most common food allergy that cats and dogs have? Well, we're going to answer that right now. The top five foods that are associated with allergies are beef, chicken, corn, soybeans, and rice. And there's a very simple reason for that. Those are the five top foods that we feed to dogs and cats. And that proves the point, those foods don't cause allergies because 95% to 98% of the animals that eat them will never have an allergy. But unfortunately, those 2% to 5% will have a genetic makeup up that makes them sensitive to one of those foods.

So that's why 15 years ago, pet food companies started putting a lot of lamb in food. It was a marketing ploy and lamb cost less. Plain and simple. So animals would not be sensitive to lamb because they would have never seen it before.

So next question here, what's a rich source of polyunsaturated fatty acid to be beneficial for animals? Any plants oil. So corn oil, canola oil, sunflower oil, vegetable oil that you would buy in the grocery store. These are very high in polyunsaturated fatty acids. Animal fats are higher in saturated fatty acids. So you want to have a good mix of that. And again, to follow up on that question, Andrew, is that one of the problems you're going to have-- And we're going to talk about obesity real quick because as usual I'm going too long. If you start feeding these oils to your dogs to help their coat or something like that, you can quite often overfeed them.

And I got a question from Savannah. Is lamb good for dogs? Yes, it's an excellent quality protein. It's well digested. And there's no reason at all why dogs can't eat lamb. It's a perfectly good protein for dogs. OK? OK.

I want to wrap up with obesity and diabetes. Obesity is easy, it hasn't changed in thousands of years. Don't eat too much and get regular exercise. Nothing's changed. We don't need to get any more complicated than that. There's nothing hiding in pet foods. There's nothing magic about doing the first law of thermodynamics. If you measure your pet food in relation to what they need, if you give a good regular exercise program and watch their body condition score, you can prevent most obesity.

So we will send you these slides. I can't expect you to memorize these numbers immediately. But let's just think about a pretty good sized dog. So this is 20 kilograms, so a 45 pound dog. Only needs less than four cups of food. So if you're at home when we're done here, go to your kitchen and get a cup measuring cup. And look at that and think that a good sized dog only needs four cups. A small dog only needs about two cups. And you put that into a big pet food bowl and you think that you're starving your animal. But you've got to do the math here, folks. You've got to read the label and feed the proper amounts.

So I'm going to skip this. But the bigger bags-- And you can go on the company websites and look at feeding directions, but honestly, if you do the body condition score and you limit feed your animals, you're going to help a lot. Now this is going to be real quick. Basically, I'm going to show this. The bigger meal that the animal gets, the more likely they're going to get fat. And that's because of insulin. Insulin is there to store food. And the idea here is that you want to feed your animal two or three times a day. That's the take home message. Not one big meal a day. Because if they get one big meal, they can't handle all that food at once so what happens is their body turns a lot of it to fat. And if they're not exercising, they just get fatter and fatter on the same amount of food. And that's the bottom line of this. Smaller meals, watch your total intake, have a regular exercise program. OK?

Had a question. What are the benefits of omega fatty acids that will make something like omega 3s become so popular? When we go back and look at the slides, the truth is, the omega 3 fatty acids help reduce inflammation and they help in membrane health. So for humans who have a history of heart disease or inflammation, omega 3 fatty acids could help in reducing that. And there's data on that from the medical field. For pets, it's primarily for reducing inflammation in dogs that are sensitive. Not all dogs are sensitive.

So I'm getting some good questions here. We're going to come back to those here in a minute. But there was a question early on. What happens if you've already got an animal that's obese or fat? It didn't take them a week to gain that weight, it's going to take months to lose the weight. You can't take an animal that's been eating too much for a year or two and expect it to lose all that weight a few weeks. Just like we can't for ourselves.

The bottom line is we will recommend 1 and 1/2% to 2% loss of body weight a week. And if you do the math on that-- So assume you've got a dog that belongs at 60 pounds and they weigh 85 pounds. That dog is going to be obviously fat. It's going to take four months of a serious reduction in intake to reduce that animal back down to normal. So a little more than we can get into now. You can always email me and I can send you the math. You can look it up online on the veterinary websites. But a 2% weight loss per week is what they'd recommend for a serious weight loss diet.

Last thing we're about to talk about and then we'll finish up with your good questions, diabetes. Well you guys are out there guessing 5% to 35% diabetes. If you listen to the television or the websites, you are convinced there's an epidemic of diabetes in humans. It's terrible in dogs. Diabetes is the first known genetic disease recorded. In Egypt and Greece 3,000 years ago from the Greek and the Latin. Diabetes, to stand with legs apart, to urinate. And mellitus, sweet. To urinate sweet urine. So humanity knew that some people had a problem with whatever was sweet.

And Aristotle, Hippocrates studied this. It took 3,000 years. And I showed you that picture of glucose. And those of you that are in the class, you know I go on and on and on about all the Nobel prizes that are given for glucose. The history of human research, especially nutrition, can be tracked back to why diabetes happens in people, trying to find out why that happened. And now we know a lot about it. And I'm going to-- Basically, there's diabetes that an animal is born with, it's genetic, and others that are adult onset that can be caused by sugar intake and obesity.

So this is something we didn't get into. We'll get into this next time, high fructose corn syrup. It's all over the news. There's a big argument for human food. It's very disingenuous when they say high fructose corn syrup is no worse than sucrose because sucrose, which is table sugar, is a poison. It was never meant to be anything than a light sweetener. And to make a long story short, sucrose causes a huge insulin release. The fructose gets converted to fat immediately and it's very difficult to burn off.

