

Veterinary School for Everyone

Caring for Cats and Dogs

Course Guidebook

Dr. Justine Lee

Veterinary Medicine Expert



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Dr. Justine Lee is a board-certified veterinary specialist in emergency critical care and toxicology. She earned her bachelor's degree in Animal Sciences from Virginia Polytechnic Institute and State University and her doctor of veterinary medicine degree from Cornell University. She completed her advanced internship training at Angell Animal Medical Center in Boston, followed by her fellowship and residency in emergency and critical care at the University of Pennsylvania. She practices in the Twin Cities region of Minnesota.

Dr. Lee is the CEO and cofounder of VETgirl, a subscription-based podcast and webinar service offering RACE-approved online veterinary continuing education. She has served on the faculty at the University of Minnesota and as the head of an animal poison control center. She has appeared on radio and television to promote preventative medicine, animal health, and the

Presenter Biography

overall well-being of pets. She lectures throughout the world on emergency critical care and toxicology and has been named Speaker of the Year by the North American Veterinary Community three times.

Dr. Lee is the coeditor of *Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Toxicology* as well as *Emergency Medicine*, an issue of the journal *Veterinary Clinics of North America: Small Animal Practice*. She is also the author of *It's a Dog's Life ... but It's Your Carpet* and *It's a Cat's World ... You Just Live in It*.

Table of Contents

Introduction

Presenter Biography	i
Course Scope	1

Guides

1	Picking a Pet for a Lifetime	3
2	Introducing New Pets to Your Family	12
3	Essentials of Raising a Pet	23
4	Finding the Right Vet for Your Pet	30
5	Vaccinating Pets against Disease	37
6	Protecting Pets from Parasites	47
7	Spaying and Neutering Pets	56
8	Caring for Cats	65
9	Litter Boxes and Cat Hygiene	74
10	How to Train Your Dog	81
11	Diet and Nutrition for Dogs and Cats	89
12	Tips for Better Pet Budgeting	97
13	Common Maladies in Cats and Dogs	104
14	Diabetes and Endocrine Disorders	115
15	Preventative Care for Your Pet	126
16	The Veterinary Emergency Room	133
17	Most Common Pet Emergencies	140

Table of Contents

18	Treating Poisoned Pets	152
19	Most Common Pet Toxins	161
20	Cancer in Cats and Dogs	172
21	How to Care for an Aging Pet	181
22	Common Zoonotic Diseases	189
23	Pet Euthanasia and End-of-Life Care	200
24	So You Want to Be a Vet	208

Supplementary Material

Quiz	215
Bibliography	220
Image Credits	221

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Veterinary School for Everyone

Caring for Cats and Dogs

Dogs and cats have become part of our clan—and, for many of us, an essential part of our lives! But how many pet owners are confident that they are providing the best-possible care for their four-legged family members? This course explores everything you need to know at all stages of pet ownership, from puppy- or kittenhood through late life.

The first segment of the course covers the basics of pet care, starting right at the beginning with how to choose a pet that's perfect for your family, whether that means going to a shelter or finding a good breeder. You'll learn about introducing your pet to their new environment, as well as to other two-legged and four-legged family members. You'll be given tips on how to select the right veterinarian to keep your new family member healthy, and you'll learn the basics of pet care, from essential training and exercise to pet etiquette.

The second segment of the course addresses the basics of preventative medical care for your pet. Which vaccines are necessary, and what exactly do they protect against? What's the best diet for your pet's health? Do you really have to worry about worms, and how do you protect your pet against parasites like ticks and fleas? You'll also get the scoop on the big dirty topics, including where your cat should be pooping, how many litter boxes you really need, and why desexing is so important.

**About 62% of
American households
include at least one pet.**

Course Scope

The third segment of the course takes a deep dive into the most common maladies, complications, and diseases veterinarians see in dogs and cats. You'll learn about everything from everyday afflictions—such as allergies, skin and ear infections, and dental problems—to common systemic issues, such as endocrine and urinary disorders. You'll also discover the top problems that send pets to the veterinary emergency room, as well as the most common types of pet poisonings and how you can prevent them.

The last segment of the course covers some of the tougher topics in veterinary medicine, ranging from the types of cancer or geriatric problems that pets develop as they age to the zoonotic diseases that can threaten both you and your pet. The course will also address the hardest decisions you may have to make about end-of-life care for your furry family member.

By the time you complete this course, you'll be equipped to help your pet live a long, happy, and healthy life while being the best-possible advocate for your pet.

Lesson 1

Picking a Pet for a Lifetime

Pet ownership comes with the rewards of companionship, loyalty, and pure joy. It also has secondary health benefits, such as reducing cardiac disease, forcing you to exercise more, lowering your blood pressure, and making you feel less lonely.



Dog or Cat?

Which type of pet should you choose: a dog or a cat? Regardless of which species you pick, you should aim to have a pet for their lifetime. For a cat, you have to be prepared to commit to 15 to 20 years, and for a dog, about 7 to 15 years, depending on their size.

Cats are perfect for smaller living situations like apartments and make wonderful companions. You always come home to someone happy to see you—though they can show their happiness in different ways. And cats require less maintenance than dogs. You don't even really need to train them! They already know how to use a litter box (for the most part) and require minimal care: food, fresh water, monthly manicures and grooming, and some cuddle time. If you travel a lot, you can leave them alone for a night or two without having to worry too much.

But there are a few cons: Cats are nocturnal and like to run circles around your head at 2 am. And they can scratch furniture. And they occasionally vomit on your carpet at 3 am. But nothing warms the heart quite like their purring. In fact, medical studies have shown that feline family members help reduce their humans' blood pressure.

Dogs are much more high maintenance and require more commitment, both time-wise and financially. Dogs are amazing companions, but they need to go out at least three times a day. They need someone to pick up after them. They need exercise in the form of walks or playtime—at least 30 minutes of exercise a day per dog. They also need training. You can't leave them for more than 8 to 10 hours a day without having to let them out. If you work 12- to 14-hour days and can't afford a dog walker, it might not be the best time to get a dog. And if you travel frequently for your job, you'll have to find a dog sitter, which can add up (and isn't very fair to your dog). Plus, depending on what breed or type of hair coat your dog has, you'll have to pay for grooming appointments, which can range from \$50 to \$100,

Cats are the best starter pet—they get you prepared for pet ownership and adulting.

every 6 to 8 weeks. Dogs also need monthly flea and tick medication and heartworm medication. They're also slightly more accident-prone than cats. But they pay it back tenfold in love.

Purebred or Mixed Breed?

Let's say you're ready to commit. Should you get a purebred or a mixed breed? Should you purchase a pet from a breeder or adopt from a rescue or shelter? If you decide to get a purebred, what do you need to consider when picking a breed?

Adoption and pet rescue save pets' lives. These acts help reduce pet overpopulation at shelters, as tens of thousands of "unwanted" animals are euthanized each year. Mutts have hybrid vigor and a lower risk for inherited diseases like hip dysplasia, cancer, and heart disease than purebreds. If you're not set on any breed, color, personality type, or size, a mixed breed may be the way to go. Breed-specific rescue groups exist, so if you want

to get a purebred and still adopt, there's always that option. Purebred dogs are sometimes surrendered to rescue groups due to behavioral or medical problems, or even owner-related issues.

Mutts are generally healthier than purebreds.

Nothing is wrong with wanting to purchase a purebred if that's what your heart is set on. But before you buy, research the breed. Ask

someone who has that breed. Ask your vet. Make sure to go to a reputable source for more information, such as the American Kennel Club and the Cat Fanciers' Association, which have great information on what breed is best for different lifestyles. Certain breeds do better in particular situations or environments. You'll want to consider whether you have a quiet versus chaotic lifestyle, travel a lot, or have young children or other pets in the house.

Dog and Cat Breeds

According to the American Kennel Club, here's a list of the top 10 most popular dog breeds in 2020 in the United States:

- | | |
|-----------------------------|-------------------------------------|
| 1 Labrador retriever | 6 poodle |
| 2 German shepherd | 7 beagle |
| 3 golden retriever | 8 Rottweiler |
| 4 French bulldog | 9 German shorthaired pointer |
| 5 bulldog | 10 Pembroke Welsh corgi |

And here's a list of the top 10 most popular cat breeds worldwide:*

- | | |
|----------------------------|-----------------------------|
| 1 ragdoll | 6 Devon rex |
| 2 exotic | 7 American shorthair |
| 3 British shorthair | 8 Abyssinian |
| 4 Persian | 9 Sphynx |
| 5 Maine coon | 10 Scottish fold |

Before deciding on a certain breed, do your homework and make sure to be an educated consumer.

There are several categories of breeds of dogs to pick from: sporting, working, herding, hound, terrier, toy, and nonsporting.

* This is based on registered cats and doesn't include the common domestic shorthair cat, which is likely the most common cat in the US.

- 🐾 The **sporting** group includes the most popular dogs: the retrievers, pointers, setters, and spaniels. These dogs are very well rounded, but they are hyperactive until about seven to eight years of age. That said, they are loveable, curious, and generally good family dogs. These breeds love to run, fetch, play, and hunt. They match well with runners and active, outdoorsy humans.
- 🐾 The **working** group is made up of police dogs, guard dogs, and sled dogs.* Working dogs include the Rottweiler, Doberman pinscher, Saint Bernard, mastiff, Siberian Husky, and Great Dane. These dogs are big, strong, and possibly aggressive, so they're generally not recommended for first-time dog owners or for those with small children or cats in the household. Working dogs need training.
- 🐾 The **herding** group** is extremely intelligent and great at agility, herding, and obedience trials. They include breeds such as the border collie, Australian shepherd, Belgian sheepdog, Briard, and corgi. These dogs need mental stimulation; they need to be exercised for 30 minutes a day. This breed might try to naturally herd children (while maybe nipping at their ankles).
- 🐾 The **hound** breeds vary from the short-legged dachshund, to the giant Irish wolfhound, to the beagle. This category of dogs used to be used for hunting and typically has a very strong scenting ability. That said, hound dogs are pretty low maintenance, affectionate, and very laid back.
- 🐾 The **terrier** group is made up of generally smaller breeds that were used to dig, hunt, and kill vermin. They include the Parson Russell terrier, wire fox terrier, West Highland white terrier, Norfolk terrier, cairn terrier, and American Staffordshire terrier. This group of dogs is small, feisty, a bit argumentative, and scrappy. Terriers don't act their size and often have a low tolerance for other animals, dogs, or kids. Cats hate this category.

* Some of these working dogs have been bred to be more like couch potatoes over time.

** They formerly were in the working group of dogs but have been separated because of their innate herding instinct.

- 🐾 The **toy** group includes breeds like the Chihuahua, Pomeranian, Yorkshire terrier, and pug. These dogs fit in backpacks or large purses and are perfect for high-rise apartments, as they can be trained to relieve themselves on potty pads. However, the toy breed isn't always kid friendly, so be aware. Cats love these dogs due to their small size.
- 🐾 The **nonsporting** group of dogs is a random assortment of dogs that are more unique and include the intelligent standard poodle, the more aloof Shiba Inu, the Chow Chow, and the Dalmatian. They are generally very personable and can be highly intelligent. Hair coats vary tremendously within this category.

Finding the Right Breeder

Once you've narrowed down your search to a certain breed, you want to find a reputable, responsible breeder. Ask your veterinarian, friends, and family. Do research and make sure to ask the right questions. A responsible breeder wants to find a good home for their animals, and they spend a lot of time caring for their litters. This includes making sure they are healthy, socialized, dewormed, and vaccinated. A good breeder will make sure to produce healthy animals that look like what the breed is supposed to while having the breed temperament, too. They'll try to purposely avoid passing on known genetic defects.

The biggest red flag is if a breeder is selling puppies before eight weeks of age. Puppies and kittens need to be with their mother and littermates this long to ensure appropriate behavioral development and socialization. If you find a breeder trying to get rid of their litter at five to six weeks of age, or dirty cages of puppies stacked on top of each other, run! And consider calling your local SPCA while you're at it. Getting a puppy that's barely weaned and who hasn't had time to socialize can have unwanted effects and lead to behavioral problems down the line. As early as three weeks of age, puppies start to learn critical socialization from their mother and littermates, such as appropriate play, bite inhibition, and impulse control.

When looking for a breeder, make sure to have a list of questions ready to ask them. Find out if any of the parents or any related siblings were diagnosed with inherited or congenital problems. Were the parents ever treated for any previous medical problems, such as allergies, hip dysplasia, chronic ear infections, or cancer? While allergies don't seem like a big deal, they can cost you thousands in long-term treatment and likely are inherited. A responsible breeder will provide all the information you ask for.

Make sure to ask the breeder if the parents were vaccinated and well cared for by a veterinarian. Are they on heartworm medication or flea and tick preventative? If the breeder says they don't need it, run! Are the littermates all healthy? A responsible breeder would have dewormed and vaccinated the litter for their first vaccine.

Next, visit the breeder and check out the facilities. As a general rule, never leave with a puppy or kitten that day! You need time to think through this big decision. But tour through the kennel to see if it's a good facility. Is the environment sanitary? Are the cage conditions clean, in good lighting, and well kept? Don't buy just to "save" the puppy—you're profiting the breeder!

Finally, as crass as this may sound, be aware that there are lemon laws for pets. A responsible breeder should be willing (or will be legally required) to guarantee the health of the pet for reimbursement or exchange if health problems arise. Some will refund the full price of purchase within a certain time frame, usually 10 to 14 days, or reimburse you for the veterinary costs up to the purchase price. But the problem is that a week later, you've already fallen in love with your pet! That's why it's so important that you screen as much as you can earlier rather than later. That's also why you need a veterinarian visit within the first three to five days of acquiring your new pet—to make sure they are healthy!

Adopting Older Pets

Many animal rescues and shelters have mostly adult pets up for adoption; after all, everyone wants to adopt a cute, adorable puppy or kitten. If you aren't set on a certain age, weigh your options! If you adopt an adult cat, you skip the crazy kitten stage where they climb up your drapes, attack your

ankles, and are active nonstop. If you love your sleep and want to avoid having to wake up every three hours to potty train a puppy, consider getting an older dog.

That said, geriatric pets typically have more medical problems. They may have a chronic illness or arthritis. They may need more costly care up front and long-term medication. And you'll have them for a shorter period of time.

With that in mind, you're providing a loving home for their remaining days, which is so kind. Adult pets, especially geriatric pets, are harder to find homes for.

How Many Pets Is Too Many?

How many pets should you have at a time? The time commitment, long-term costs, and responsibilities can be daunting for just one pet. Start with one so that you have time to bond. You can gradually add in another pet as you see fit, as long as it's a good fit. You can mix in another species (a dog and a cat!).

Having at least two cats but fewer than five is generally recommended. If you travel a lot, two cats will keep each other company. They can sleep together, snuggle together, and play together. According to veterinary behaviorists, having more than five cats is associated with more behavioral problems.

Generally, more than three dogs per household is not recommended. With more than three, it's hard to provide adequate TLC and attention to each dog. You also want to check with your township to see if it has a maximum allowance on the number of pets in one household.

There are certain benefits of having more than one dog. First, you're providing your dog with a buddy; that can help keep your dogs entertained and bonded. It may also make it easier to train your dogs, since they can potentially learn from their housemates. And if one dog passes away, you'll have the comfort of another dog, or a few other dogs, to ease your pain.

The cons of having more than one dog are that your dogs are less bonded to you, and they usually are slightly less obedient. Also, having multiple pets can get expensive.

What Should You Name Your Pet?

Many people name their pets after a food or beverage, something in nature, a famous or historical person, or a favorite character from a TV show or book. Here are the top 10 names for cats and dogs, according to Banfield Pet Hospital:

Top 10 Cat Names

- | | |
|-----------------|------------------|
| 1 Luna | 6 Leo |
| 2 Bella | 7 Charlie |
| 3 Kitty | 8 Lucy |
| 4 Oliver | 9 Simba |
| 5 Shadow | 10 Milo |

Top 10 Dog Names

- | | |
|------------------|-----------------|
| 1 Bella | 6 Buddy |
| 2 Max | 7 Coco |
| 3 Daisy | 8 Bailey |
| 4 Charlie | 9 Luna |
| 5 Lucy | 10 Rocky |

Wait a few days to get to know your new pet before picking a name, as their personality may help guide you.

Choose a name that is short. Names that contain two syllables and end with a vowel (e.g., Echo or Milo) are easier for your pet to recognize.

Pick a name you won't be embarrassed by when your veterinarian hollers it out in the waiting room, like Buttkiss or a derogatory name.

Lesson 2

Introducing New Pets to Your Family

When it comes to bringing home a new pet and introducing it to your household, things will go much more smoothly if you plan in advance. Managing first impressions and setting up everyone involved for ongoing success—as well as recognizing when things are starting to go wrong and making corrections—are the keys to successfully adding a new pet to the family.



Introducing Dogs to Each Other

If you already have a dog at home and are bringing home a new puppy or dog, first introductions and the early parts of their relationship are important.

Dogs convey information to us and to each other with body language. Some body language signs are obvious:

- 🐾 Standing alert and holding the tail up high and stiff means that your dog is highly stimulated and is going to react soon. This could be good (like “I want to play now!”) or bad (like “I want to check things out but need a break.”).
- 🐾 If the hair on the back of your dog’s neck and shoulders is standing straight up while your dog growls or snaps at the other dog, that’s a clear sign that your dog needs some space.* Don’t scold your dog for growling or snapping at a puppy or dog, but just to be safe, separate them and give everyone a chance to calm down before trying again.

There are more subtle body language signs that dogs express that pet owners can miss:

- 🐾 You’re probably familiar with a dog tucking their tail under the body between the legs, but your dog also communicates that they’re not happy by turning to the side and sniffing or walking away repeatedly, leaning or looking away from the new dog, or arching their head up to avoid the new dog getting near their face.
- 🐾 Staring without breaking eye contact for more than a few seconds, freezing up, or becoming stiff without play-bowing** are other signs that your dog isn’t happy.

* Just because your dog is growling or snapping, that doesn’t always mean this relationship won’t work; it just means that your dog needs space.

** This looks like the downward dog yoga pose.

- 🐾 If your dog is licking their lips when they aren't hungry, shaking off when they aren't wet, or even yawning when they aren't tired, these are stress-releasing or calming signals, and they mean that your dog has ambivalent feelings. They're asking for a pause or a little more time or space.



Make sure to set the right environment for the introduction. As long as your dog is comfortable leaving your home, choose a neutral location with plenty of space for the dogs to meet.* Choose a large, safely enclosed area—preferably outdoors—with no other pets or strangers. Don't do this at a dog park, as there are too many factors that you can't control. If you don't have a neutral location, choose your yard instead of making inside introductions.

Next, make sure all the dogs have a secure harness and leash on. There should also be at least two adults, one to manage each dog. Before you let the dogs meet each other, allow the new dog to spread their scent around the introduction area; then, bring in your current dog to investigate and get familiar with the area. Once the investigative sniffing has been done, you can

* Some dogs are territorial about their homes and yards and may see the new puppy or dog as an intruder if they just show up in the house suddenly.

reintroduce the new dog to the area. Let the puppy or new dog approach your dog, but make sure they can both get away from one another if they want to or need to.

While you may be tense during this introduction, try to keep the leash loose whenever possible, as tight leashes may cause dogs to feel more nervous. Keep interactions brief at first, with only a few seconds per interaction. Gradually lengthen the greeting period until your dog shows signs of wanting to do typical dog greetings—groin sniffing, butt sniffing, nose-to-nose greeting, and even play-bowing. If the dogs want to initiate play, great! But if your dog never shows an interest in wanting to see the new dog, that's OK, too! Try several of these brief greetings to get them used to each other.

During this cursory introduction, bring tasty treats, such as small pieces of freeze-dried liver or microwaved hot dog. Providing treats whenever either dog is showing calm behavior is a good way to teach your dogs that great things happen when they behave like this. Keep in mind that some dogs can be food aggressive, so be ready to prevent your dogs from competing over food!

After a few of these short dog greetings, consider leashing both dogs and going for a parallel walk. This means walking them together, so your dogs are spending time with each other but without the requirement for direct social interaction. Go slow at first. You can gradually work up to allowing your dogs to be off leash together in the neutral area if they seem relaxed and excited together, or you can do more parallel leash walks until the dogs become more adjusted. If, after a few days of parallel walks, your existing dog still shows no interest in the new dog or your dog is repeatedly growling, can't relax, or shows other defensive or aggressive

Don't expect your dog to play with a new dog right away—or perhaps even ever! Young dogs and puppy-dog combinations are more likely to want to play, but play between adult dogs who don't know one another doesn't always happen, so don't be disappointed.

behavior, consider having a professional behavioral consultant help by coming to assess your current dog and new dog or puppy and give some direct advice for next steps under professional supervision.

Remember that you shouldn't just adopt or purchase another dog as a playmate for your existing dog, as dogs are pets for people, not pets for other dogs.

Introducing Dogs and Cats

Dogs and cats can live together peacefully, depending on the individual dog and cat. Just keep in mind that you'll have to monitor and supervise them when they are together.

How do you successfully and safely introduce a new dog to the resident cat? In general, it should be done gradually over the course of a few days or weeks, depending on the dog and cat. Keep in mind that cats don't like sudden change, so you always want to go slow with anything cat related.

When introducing a cat and dog together, you'll need

-  a safe and always-accessible place for your cat that's out of reach of the new dog;
-  a secure place for the litterbox and cat food that the dog can't access;
-  a secure harness and leash for the dog; and
-  treats for your dog and cat.

When introducing the two species, watch for body language stress signals. Things to watch for that mean your cat is stressed or uncomfortable include having dilated pupils, holding the tail close to the body, laying down and not moving, looking away and moving away, flattening the ears against the head or holding them to the side, holding the whiskers tight to the cheeks or all the way forward, and flicking or swishing the tail. If your cat is running away, freezing, staring, hissing, or swatting, they're stressed and need a safe break away from the new dog.

For initial introductions, place your cat in a room your dog can't access. Walk your dog around the house on a leash and allow them to investigate and get familiar

with all things cat, including the cat's bed, fur, and water bowl. Then, put your dog away and let the cat come out and smell all things dog. Watch your cat's body language: If there are any signs of stress, that's a sign to stay at this step for a few days and keep your dog and cat apart.

Certain breeds of dogs—such as greyhounds, pit bulls, and husky-type dogs—are generally not cat friendly, so be extra careful when introducing them to a cat or small dog.