Diabetes, over time, is dangerous because the glucose in the blood starts breaking down small membranes. Over years and years and years. And some of you may have history of diabetes or family with diabetes. It can be devastating. They can lose their limbs. They can lose their sight. And it's because the glucose levels start breaking down the small blood capillaries. You manage sugar intake and you manage body weight and you get rid of most of the adult onset diabetes.

Now there's the incidence, folks. Measured over thousands of animals. The incidence of diabetes in dogs and cats is less than 1%. There is no epidemic of diabetes in the dog and cat population. It's just not there. In my senior level class, we talk about, well then why do we read so much about it? Well, if there 70 million cats in the United States and 1% of them have diabetes, we do the math, that's 700,000 cats with diabetes. So it is a problem but it is not an epidemic.

Some of it is genetics and that animal has to be, depending on the severity, either euthanized or treated very carefully. You can prevent the obesity sugar related diet by what we've talked about before. So that's the end of the actual talk. And there's a stack of questions we're going to get to and hopefully some more.

So what do we do about it? Read the label. And remember the facts, not the myth. Early and regular training. Watch your feeding behavior. Watch the body condition score. For You can go online and see some great graphics or pictures. You want to be able to, depending on the type of dog or cat, see the ribs or lightly feel them. There's not belly fat hanging down. They have a waist. They're not getting rounded over the top. And again, this is going to be different in a Weimaraner than a Lab. Some animals are very, very difficult to get obese because of their energy levels.

Read the label. Remember the facts, not the myths. Trust the scientific organizations. Journal of Nutrition, Journal of the American Veterinary Medical Association, American Diabetes Association, the American Cancer Society. Now those two organizations don't deal with pets. The Veterinary Medical Association will. But you can go to them and get the facts.

And I'll tell you straight out, is the company websites, the large name pet food company websites are excellent. They have to tell the truth. They are under scrutiny all the time. Now there's got to be marketing on there, without a doubt. But their research and the way they write it is simple and easy to explain, easy to understand, and they're telling the truth.

Pubmed.com, for those of you with a little more background, that's where you actually go find the scientific articles if you want to find articles on diabetes in cats. One of the things that you've got to be careful of there is that you can read one article and come away thinking that this happens all the time but that's just one article. So if you read the review articles, you get the whole story.

OK, so as usual, I talked too long. But we've had some good questions here. What's the benefits of omega fatty acids? We talked about that because omega 3s will reduce inflammation. Should you feed dogs a mixture of canned and dry food, or is dry food good enough? And then ditto the above question but for cats. All right. So there is no overpowering reason to feed dry or canned food. The only thing that the American Veterinary Medical Association will say outright is that dry food does help prevent dental disease because of the scrubbing effect of the particles.

The real issue there folks, is to read the label and determine how much protein and fat are in those foods. Canned foods tend to be much higher in meat and fat, just because of the nature of the product. You can find some products, and the pet food and Science Diet does this more than others just because of their clientele, they'll actually take their dry diet and wet it and can it safely. And those are for animals who are, for example, for dental reasons or digestive reasons can't handle the dry food.

In our older geriatric dogs over the years we started feeding them more and more wet food because it's easier to digest. It's also very expensive. And there's one reason why the pet food companies got away from that, is the canning process and the cost of shipping water and metal is very high. There is no advantage to feeding wet food or dry food. You may have some animals, and again these are animals that will be older probably, they may not be able to chew as well. But I'll tell you what will happen, if you get any animal started on canned food, especially cats, it's going to be very, very difficult to wean them to dry food. So you really need to be careful about that.

We had something, I think this was a response to the food sensitivities. Again, surprising. This is not a diatribe for me against the media. The media has done a lot of things. But boy, when you see something over and over and over again, a lot of times they're just repeating the same story over and over again and it sounds like there's 85 stories out there. But diabetes is not an epidemic. It's a very small problem. But it's a big problem if you or your pet have it.

What's the best homemade diet for young adult cats, from your own experience? This is actually from a student in class. I can send you a reference. In my textbook, in the chapter on dogs, it refers to a book that I think has some very, very good recipes, if you really want to go down that road. So for those of you that are interested in that, send me an email, I can send you a reference of a book that I trust that's got some very well balanced diets, with all the good proper vitamins and minerals.

OK, your answer to the wet food versus dry food question. What about diabetic renal urinary patients? Is there any benefit to feeding them wet food to increase their water intake or is that a myth as well? No, that's very true. When you have these veterinary patients, and again I am not a veterinarian, so I cannot give veterinary advice, work with your veterinarian. But those are exactly the things, when you do have a problem, an animal that has a genetic problem or injury or insult going on, perhaps they've got a parasite, they've got gastroenteritis, have renal problems, urinary problems, there can be benefits to feeding them a wet food. And again, there's hundreds now of prescription diets that the veterinarians will know about of feeding them the proper kind of diet.

So it's about time. And so you just got that. The slides are going to be coming through. Thanks very much for your interaction. I know it's kind of hard to do that just through chat boxes but you guys are much better texting than I am. We'll do this same one again tomorrow and Wednesday, if you want to tell your friends. And thanks very much for your interest.

REBECCA STULL: Yeah, thank you everyone for coming. And I'll be sending that slide show through in just a second. So you can go ahead and save it, or open and then save it. And then we'll be hanging out in the room for just a couple minutes and then closing down. Thank you so much for coming and please have a great night.