When your cat can smell where your dog has been without showing signs of stress, begin allowing your dog and cat to see one another from a distance, keeping them separated by a baby gate or keeping your dog on a leash. Anytime they glance at one another, give both of them a special treat. Anytime your dog shows calm behavior when the cat is

visible, provide a special treat. Gradually—over several days or even weeks—allow your new dog and cat to be closer and closer together. Don't forget to reward them with a treat when they are demonstrating good, calm behavior.

If the introduction is taking more than a few days, or if at any time you see overt aggression by either your dog or your cat, consider getting professional help from a qualified trainer or behaviorist.

Introducing Pets to Kids

Introducing a dog to a child brings a whole different level of complication. Supervision is key. It's important for kids to know how to act around dogs and cats—no pulling ears, fur, or tails; no stepping on, jumping on, or hugging the animal; no picking them up around their middle; and no close face-to-face contact. Teach children to never touch a dog that's sleeping or has food or a toy. This might sound strict, but you want to minimize dog bites to children, as most dog bites aren't from strangers' dogs, but from family pets!

It's normal for kids who are less than 5 years of age to struggle with being appropriate around pets, so they'll need extra help. Parents have to make sure to model appropriate touching—such as gentle, slow stroking—how to play with pet toys, and how to give treats gently to pets. Be a good example and your kids will soon figure it out. Also, keep in mind that young children and pets should never be left alone together.

To set yourself up for success, start by choosing a dog that's likely to enjoy the company of kids. Talk to your veterinarian about this or ask breeders or dog trainers. Some dogs, such as golden retrievers and Labrador retrievers, are generally very kid friendly. Terriers and toy dog breeds generally don't like children. This varies greatly by breed and by individual dog. When in doubt, puppies often adapt better to homes with children than adult dogs do.

Make sure that the introduction of your kids and pets is a good experience for all. First, prepare your pet if you are bringing home a baby. Let your dog sniff all the new toys, diapers, lotions, and blankets. Consider bringing home some baby smells, such as the baby's blanket at the hospital, to acclimate your dog before you bring home the baby. Play some sounds of babies crying so that your dog gets accustomed to the noise. Once you bring the newborn home, supervise pets at all times; a young child should never be left alone with any pet.

For first introductions, there should be at least two adults: one to look after your dog and one to monitor the child. Make sure your puppy or dog is wearing a secure harness and leash and that you are monitoring your dog's body language to look for signs of stress. Start with a barrier—such as a baby gate—that allows the dog to see the baby but safely keeps them apart. Be patient and allow introductions to go at your dog's pace. If your dog is avoiding the child, it's a sign that your dog is feeling uncomfortable. Anytime your dog looks at, sniffs, shows interest in, or approaches your child, have a tasty training treat ready for positive association. Most importantly, continue to monitor your dog's body language for signs of stress, and give them a break whenever you notice this.

While this may sound tedious, eventually your dog will visit your child. It takes time and patience, but a slow introduction with positive reinforcement is important to help establish a safe, strong relationship.

The next step is to let your dog sniff or greet your child for a few seconds, and then scatter a few treats on the ground nearby as a reward and to give your dog a short break from the greeting. Once your pup chooses to greet your kid several times, start walking together so that your dog can see that kids move, and provide a treat every few steps as you walk your dog on the leash near your constantly moving child. Gradually allow more and more freedom for your dog until they know it is safe and fun to calmly approach kids.

Consider keeping rambunctious dogs on a harness and loose leash when they are interacting with children at home until you feel confident that your dog can manage their behavior and is both friendly and calm enough to be safe.

Resources that can help with initial dog-kid introductions include the book *Tails Are Not for Pulling!* and resources at www.familypaws.com.

If your dog is barking, lunging, growling, hunched, or crouching, or if they never choose to approach your child, seek professional help immediately to assist in the introduction. It's not worth risking someone getting injured.

Introducing cats and kids is pretty similar to introducing dogs and kids, but it's much easier. Children and cats are both naturally curious, but they both need time and space to learn to live together. Most importantly, provide a safe place for the cat to go where the kids can't reach or follow. This area should be available all the time so that the cat can retreat as needed whenever they feel uncomfortable or overwhelmed. Allow your cat to progress at their own pace, and show your cat that wonderful things can come from kids, like treats, treats, and more treats! Always supervise your children near the cat, using gentle hands when petting, and make sure they know when to leave your cat alone, such as when it is sleeping or eating.

Introducing Cats to Each Other

Adding a new cat to a home with an existing cat or multiple cats can be challenging. Forcing cats who dislike one another to live together can lead to serious issues, such as fighting, inappropriate urination or defecation in the house, destructive behavior, or even redirected aggression or injury to you when you're trying to break up a cat fight. But with careful introductions and caution, you can make it work with the right cats! If you're going to add a new cat to your household, kittens are often better tolerated than adult cats. That said, adult or senior cats often have a harder time getting adopted than kittens, and you can have success introducing adult cats to each other.

How do you introduce a new cat into a resident cat's home? Rotating space is a good way to start. You'll need

-  two home-base areas that include resting, feeding, water, and litter stations;
-  one human adult per cat during interaction periods whenever possible; and
-  tasty treats (such as tuna or bonito flakes) or special toys your cats can't resist.

Start by setting up each of your cats in their own space; this should be behind closed doors where the other cat can't go. Once or twice a day, rotate home-base stations for an hour or two. This allows the cats to smell, eat, eliminate, and sleep where the other cat was. It's normal for the cats to appear hesitant at first when they encounter the scent of another cat. Watch for them to rub their cheeks on things: They're trying to leave behind important pheromone signals and begin forming a community scent.* Monitor the rotation period each day and you should start to notice your cats becoming progressively more and more comfortable.

If rotating spaces is too stressful or impractical, you can try rotating bedding between the cats or introducing a towel with the other cat's scent on it.

* A community scent is one way cats form and identify social groupings.

Feliway Multicat, which is a diffuser you can use throughout the house that mimics natural pheromones, has been clinically shown to decrease stress during new cat introductions and is a benign way of helping during this stressful time.

Once your cats are comfortable rotating spaces, try to allow them to meet through a cracked door or screen. You can do this by letting your resident cat out of their space so they can sniff under the bottom of the door. You can also use a security guard on the door that allows the door to open but isn't wide enough for your cat to fit through. Each time you see your cats investigating the other side of the door, provide a tasty treat. As long as your cats appear relaxed with this setup, gradually open the door more.

This introduction can take a few days to weeks. If cats are introduced suddenly and end up fighting, it is more challenging to get them to give the other cat a second chance. First impressions are key for cats, so go slowly.

What to Do if It's Not Working Out

If you find your new pet fighting with existing pets, showing aggression toward family members, acting fearful or hiding for more than a few weeks, or showing signs of high stress levels, get a professional consultant or veterinary behavior team involved as soon as possible. Often with professional guidance, the integration can get back on track, or a professional can help the family know that this match is not the right one and the pet would be better suited to a different home.

If you are taking on the responsibility of a pet, you have to take great care in deciding how to ethically and responsibly find a new home for that pet if it's not working out. Depending on where your pet came from, they may have come with a built-in safety net or return policy. Responsible breeders will always accept dogs or cats to be returned to them at any time during the

pet's life. Before you buy, ask breeders what happens if the pet needs to be returned and how to go about doing this. If the breeder says you're on your own, think twice about working with them.

Shelters and rescues also often provide a lifelong safety net for pets and even insist that if the pet doesn't work out in the current home, it is to be returned to the shelter. Always ask about this in advance. These are usually the best options for giving the pet a good opportunity to find the right match next time. A shelter does not mean end of life for most animals, and you can find out what services are available by contacting local rescues and shelters and by talking with them about the needs of your pet and your family.

Lesson 3

Essentials of Raising a Pet

Animal husbandry refers to the general care of animals. At the bare minimum, animals need a safe shelter, an appropriate diet, clean water, and appropriate grooming. But beyond these basics, there are five key areas of pet care that make a world of difference to your furry family members: training, exercise, environmental enrichment, routine veterinary care, and pet etiquette.



Training

Appropriately training your dog makes pet ownership easier, and it makes both you and your dog happier. If you already have a dog and haven't trained them, it's not too late—it turns out that you *can* teach an old dog new tricks!

Good training provides environmental and physical enrichment, stimulates your dog's mind, and makes your dog a well-mannered part of your family and your community.

When it comes to training dogs or cats, you should never use physical or verbal punishment, such as swatting, spanking, or yelling. Doing this can result in behavioral problems, will stress out your pet, and can cause them to run away from you and hide. Instead, use a reward-based training method so that your pet makes an association with something positive instead. Positive reinforcement works even for training zoo animals!

In general, two levels of dog training are recommended: a puppy course to help socialize your dog and work on initial commands and an intermediate course to help bring all the training home. You don't need to get fancy with teaching your dog to shake paws or roll over; the five and only commands you really need to teach your dog are sit, stay, come, heel, and down.



Another part of dog training is crate training your dog. Crate training can sometimes get a bad rap, but it shouldn't be viewed as punishment; instead, if done properly, it should create a den-like environment for your dog to rest safely in.

Exercise

Exercise is an important part of both dog and cat ownership. It provides physical stimulation and environmental enrichment, helps minimize medical problems related to obesity, and allows you to bond better with your pet.

For dogs, there are several ways to exercise—from walking or jogging, to throwing Frisbee, to obedience training, to more structured activities like sheep herding, dock diving, and flyball.

All dogs should be exercised for approximately 30 minutes a day, ideally in two 15-minute increments. Regardless of age, breed, or underlying health problems, this is generally a good rule to follow. That said, some dog breeds, typically the giant breeds, are more mellow and require less exercise. Small terriers and sporting breeds are often high-energy dogs that need more intensive activity, such as jogging, Frisbee throwing, or some serious fetch time in a fenced-in area. For these types of high-energy dogs, increase exercise, if possible, to one hour of walks a day.

When exercising dogs, follow these basic safety tips.

-  For puppies, don't engage in exercises that can impact their joints until the major growth plates in the bones are closed, which typically happens around the eight- to nine-month mark. Playtime, roughhousing, and walks around the neighborhood are fine for puppies, but don't take one-mile walks at two months of age, as it may add too much stress on your puppy's joints. By six months, your puppy can do much longer walks or even slow jogs, but no long runs with you yet.

-  The biggest danger and the most life-threatening problem when people exercise their dogs is heat stroke.* Certain breeds and types of dogs are more predisposed to heat exhaustion than others,** but in general, if the temperature is higher than 85° Fahrenheit (or 30° Celsius) outside, it's too hot to run or exercise vigorously with your dog. If you add the Fahrenheit temperature and humidity together and it's greater than 150, it may be too hot for your dog. Walks in the sun and shade are OK at this range, but vigorous exercise with your dog is a no-no.
-  When it's warm out, exercise during non-peak heat hours: very early in the morning or late in the evening. Most importantly, if you notice your dog is showing early signs of heat exhaustion, stop and take a break. Get your dog some water. If you're wondering if they're overheating, play it safe and walk them home.
-  When walking or exercising your dog, make sure they have frequent access to cool water and stop if it looks like they could use a rest. Also, don't let your dog carry a tennis ball or anything else in their mouth on hot days; this impedes their ability to pant well and blow off heat to cool down.
-  If you see any signs of heat exhaustion—including constant panting; lagging behind; concentrated, dark-yellow urine or discolored urine; vomiting; and collapse—cool your dog off immediately with a water source, such as a fountain or hose, and bring them to a veterinarian stat. The hotter the body temperature becomes, heat exhaustion can quickly progress to heat stroke, which is often deadly—even with aggressive therapy and 24-hour care—as it results in organ failure. Knowing the signs of heat stroke is critical to preventing it.

* Dogs maintain their body temperature primarily by panting and releasing a small amount of heat via their paw pads, so when it's hot and humid, they are prone to overheating, no matter how much water they have access to.

** This includes obese or overweight pets, dark-furred or thick-haired pets, and breeds with a flattened or smooshed nose.

Cats also need exercise. It's pretty much always safe to exercise your cat, since as a species they are pretty lazy and inactive, but when in doubt, start exercising them for just a few minutes a day. One way to start this is to set your online calendar for a 15-minute play session one day a week and actually play with your cat for that full time. Then, you can increase the frequency until you're playing with your cat daily. Next, splurge on cat toys, such as furry fake mice, feather-on-a-rope toys, laser pointers,* shiny soft balls, cat-sized hamster wheels, and catnip-filled plush toys. You can also use things around your house, such as an empty cardboard box, balled-up wads of paper, or an empty paper bag. Put cat toys in multiple areas of your house to remind you and trigger you to play with your cat. If you live in a multistory home, put your cat's litter box in the basement and their food on the second floor so that they're forced to climb the stairs for exercise.

Environmental Enrichment

According to The Ohio State University,** environmental or behavioral enrichment is the process of manipulating an animal's environment to increase physical activity and normal species-typical behavior that satisfies the animal's physical and psychological needs. Environmental enrichment falls into five general categories: food enrichment, sensory enrichment, novel objects, social enrichment, and positive training.

For dog owners, the general rule when it comes to environmental enrichment is that these are social creatures who need to feel safe and loved. Dogs have been bred to please us, regardless of what the breed is. They are also pack animals, and you are part of their pack. In addition to providing environmental enrichment through exercise, provide lots of physical touch, a comfortable bed, and puzzle toys like slow treat dispensers*** to keep them engaged.

* Keep lasers away from cats' eyes to avoid causing permanent damage to their retinas.

** Check out www.indoorpet.osu.edu for more information.

*** Studies have shown that these toys reduce barking while increasing exercise and learning.

For cat owners, the general rule when it comes to environmental enrichment is that this species does not like sudden change. Cats are very independent and like their alone time, so they'll play with you on their terms. If possible, provide a room or space that belongs just to your cat. It should ideally have a frequently cleaned litter box that is 1.5 times the length of your cat, with soft, non-fragranced, scoopable, fine-grained, dust-free litter. The space should have a cat bed, a window perch, some cat-friendly toys, a scratching or climbing post, and food and water.*

Routine Veterinary Care

For veterinary visits, the general rule is you need more frequent veterinary visits when your pet is young, as your puppy or kitten generally needs one vaccine every three to four weeks until they reach 14 to 16 weeks of age. Then, a physical examination is recommended every year for the rest of their life. You should increase this to once every six months once your dog or cat turns eight to 10 years of age, depending on the breed and size of your pet.

Routine veterinary visits are vital, since your veterinarian will be able to pick up on anything that may be worrisome during a physical examination if you go more frequently. Finding ailments early could add years to your pet's life. Routine veterinary care also includes periodic dental cleanings, unless you regularly brush your dog or cat's teeth.

Pet Etiquette

When it comes to pet etiquette and how to be a responsible dog or cat owner, there are a few key things you need to keep in mind.

-  **Pick up after your pet.** When people don't poop-scoop, not only does it give good dog owners a bad rap, but it's also a public health hazard. In addition to being dirty and stinky, pet feces can spread disease to other pets and humans. If you let your cat outside overnight,

* Make sure that the food and water sources aren't right next to the litter box. And make sure that none of these are near noisy appliances that can turn on randomly (like a water heater or furnace) since cats don't like sudden sounds.

make sure you have an outside litter box that you scoop every day; otherwise, you're letting your cat use a neighbor's garden or a kid's sandbox as a litter box.

-  **Abide by your city's laws.** Make sure your pet is licensed. This helps your city know who has pets, ensures that everyone's pets are up to date on rabies vaccinations, and tracks dangerous dogs (those that bite). If your city has a limitation on the number of pets you can own in one household, adhere to it.
-  **Walk your pet on a leash.** Even if you have an obedient dog, obey leash laws, which protect your dog from running off or attacking someone's cat or child and help make everyone nearby feel safe.
-  **Do not bring aggressive or dominant dogs to dog parks or doggy daycares.** Remember, dogs are pack animals, so at these community dog places, there's a natural canine hierarchy that takes place. If you have a toy-aggressive, food-aggressive, un-neutered, or dominant dog that may be prone to start fights, do not bring them to these places. Likewise, if you have a small, shy, submissive dog, they might get beaten up at dog parks and doggy daycares. While these places are great ways to provide environmental enrichment and exercise for your dog, make sure your dog is safe. Ideally, look for parks with separate areas for different-sized dogs and daycares with size-appropriate playtimes.

Lesson 4

Finding the Right Vet for Your Pet

You need a good veterinarian at your side for your pet's entire life. When you're looking for a good vet, find one who is compassionate, tells you what you need to know but can be empathetic at the same time, works with all your options—including financial ones—and can help guide you to make the best decision for your pet. Establishing a strong, long-term relationship with your veterinary team is a must, as they'll help you optimize your pet's health.



Finding the Right Vet

How do you start looking for a veterinarian that you trust and feel comfortable with?

First, ask around. Ask your friends, breeder, or acquaintances at the local dog park who their veterinarian is and why they like them. Does the vet have a good bedside manner? Is the front desk staff nice? Do they treat your pet with TLC? Are they convenient to work with? Do they have evening or weekend hours? Do the doctors and staff have strong communication skills and seem to love their job (and your pet)? Are their costs on par with other vets?

Next, check online reviews on places like Nextdoor, Google, Yelp, and Facebook neighborhood groups. Throw away the top 10% of the best reviews and the bottom 10% of the worst reviews, and then look at the average review. Online reviews should give you a good general vibe of the veterinary clinic.

After that, look at the veterinary clinic's website and social media platform. Is their website up to date, or does it look like it's from the 1990s? Do they offer an online pharmacy or portal to communicate with staff? Are the posted hours accurate and convenient for you? Take time to look at the biography of the veterinarians on the website. Don't necessarily get hung up on where a person went to school but

Many people will pick the cheapest veterinary clinic they can find. When it comes to routine care, such as getting vaccinations for your pet, that's probably OK. But generally, you often get what you pay for.

Veterinary clinics with all the bells and whistles—such as digital radiography, ultrasound, oxygen cages, fluid pumps, and monitoring devices—are more expensive because they have more overhead. But if your pet is really sick or about to be anesthetized for major surgery, that's where you'll want them.

check to see if they did an internship or any additional training (an extra year of training can offer the equivalent of almost five years of experience). Can you tell if they are members of a professional veterinary medical association or if they are active in their veterinary profession?

Just like you need to make sure you have a good human medical team, the same goes for your pet.

On the bio page, make sure that the vet seems “normal.” Do they list their hobbies? If there’s a profile picture of them hunting the last white rhino in the world, that’d be a red flag! Does their profile picture include a pet? Do they own any pets? (There are veterinarians who don’t have pets—and sometimes they have a good excuse, like their kid is deathly allergic—but ideally you want a professional who’s empathetic to what you’re going through.)

As for their social media sites, they don’t need to be hugely active, but make sure there aren’t any red flags, such as mean comments, negative reviews, or inappropriate or unprofessional photos.

Next, find out if you can schedule a hospital tour. Not all facilities offer this, but if you can visit, look around: Does the veterinary clinic appear to be clean, safe, and well lit? If it looks like someone’s basement or garage or smells like garbage, feces, vomit, or urine, think twice about it. Was the waiting room stressful? Did they have separate areas for dogs and cats? If there are pets in cages, are they clean or soiled? Is there a dedicated, sterile room for surgery? Don’t be lured by amenities like a coffee maker, a kid’s play area, free snacks, or internet access—it isn’t a car dealership! When in doubt, trust your gut instinct when you visit a clinic.

Next, ask the right questions.

-  How is payment handled? Are there payment plans, and do they accept pet insurance? Do they offer wellness plans?
-  How are prescriptions handled?
-  Does the clinic offer in-house blood work and x-rays?

- ❧ How are emergencies handled? Is the clinic open 24/7? (Most aren't and often will refer you to an emergency clinic nearby for after-hours care.)
- ❧ Are pets kept overnight? How are they monitored? Is there a staff member there? (For overnight care, it's recommended that you go to the local emergency clinic.)
- ❧ Can you communicate with the veterinarian by phone, text, or email?
- ❧ Can you easily get a copy of your pet's medical records or copies of their blood work and x-rays?
- ❧ Do they offer second opinions or referrals to a specialist if needed?
- ❧ Do they provide nonmedical services, such as grooming, nail clipping, boarding, and puppy training? If not, can they give you suggestions on where to go?

After you've zeroed in on a clinic, the next step is to try it out with an appointment. Did you feel comfortable with the doctor and staff? Did the doctor greet you and your pet warmly and have welcoming body language? Were they confident, without being arrogant, in their medical suggestions? Did they use medical jargon too much, or were they able to communicate well



with you? Did they take the time to answer your questions? Did they have a good bedside manner? Did they take the time to pet your dog or cat? Were they patient with your pet?

It might be hard to judge all of this in a 15- to 20-minute appointment, but just make sure to pay attention during your first visit.

Accreditations and Certifications

If you have one near you, consider going to a clinic that is accredited by the American Animal Hospital Association (AAHA). Only about 12% to 15% of North American hospitals hold the AAHA-accredited designation. AAHA-accredited practices must meet stringent standards encompassing all aspects of veterinary medicine, including emergency, radiology, anesthesia, leadership, pain management, patient care, surgery, safety, and even medical record keeping and continuing education. This accreditation can be given to general and specialty practices. And standards for accreditation are continuously updated to make sure practices are “at the forefront of the profession.”

In AAHA-accredited practices, the clinic and staff hold themselves to a higher standard of care. In general, most veterinarians need 20 hours of continuing medical education every year. With AAHA accreditation, each doctor needs 50 hours per year, which is important for staying updated on what’s new in veterinary medicine. Even veterinary technicians, front desk staff, and assistants have continuing education requirements for AAHA accreditation.

In addition, Fear Free is a special type of training vets and technicians can get for handling particularly reactive, fearful, or aggressive pets. If you have one of these types of pets, Fear Free might be a certification worth searching for in a veterinary clinic.

Keeping Yourself, Your Pet, and Your Vet Happy

Hopefully all of these tips will help you find a good veterinary team to be by your side. Once you do that, what else do you need to know? Here are a few more tips to keep yourself, your pet, and your vet a happy team.

 **Consistency is key.** Try to go to the same veterinarian each time (though seeing another doctor in the clinic is fine for vaccines or the occasional ear infection). If you're new to the clinic, there's no problem with trying out a few different vets. But the more consistency you have, the more rapport you'll establish with your veterinarian, and this helps with communication and building a long-term relationship. This is especially important if your dog or cat has a long-term disease, such as diabetes or cancer.

 **Health problems are less expensive to treat earlier than later.** The best thing you can do is schedule an appointment with your vet when symptoms arise, which means noticing things and addressing them sooner rather than later. With most diseases or poisonings or other problems, the sooner you recognize and address them, the less expensive it'll be at your vet and the better and safer it'll be for your pet.

 **Make the visit as safe and stress-free as possible for all involved.** If you know that your pet will be a behavioral nightmare at your upcoming appointment, talk to your veterinarian beforehand, because it might be best for your pet and for the staff at the vet's office

Veterinary medicine is consistently ranked as one of the worst professions for mental health. This is likely a result of huge emotional burdens at work, ranging from economic limitations of pet owners to having to euthanize animals that they could have healed. So the next time you see your vet or vet staff, remember that any expression of gratefulness is highly appreciated.

if you sedate your pet before you go.* To make the appointment itself flow well, don't be late. Most importantly, communicate openly with your vet. Bring up any medical issues early in the appointment versus at the end of the appointment. And to make the visit less stressful for you, write down your questions so that you remember to ask them. And use technology! If your vet is showing you how to give your pet an insulin injection, for example, ask them if you can record it on your smartphone so that you can view it later.

 **Do for your pet what your vet does for theirs.** Copy what your vet does. If you trust your vet with your furry family member, know that they will likely be treating your pet the way they treat their own. You should consider using the same flea and tick medications, vaccines, heartworm medications, pet food, and environmental enrichment for your pet that your vet does for their own pet (which again is why you want a vet who has pets).

When it comes to caring for your pet, you should bring them to the vet more frequently earlier in their life and later in their life, with annual visits in between. What a veterinarian can pick up on with a physical examination and a thorough history can help them identify scary problems like cancer or diabetes and start lifesaving treatment sooner.

And if you aren't totally happy with your vet, you can find another. It's OK to request that your pet's medical records be transferred elsewhere. No one is going to hold that against you, and if they do, it's a good sign to leave that relationship! If your pet has more complicated medical problems, or if there's a chronic problem that isn't getting better, you can self-refer to a veterinary specialist or ask your veterinarian who they'd recommend as a specialist.

* Your veterinarian could prescribe your pet trazodone or gabapentin (or both!); these are safe sedatives that will help take the edge off. If these meds are needed, it's usually recommended to give them the night before the exam and again two to three hours prior to your visit. If your vet has to sedate your pet during the appointment, they'll do so with injectable medications, but this will add an extra cost, plus a longer hospitalization and wait in the waiting room as well as a slightly higher risk to your pet.

Lesson 5

Vaccinating Pets against Disease

Vaccines are drugs that help stimulate the immune system to produce antibodies, which allow the body to respond more quickly when exposed to a disease, typically viruses, protecting you from the illness itself. Most veterinary vaccines are called killed or modified-live vaccines, which means that your pet can't actually get the disease from the vaccine. They are extensively tested for safety, and as a result, they are very unlikely to do any harm to your dog or cat.



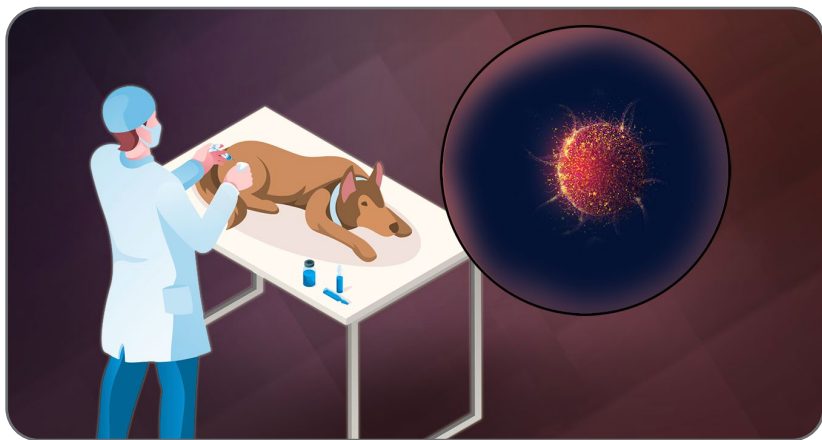
Vaccinating Your New Pet

If you have a two-legged kid, you probably remember visiting the pediatrician frequently when they were young. The same goes for your four-legged pet. Just like your kid, puppies and kittens need more vaccines in the beginning since they aren't yet protected against all the potentially life-threatening diseases that exist.

The first vaccine doesn't actually protect your pediatric pet yet, as that first vaccine only triggers the body's immune system to respond to a second and third and fourth vaccine. It's those booster shots that will protect your dog or cat from preventable diseases. That's why your pet needs to go through the entire vaccine series.

A big mistake pet owners make is assuming that their newly purchased puppy or kitten is up to date on their vaccinations. You can't assume this. Just to be safe, a wellness or healthy veterinary visit is always a must within a few days of getting your new pet. Bring all the breeder or shelter paperwork with you so your vet can figure out which vaccines your dog or cat needs and when they need them.

Let's say you just brought home an eight-week-old puppy or kitten. Ideally, the breeder or shelter should have started the first vaccine at five to six weeks of age.



Puppies and kittens are typically protected for the first month by their mother's early milk, called colostrum, depending on the health of the mother, how well vaccinated she was, and how much colostrum the babies got. These maternal antibodies will initially keep her young safe, but the antibodies start to decrease around the four- to five-week window, and that's when you need to start vaccines. If you give vaccines prior to four weeks, they won't cause harm, but they won't work either.

Then, the next booster shot should start two to four weeks after the first vaccine—so ideally at eight to nine weeks of age—with further boosters every three to four weeks, until your puppy or kitten reaches 14 to 16 weeks of age. At that last 14- to 16-week vaccine, you should also add on the rabies vaccine, which many states mandate should not be given earlier than three months of age. Rarely, if a dog is in a high-risk environment (e.g., a rescue dog traveling between states with other puppies in a stressful, crowded environment), there is some benefit from vaccinating up to 18 to 20 weeks of age.

If you adopted an adult dog or cat, you don't need the whole puppy or kitten series, because they have a stronger immune system. However, you still need a booster if that pet has never been vaccinated before. This means your pet gets a set of vaccines and a repeat two to four weeks later.

After that, it's recommended that you revaccinate in one year. State laws may affect this, so definitely do it within this time frame! After that, it's recommended that you vaccinate once a year for one to two more years and then, depending on the pet's lifestyle and situation, change the vaccine schedule to every one to three years thereafter.

Don't throw money out the window by going in for just the first set of shots but skipping the others. Your pet must have the follow-up boosters to mount an appropriate response—or it's all for nothing!

If you're worried about overvaccinating, you can always do blood titers to see if your pet's immune system is protected; these are relatively expensive and harder to interpret, but you can discuss this with your veterinarian as an alternative.

Core versus Non-Core Vaccines

The experts in both feline and canine medicine at the American Veterinary Medical Association, the American Animal Hospital Association, and the Compendium of Animal Rabies Prevention and Control have created vaccination guidelines that you and your veterinarian can find online. These veterinary experts define a vaccine as either core or non-core: Core means that you must have it, and non-core means that it's not recommended unless your dog or cat has increased exposure. Most core vaccines last one to three years, while non-core vaccines typically only last one year.

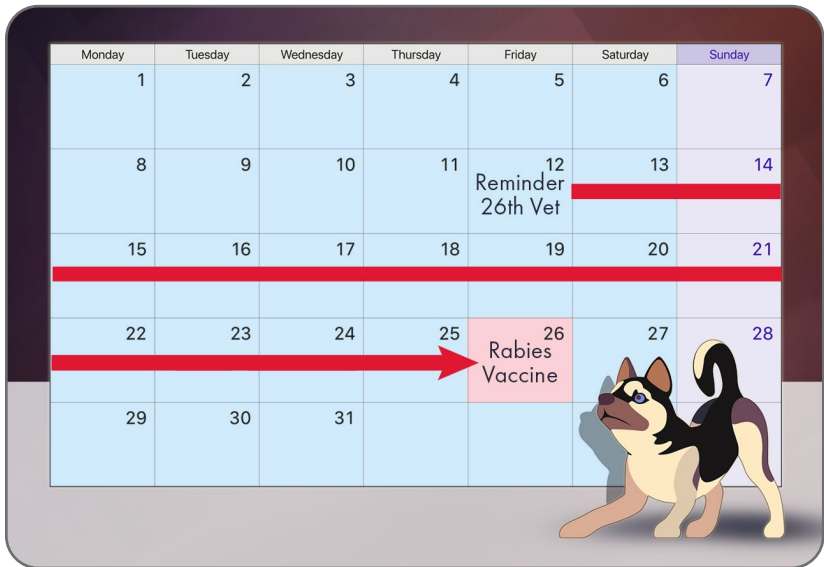
Core vaccines include the DHPP in dogs, the FVRCP in cats, and the rabies vaccine. Non-core vaccines in dogs include *Bordetella* (more commonly called kennel cough), leptospirosis, Lyme (caused by the organism *Borrelia*), dog flu (H3N8 and H3N2), coronavirus, and rattlesnake vaccines. In cats, non-core vaccines include feline leukemia virus (FeLV), feline immunodeficiency virus (FIV), *Chlamydia felis*, *Bordetella*, feline infectious peritonitis (FIP), and a ringworm vaccine.

The most important vaccine for pets is the rabies vaccine. Rabies is caused by the lyssavirus that affects the central nervous system. Depending on what stage of rabies is occurring, a variety of symptoms can be seen, such as abnormal pupil size, behavioral changes, walking drunk, aggression, exaggerated responses to stimulation, inability to swallow food or water, coma, and death. Rabies is zoonotic—which means that it can be transmitted and spread to humans. Rabies is almost 100% fatal, and it's 100% preventable by vaccination.

Most people in North America assume that rabies is rare, but worldwide one person dies of rabies every nine minutes, mostly in developing countries.

If you choose only one vaccine for your pet—dog or cat—rabies is it. And it must be kept up to date. Depending on what state you live in, if your pet is overdue on their rabies vaccine, even by just one day, and gets bitten by an unvaccinated animal, your pet may need to undergo strict quarantine or receive a rabies booster immediately. In severe, rare cases, your pet may be humanely euthanized. Check with your veterinarian, your state veterinarian, or www.rabiesaware.org for more information on your specific state.

To make sure that your pet is never overdue for their rabies vaccine, add a reminder to your online calendar at least a few weeks in advance of when your pet is due for this important vaccine.



Vaccines for Dogs

For dogs, the other core vaccine that's a must goes by the acronym DHPP, where each letter stands for a disease the vaccine protects your dog against.

 **Distemper** is a rare but deadly virus that causes respiratory signs (such as coughing and discharge from the eyes and nose), gastrointestinal signs (such as vomiting and diarrhea), neurological signs (such as seizures and paralysis), and skin lesions. This one has no cure, and the prognosis is very poor if your dog gets this.

 **Hepatitis** is a virus that causes liver and kidney failure, gastrointestinal signs, fever, clotting problems, and corneal opacity if your dog survives it. The mortality rate is about 10% to 30%, and it's higher in very young puppies.

 **Parainfluenza** is a virus that can cause respiratory signs, such as fever, coughing, and (rarely) pneumonia.

 **Parvovirus** is a very contagious disease that causes severe dehydration, vomiting, bloody diarrhea, and hypoglycemia. The mortality rate is about 25% in young puppies.

Here's a list of the non-core vaccines for dogs and the diseases they protect against:

 ***Bordetella bronchiseptica***, often called kennel cough, is a highly contagious bacterium that causes cough, tracheal irritation, and (rarely) pneumonia in puppies and social dogs who go to kennels, dog parks, and doggy daycares. There are several types of this vaccine. The one that goes in the nose—even though dogs don't like it very much—is recommended, as it provides local immunity in the nose quickly and doesn't require a booster.

While canine distemper and parvovirus are almost 99% preventable with adequate vaccination, there are still outbreaks due to inadequate awareness and lack of vaccinations.

-  **Dog flu**, a virus caused by H3N2 and H3N8, causes respiratory signs (such as coughing and difficulty breathing) and flu-like symptoms. Like the kennel cough vaccine, this is one that's recommended for social dogs and is a must for any dog that is boarding.*
-  **Leptospira** is a bacterium that causes potentially irreversible kidney failure and liver injury and is potentially contagious to you. The mortality rate is about 20% to 25% in dogs. Depending on what part of the world you live in, this vaccine series is a must, especially for small dogs living in urban settings and dogs who swim, hunt, or play outside.
-  **Lyme disease**, caused by the bacterium *Borrelia burgdorferi*, can sometimes result in pain, joint swelling, and fever. Upward of 85% of dogs that are exposed to ticks carrying the bacterium don't develop symptoms or problems from it. Lyme disease is generally mild in dogs, but in rare cases, it can be deadly. Occasionally, Lyme results in severe protein-losing nephropathy (PLN), which can be slowly debilitating and results in terrible kidney injury.** Talk to your vet about using a strong, fast flea and tick medication, flea combing, and Lyme vaccination, depending on where you live.
-  **Coronavirus**—a virus that is totally different from the one that causes COVID-19 in people—causes gastrointestinal signs in dogs but is generally pretty mild.

Vaccines for Cats

As stated previously, rabies should be considered a core vaccine. Some states and advisory panels list the rabies vaccine as non-core in cats, but if your cat escapes your house and bites someone, it could be euthanized due to lack of vaccination. So it's not worth the risk.

* Be aware that you have to vaccinate at least one month in advance of boarding for your dog to be protected.

** This is reported most often in golden retrievers and Labrador retrievers, so if you have these two breeds, a Lyme vaccine is a must, depending on where you live.

Other than rabies, the second core vaccination for your cat is the FVRCP vaccine.

-  **Feline viral rhinotracheitis** (FVR), often called feline herpesvirus 1 (FHV-1), causes severe upper respiratory infections (URIs), with sneezing, conjunctivitis, inflammation of the upper airway, ulcers in the mouth, and (rarely) pneumonia.
-  **Calicivirus** also causes severe URIs, oral ulceration, severe chronic gingivitis/stomatitis—and (rarely) jaundice, severe skin lesions, and death.
-  **Panleukopenia** is a highly contagious virus that is similar to parvovirus in puppies and causes severe gastrointestinal signs (such as vomiting and diarrhea), fever, a low white blood cell count, and sepsis. It is often fatal without treatment.

The non-core feline vaccines include the following:

-  **Bordetella bronchiseptica** (kennel cough) can cause URI signs in this species, too, as it does in dogs. Typically, this is recommended only for shelters and catteries,* where the risk is greater. Otherwise, this is one you can skip, unless your cat has a lot of exposure to other cats.
-  **Feline leukemia virus** (FeLV) is a highly contagious retrovirus that can spread through bodily fluids (such as milk from a mother or saliva). This vaccine is a bit controversial. Most of the vaccines discussed here are almost 100% effective in preventing the disease. The FeLV vaccine doesn't prevent the disease completely, but it does help prevent how long the virus hangs around, prevents replication, and decreases the severity of the disease. The median survival of cats diagnosed with FeLV is only about 2.5 years. While FeLV is non-core, the American Association of Feline Practitioners (AAFP) recommends that all cats under one year of age be vaccinated for FeLV and receive a booster one year later. After that, subsequent vaccination should be based on exposure.

* These are breeding facilities for cats.

- 🐾 **Feline immunodeficiency virus (FIV)** is a virus that's similar to HIV, but cats can live with this disease for a long time, unlike FeLV. This vaccine is not as effective as other vaccines and is not recommended routinely. That's because once your cat gets this vaccine, they'll forever test positive for FIV, and then you won't know if they're sick from it or if it's just a positive from the vaccine.
- 🐾 **Feline infectious peritonitis (FIP)** is a coronavirus—but it's not related to the one that causes COVID-19 in humans. Until recently, the prognosis was grave; in one study, the average survival after diagnosis was only nine days. The vaccine for FIP is not highly effective and not generally recommended by the AAFP. The FIP vaccine also causes your cat to test positive in the future, so this vaccine is not recommended at this time.
- 🐾 **Chlamydia felis** is a bacterium that causes conjunctivitis and URIs. This vaccine is generally recommended for multiple-cat environments, such as shelters or catteries.
- 🐾 **Ringworm** is a fungal infection called dermatophytosis, and it is highly infectious. It causes hair loss and skin redness and dryness, and it can spread easily. This vaccine is not very effective, however, and is not recommended.

Vaccine Side Effects

Though they are rare, there are some potential side effects from vaccines. When vaccines are administered correctly, these reactions are extremely unlikely. But they are possible.

Studies have shown that young adult, neutered, small-breed dogs receiving multiple vaccines per office visit are more likely to have a reaction, so it's recommended that you spread out the vaccines over multiple trips.

It's good to know what vaccines are truly needed and which ones you can consider skipping. But when in doubt, talk to your veterinarian about what to do. In general, the decision of which core versus non-core vaccines to give your pet, along with how frequently to vaccinate them, will depend on several factors. These include age, general health, level of exposure to other animals, geographic prevalence, travel history, vaccination history of the mother, concurrent drug therapy, illnesses, level of immunosuppression, nutritional status, stress level, local laws, and even your health status.

Lesson 6

Protecting Pets from Parasites

It's extremely important to protect dogs and cats from fleas, ticks, and heartworm. There are safe preventative options, and you need to make sure your pet is protected from all three. It's a regimen designed to keep your pets as safe and protected as possible. Ultimately, work with your veterinarian to pick flea, tick, and heartworm medications that are good for your pet and work with your lifestyle.



Fleas

Not only are fleas irritating, itchy, and painful to your dog and cat, but they can cause a lot of secondary, life-threatening diseases. And they replicate—a lot, and quickly. One female flea can produce about 40 to 50 eggs a day. About half of those eggs can then hatch into female fleas, who go on to make more fleas. This kind of exponential reproduction can produce tens of thousands of fleas in just one month, leading to infestation.



And while fleas typically prefer to stay on your pet, they're happy to feed on you in a pinch. If you find yourself with mysterious ankle itch and little red bites around the feet, you probably have fleas in your house. And they can be hard to get rid of; it may take several weeks before you're totally flea-free.

If you're "chemical phobic" when it comes to using preventative medication, just wait until you have to hire a professional exterminator to flea-bomb your house, while you add more sprays, powders, dusts, topical anti-flea medications, and oral pills, too.

Plus, without a prescription-strength flea and tick medication, you'll have to work hard to get rid of an infestation: You'll have to vacuum the rugs, furniture, and carpet every day for several weeks, while dumping and changing the vacuum bag immediately afterward and bringing it outside into the trash.

More importantly, fleas can cause underlying medical problems and carry diseases. Common emergencies from fleas are severe anemia and iron deficiency from having your pet's blood sucked out by fleas.

Fleas also transmit tapeworms, rice-like segments of gastrointestinal parasites that you may see around your pet's tail base or perineal region. When you see tapeworms on your pet,* it means they ingested a flea that was infected with tapeworm larvae or ate a mouse or rodent or rabbit that was infected with fleas. That's why vets also dispense a flea medication for a tapeworm infection—because the life cycles of these two parasites are closely related.

Some dogs and cats develop severe allergies from fleas. Flea allergy dermatitis occurs when they have a reaction from the saliva of a flea, and it is excruciatingly uncomfortable for your pet. You may notice hair loss, intense itching and discomfort, and red bumps all over your pet's body.

Lastly, fleas carry lots of diseases. Some of these are more common, such as cat scratch disease (*Bartonella henselae*), but some are rarer and can potentially be fatal, such as the Black Death (*Yersinia pestis*).** Fleas can also carry mycoplasma, tularemia, typhus, and (rarely) trypanosomiasis. Depending on the disease, these can cause enlarged lymph nodes, lethargy, sepsis, shock, and even death—in both pets and humans.

How do you know you're dealing with fleas? Since they are really good at hiding, if you notice hair loss on the back of your pet's legs and itchiness over the back, it's often fleas or flea allergy dermatitis. But you can try and spot the fleas themselves, too. The easiest thing to look for is flea dirt: digested blood that's been excreted by the adult flea, which looks like dark-red to black pellets in the fur. If you put these on a white paper towel and add a little water, the flea dirt will dissolve and turn blood colored. Otherwise, finding small, jumping, brown adults on the fur of an itchy pet is a dead giveaway! You can also work through the fur with a flea comb to look for adult fleas. If you find any of these signs, get your pet on a flea and tick preventative immediately.

* This typically occurs during grooming.

** The Black Death killed an estimated 30% to 50% of Europe's population in the 14th century.

Ticks

Ticks are hard to spot, even harder to kill, and—like fleas—transmit lots of diseases. Ticks can also get really big, expanding by as much as 100 times their size when engorged with blood from you or your pet.

There are several species of ticks, including the brown dog tick, black-legged tick, Rocky Mountain wood tick, American dog tick, and lone star tick.

Depending on what region of the world you live in, some species can invade your house, often requiring consistent treatment with tick control medication and a licensed exterminator to eliminate the infestation.

Like fleas, ticks can cause irritation and itchiness where they attach and, in severe cases, anemia and iron deficiency. Certain types of ticks, such as the *Dermacentor* genus, can release a neurotoxin and cause tick paralysis: an acute, ascending paralysis that can be deadly without treatment and removal of the tick. Of the many infections ticks can cause, there are potentially deadly, chronic diseases, including Lyme disease, anaplasmosis, Rocky Mountain spotted fever, ehrlichiosis, rickettsiosis, tularemia, bobcat fever, and babesiosis.

Some of these infections are more common and respond well to antibiotics. But if you didn't catch the tick infection early, fever, loss of appetite, anemia, platelet problems, bruising, difficulty breathing, enlarged lymph nodes, weight loss, shock, collapse, and even death can occur—and that's in both pets and humans.

Some of these diseases transmit quickly during a blood meal by a tick. For Rocky Mountain spotted fever and ehrlichiosis, the tick has to be attached on your pet for only about three to six hours to transmit these infections. For Lyme disease, ticks typically have to feed for about 24 to 48 hours before your pet is infected.

An ounce of prevention is worth a pound of cure when it comes to using preventative medication. Thankfully, there are a ton of effective and safe flea, tick, and heartworm medications.

Heartworm

Heartworm is a serious and potentially deadly disease, but it is almost 100% preventable with safe medication. Such medications come in the form of convenient once-a-month pills, topical medications, and long-acting injections that last six or 12 months. But sadly, pet owners still forget or neglect to give these meds. That's why you should add a reminder to your calendar so that you won't forget.

Heartworm is caused by a foot-long worm called *Dirofilaria immitis* that lives in the bloodstream and cardiopulmonary system of animals. Heartworm is transmitted by mosquitos, so pets that spend more time outside are at higher risk. Dogs, wolves, and coyotes are natural hosts for heartworm, meaning that heartworms can grow, mate, and make more offspring in their bloodstreams. Then, along comes a mosquito that bites a heartworm-positive dog or canid, and now that mosquito can transmit it to the next unsuspecting, unprotected animal. Other species—such as foxes, sea lions, ferrets, cats, and even humans—can also be affected by heartworm.

Heartworm disease causes severe damage to the pulmonary vessels, lungs, and other organs and can lead to heart failure. The damage occurs when the baby larvae, known as microfilaria, grow into adult worms, block blood flow throughout the body, and cause small clots and even strokes.



In dogs, indications of heartworm disease don't show up until heavy infestation has already occurred. Signs include decreased energy, no desire to exercise, mild but persistent cough, decreased appetite, distended belly, and weight loss or muscle wasting. Some of the more severe signs can be collapse, fainting, abnormal heart rate, acute shock, and sudden death. Long-term side effects include chronic lung disease and secondary organ damage.

In cats, signs of heartworm are vaguer and may include coughing, occasional vomiting, asthma-like attacks, wheezing, drooling or acting nauseated, not eating, weight loss, difficulty breathing, open-mouth breathing, fainting or seizures, fluid accumulation in the abdomen, and collapse. Unfortunately, in cats, the first sign of heartworm disease is often sudden death.

Heartworm disease has been diagnosed in all 50 states. Some areas have a higher incidence than others, and it's likely due to infected mosquitoes in those areas. More recently, veterinarians in the Southeast, Northeast, and Midwest regions have been seeing more heartworm disease due to transport of dogs from infected areas. They're also seeing more heartworm disease spread throughout the US due to pet owners traveling with pets more, changes in the climate, noncompliance with medication, natural disasters, decreased mosquito control programs, and the expanding range of wild heartworm-positive canids.

In the United States, the highest incidence of heartworm occurs in the Southeast and the Mississippi and Ohio River valleys, along with the coastal regions of California and the Sierra Nevada foothills.

You can find maps on the American Heartworm Society's website (heartwormsociety.org).

Thankfully, protection from heartworm disease is easy in dogs; it comes in a chewable monthly pill, a monthly topical medication, or a long-lasting injection that lasts six or 12 months. The goal of the medication is to kill the heartworm larvae before they grow into adult worms.

Prior to giving any preventative medication, your dog has to test negative for heartworm. If you start such medication when your dog is positive, it could result in anaphylactic shock and death (though that's rare). Because the life cycle of the larva growing into an adult worm takes approximately six months, your veterinarian will want to retest your dog every spring before you pick up more heartworm medication. If you don't want to have to remember the six-month rule, you can keep your dog on year-round heartworm preventative and just do an annual blood test each spring.

If your dog is diagnosed with heartworm disease, confirm it with another blood test to be safe. If both these tests are positive, your dog needs treatment right away. Over the course of about six months to a year, your dog will need several heartworm tests, routine blood work, a clotting blood test, several chest x-rays, several ultrasounds of the heart, oral medications, preventative medication, blood thinners, and three injections of melarsomine dihydrochloride (Immiticide or Diroban). In total, you're looking at \$3,000 to \$7,000 for treatment, along with 12 to 52 weeks of strict crate rest for your dog, as they can die suddenly from complications from excessive exercise and strain on the heart and lungs. Not only is this very costly to you, but your dog hates being crated for that long. Compare all of this—along with the long-term lung and organ damage and shortened lifespan—to a \$100 box of heartworm preventative, and it's a no-brainer.

Cats are considered dead-end hosts for heartworm, as they rarely develop larvae. That said, as few as one to two adult heartworms can be fatal to a cat. Even one worm can cause severe damage to your cat's body. There's even a difficult-to-treat complication in cats called heartworm-associated respiratory disease.

Unlike in dogs, there's no cure for heartworm in cats—only management of the disease—so prevention is extremely important. Depending on what region of the world you live in, the safest thing you can do is to have your cat indoors and on heartworm prevention. If you have a cat who goes outside in the South or warmer areas of the US, prevention is a must.

Which Medications Should You Use?

When it comes to preventative medication, there are many to choose from. There are several types that prevent flea, tick, and heartworm disease. But some products get only fleas. And some get only ticks. And some get only heartworm. You want to use medication that protects your pet from all three.

There are oral fast-acting types called isoxazolines, high-concentration topical or collar pyrethroids, and insecticides containing amitraz, fipronil, indoxacarb, imidacloprid, spinosad, and selamectin. There are also products that are insect-growth regulators, which are basically birth control for fleas (they prevent flea eggs from developing, but they don't kill adult fleas).

These preventatives are very safe for pets and are extensively tested and regulated by the EPA and FDA in the United States. Drug companies also do extensive testing to make sure these products are safe.

That said, rare problems can occur from using these—and typically, it's because of user error. Here are some common mistakes people make:

-  **Not knowing what you're treating for.** Some pet owners go into the ER saying that their dog shouldn't have any ticks because they use product X—but it turns out that product X is for heartworm and they have no flea or tick protection at all, so your dog ends up with Lyme disease.
-  **Not reading the instructions carefully before you use the medication.** Don't read the instructions while you're holding down your cat about to medicate them. Read them beforehand to avoid making mistakes.
-  **Using the product inappropriately.** Don't give prescription medications to puppies or kittens that are too young to have the medication. Don't accidentally give too few or too many doses.
-  **Forgetting about your pet's weight or underlying medical problems.** Guessing what your pet weighs and randomly dosing based on this could result in an ineffective dose. If your pet has

underlying medical problems or is on certain types of medications, rare adverse effects can occur from normally safe medications.

If you're confused, you can always talk to your veterinarian—or even the drug company—if you have questions.

Home remedies, such as boric acid, diatomaceous earth, coconut oil, or essential oils, do not work.

Lesson 7

Spaying and Neutering Pets

When it comes to your pet's reproductive organs, there's a lot of information to know. In general, when it comes to having your pet spayed or neutered, you want to weigh the pros and cons, the health benefits, and the various behavioral concerns. Ask your veterinarian and do your research.

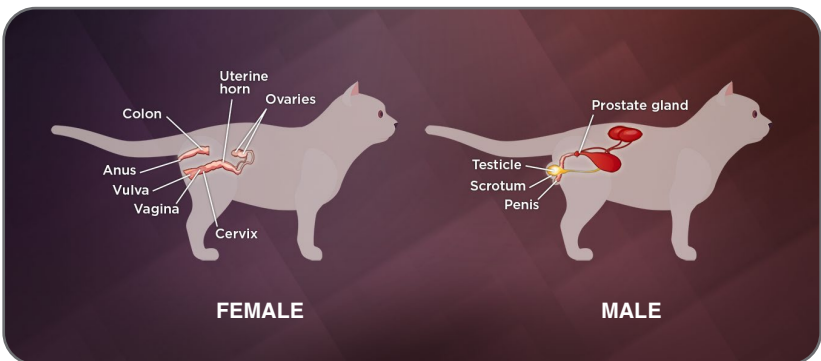


Pet Genitalia

Spaying is female desexing. It means removing the female reproductive parts—typically both the ovaries and the uterus. The technical term is ovariectomy.* More recently, some veterinarians are doing an ovariectomy, meaning that they are removing just the ovaries. Sometimes ovariectomies can be done with minimally invasive surgery via laparoscopy. A hysterectomy, which is when the uterus is removed but not the ovaries, is not typically done, as it doesn't prevent all the problems related to sex hormones. So it'll prevent an unwanted pregnancy, since there won't be a uterus to house it, but it still exposes your pet to the hormonal effects of both estrogen and progesterone.

The general definition of *neutering* is to remove reproductive organs, so technically it can refer to either females or males. However, it's usually more associated with male desexing. With neutering, the two testicles are removed directly from the scrotal sac. The penis is left alone and not touched or altered during a neuter. The empty scrotal sac will shrink over time.

Being able to determine if a kitten is female or male is harder than you might think it would be. The feline species is hard to sex because they don't have a classic penis near the belly button like a dog; instead, cats have a barbed penis that is tucked underneath their tail.



* Ovario refers to the two ovaries, and hystero refers to the uterus.

If your cat sticks their rear end in your face, you'll notice two orifices: an anus and another orifice just below that. In male cats, that orifice will look like a small dot. If it's a bigger vertical dash instead, then it's a female. That's hard to do in one-week-old kittens, so if you're not sure of the sex of your young kitten, pick a gender-neutral name.

Not only is your cat's anatomy difficult to determine, but the cat penis has a large bend in it to allow him to twist and turn to breed a female. Add barbs and spikes onto that penis, and you have yourself a medical anomaly! The barbs and spikes exist to help stimulate ovulation in the female cat, as they are induced ovulators, which means they need physical stimulation to release an egg.

As a cat owner, you should never see your cat's penis sticking out; if it is, something is wrong medically, such as a urinary obstruction, and a visit to the emergency veterinarian is a must.

Even if you've had cats for decades, you may not know that male cats have a backward penis and that they breed indiscriminately among brothers, sisters, and parents.

Pros and Cons of Desexing

While there are pros and cons to spaying and neutering, there are fewer cons. The first is that depending on where you live, a spay or neuter typically costs a few hundred dollars. It typically requires preoperative blood work, an intravenous catheter, IV sedation and general anesthesia, sterile equipment, and postoperative pain medication. Some veterinarians may do some of these procedures without general anesthesia and use sedation instead. This will depend on the speed of the procedure. For example, the procedure for neutering male cats is relatively rapid, so vets can do this just under sedation. But spaying a female dog can take some time, as it requires opening her entire abdomen, so this is typically done under anesthesia.

Also know that if your pet is in heat, the surgery is more expensive. They are under anesthesia longer, as the reproductive organs are more vascular and more delicate, and there is slightly more risk of bleeding associated with it. You can avoid this cost simply by having your pet spayed outside of her heat cycle.

General anesthesia is very safe in veterinary medicine. However, older pets are more likely to have age-related changes to their organs (such as chronic kidney disease or a heart murmur), which could increase their risk with anesthesia. This is why spaying or neutering earlier in life is typically recommended. You usually end up having to do a spay or neuter eventually for health reasons, so do it when it's less of an emergency, less expensive, and less dangerous to your pet.

Unlike a human vasectomy, neutering is not reversible in veterinary medicine—it's permanent.

Another con is the increased risk of a few medical issues with spaying and neutering. First, it slows down metabolism, so your pet will need fewer calories and less food. As a general guideline, reduce the amount of food by 20% to 25% after your pet is spayed or neutered so they don't become overweight or obese. Also, spayed female dogs—especially those spayed very early in life—have a higher risk of urinary incontinence, which means they can dribble urine on their bed when lying down or sleeping. This can be easily treated with medication, but it can be a life-long problem.

What are the pros of spaying and neutering?

-  Spaying/neutering helps reduce pet overpopulation and the euthanasia of healthy pets due to overcrowding in shelters. The average cat can produce anywhere from one to 10 kittens per litter, while dogs can produce anywhere from one to 15 puppies per litter, depending on the size and age of the mother. On average, you're looking at approximately three to six babies. Kittens can have litters as early as five to six months of age! It's estimated that an initial mating pair of cats can eventually produce 2,000 unwanted kittens in just

four years, thanks to the exponential multiplication of their offspring. For this reason, there's a campaign called Feline Fix by Five Months to get cats spayed or neutered before they can begin mating.

 Spaying/neutering helps prevent behavioral issues from sex hormones. Tomcats are aggressive, very territorial, and like to wander, masturbate, and urine-spray.* These undesirable behaviors are directly related to testosterone and can be eliminated with neutering. In dogs, neutering can help prevent behaviors like constant urine marking, aggression, masturbating, and roaming in search of females. Spaying female dogs can prevent aggression, especially if you have multiple females in the house together.

In North America, it's quite common to spay and neuter. But in other countries, it's not the norm.

 Spaying/neutering helps prevent certain medical problems, such as uterus infections, prostate-related problems, and different types of cancer.

 Spaying/neutering minimizes the chances of your dog getting a sexually transmitted disease. While it's not that common, canine STDs, such as transmissible venereal tumor and brucellosis, can result in cancerous tumors in the body, a painful and swollen scrotum or testicles, enlarged lymph nodes, or miscarriage in females. Thankfully, there's good medical treatment for doggy STDs, but some of these can affect humans, too!

 Spaying/neutering reduces the risk of breast cancer, called mammary gland tumor or mammary cancer. If you happen to notice a lump near your pet's mammary chain while giving them belly rubs, you'll want to get to a veterinarian right away. In dogs, 50% of the time, the mammary tumor is benign; in the other 50%, it's an aggressive type that can spread. In cats, mammary cancer is much worse, with more

* That spray is a very concentrated, foul-smelling urine that tomcats squirt on vertical surfaces to mark their territory.

Both dogs and cats—and both females and males—have a chain of mammary glands, typically five pairs. Male nipples are vestigial, meaning that without the effect of female hormones, they're nonfunctional and nonsecretory. In spayed females, the mammary glands are smaller in size compared to intact females.

than 85% of mammary tumors being aggressive and fatal. Spaying cats before the first heat cycle reduces the risk of mammary cancer by as much as 90%. In dogs, studies have shown that a female's risk of breast cancer can be reduced by more than 90% if she is spayed before her first heat, but if you wait until after several heat cycles, the protective effect is gone.

The Estrus Cycle

When a pet goes into “heat,” this is also called an estrus reproductive cycle and means that the female is sexually receptive and can breed during this time. Several factors will affect when a pet has their first estrus cycle, including temperature, time of year, number of daylight hours, genetics, nutrition, and size of the pet.* On average, dogs can go into heat starting around six to 18 months of age, depending on the size, while cats can go into heat around six months of age.

Dogs typically go into heat twice a year, which is why you see puppies in the summer and around the holidays. However, this can vary quite a bit by breed. Small-breed dogs can go into heat three times a year, while giant-breed dogs often go into heat only once a year. That's different from cats, who are seasonally polyestrous, which means they can have several heat cycles during the breeding season.

* The smaller the dog, the earlier the heat.

Dogs can get stuck after having sex—just like wolves. A gland at the tip of the dog's penis becomes massively engorged during breeding and can get stuck in the female. This can last a few minutes to an hour. Evolutionarily, this may help keep the semen in there longer, increasing the chances of pregnancy.

In dogs, an average heat will last around one to two weeks. In cats, each heat cycle lasts an average of six days; if she isn't bred during her heat, she'll go out of heat for a short duration only to cycle again. The complete estrus cycle in a cat can last approximately one to six weeks.

With heat cycles, females are more playful, vocal, friendly, and affectionate. They are trying to engage a male and do so by keeping their tail high, sticking their backside out more, and rolling on their side. Female cats may mark their territory more by spraying, or urinating, more frequently to release pheromones to attract males. In dogs, signs of heat include an engorged vulva, excessive grooming, and vaginal discharge, ranging from a few scant drops to larger trails of blood, which may require doggy sanitary pads for a few days.

Because cats are induced ovulators, a female can mate with several different tomcats and have a litter of kittens from several fathers. Once she is bred, her heat cycle will quickly end. Without the physical stimulation of breeding, her heat cycle will eventually end after a few torturous days, only to restart a few weeks later. It's just easier to get female cats spayed.

When to Spay and Neuter

For cats, you want to spay or neuter at five months of age. For dogs, it's more controversial. For the past few decades, most veterinarians and pet owners were trained to spay or neuter dogs around six months of age. However,

recent research out of UC Davis has called the six-month standard into question, as certain breeds—golden retrievers, Labrador retrievers, and German shepherds—were found to have some potential health implications and disease risks if desexed early in life (specifically, orthopedic problems and certain types of cancers). However, these health implications and disease risks were not seen in many other dog breeds that were assessed in the study.

Current studies are confusing and hotly debated. It is known that spaying and neutering may increase the incidences of some tumors and some medical conditions. But it is also known that spaying and neutering decreases the incidence of some tumors and some medical conditions. When it comes to making the decision on when to spay or neuter their dog, pet owners should critically discuss this with their veterinarian.

You might consider spaying or neutering the three breeds in this study around two years of age, as long as you are aware of the pros and cons, prepared to leash-walk your pet at all times, ready to deal with sanitary pads, and accepting of a possibly greater risk of mammary cancer in your dog. As for other dog breeds, there just isn't strong enough evidence not to spay or neuter around six months of age.

Most rescue organizations and shelters spay and neuter early. This means that by the time you adopt your new puppy or kitten, it's already desexed—even if they are less than six to eight weeks old! Know that early spay/neuter has been safely performed for decades, and with proper anesthetic protocols and pain control, dogs and cats could be safely neutered at a young age without complication.

Unlike humans, dogs and cats heal very quickly from either type of surgery. Within a few days of surgery, young puppies and kittens are back to their old selves, and younger pets recover much faster than geriatric or older pets.

However, there are a few risks associated with early spay or neuter. First, while it's not common, puppies and kittens can get sick from other illnesses, such as parvovirus or distemper, after early spay/neuter, when many puppies and kittens only have one vaccine on board. On top of that, the sedation or anesthesia can also mildly immunosuppress them. While most of these illnesses are rare and treatable, they can be seen more with early spay/neuter. There

is also an increased risk of urinary incontinence in early-spayed dogs, as they haven't grown into their body yet, and sex hormones play an important role in early stages. Unless it's an animal rescue or shelter situation, it's typically recommended that you wait until your dog or cat has received their entire series of puppy or kitten vaccines and when their growth plates have closed.

Lesson 8

Caring for Cats

There are more cats owned in the United States than dogs. That's because cats are relatively low maintenance. But while they seem low maintenance, they require more than you may think. It doesn't take much to provide a safe, welcoming home for your feline family members, but you do need to be aware of the basics to keep your cats healthy and happy.



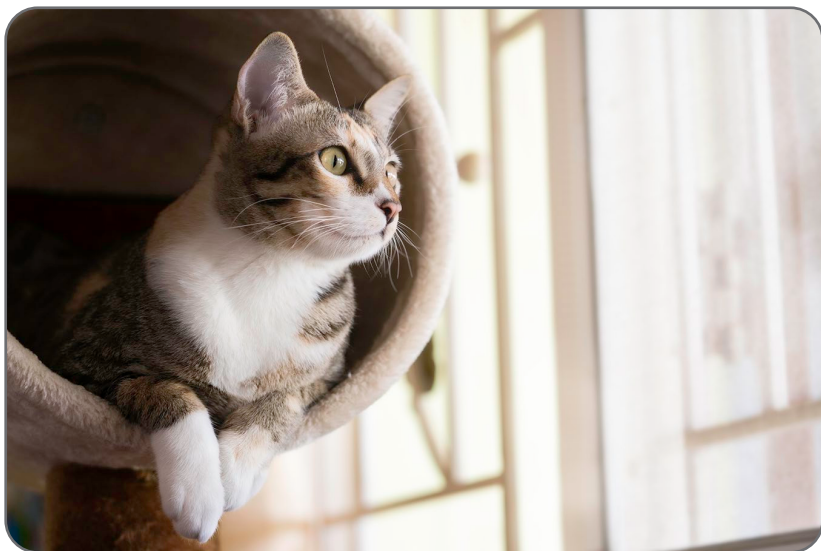
FeLV/FIV Testing

- Before you let a new cat set foot—or paw—into your household, the first thing you need to do is get them tested for feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV). Some breeders and shelters automatically test cats for this, but not all do, so you always want to run a blood test on the cat, especially prior to them being exposed to other house cats.
- The blood test for FeLV and FIV—called an ELISA SNAP test—is easy to run and very accurate. It only requires a few drops of blood, and you'll have results back within minutes.
- FeLV is a retrovirus that is highly contagious and spreads through bodily fluids. FeLV causes lymphoma, an aggressive type of cancer in cats, which also causes severe bone marrow suppression. Unfortunately, cats diagnosed with FeLV live only for a few years at most.
- FIV, otherwise known as kitty AIDS, is a virus that attacks the immune system and is similar to HIV in humans. While it's not contagious to you, it's very infectious to other cats. Cats can live with FIV for years, but it does immunosuppress them and makes them more predisposed to getting infections. While cats may live for 10 to 15 years with FIV, they ultimately will succumb to the disease.
- All cat owners should know their cat's FeLV/FIV status. While positive tests are rare, the results can be devastating. If your cat is positive for either disease, talk to your veterinarian about separating them from other cats and what you can do to maximize your cat's health.

If you want to set yourself up for success with a multicat household, know that siblings typically are more likely to get along, as well as cats that are introduced at younger ages.

Indoors versus Outdoors

- Should you keep your cat indoors or outdoors? Most veterinarians keep their cats indoors for multiple reasons. One main concern is that they don't want to risk their cats getting stolen (or "adopted") by someone else or losing them to the great outdoors.
- Cats can be just as content indoors. Check out the great environmental enrichment resources on The Ohio State University's website. And make sure to provide the perfect living space: a safe and stress-free place to eat and drink, lots of toys, a cat tree to look outside on, cat grass, the appropriate number of litter boxes, plenty of fresh water, and lots of playtime. Depending on how many cats you have, you want to be able to provide resources for each cat—which means you need lots of space.
- Keep in mind that once your cat has tasted the great outdoors, you'll find that they develop a love for it and may bolt out the door as soon as you crack it open. For that reason, try to prevent your cats from even tasting "freedom" to begin with!



- Letting your cat go outside depends a lot on where you live and how well supervised your cat is. If you live out in the country or on a quiet dead end in a suburb, you're likely OK to let your cat outside. If you must let your cat go outside, do so on a leash while supervised—that way, you know they're not going to run away or get hurt.
- If you do let your cat outside, make sure to do it while you're home, and only for short periods at a time. That way, you're around in case you hear a backyard brawl. Also, try to entice your cat back in for the night: Simply shake a treat container while ringing a bell to train your cat to run back home. Use positive association—in this case, feeding that delectable treat as soon as your cat comes in the house.
- The outdoors can be a dangerous place. Your cat might be attacked and killed by coyotes or dogs, be poisoned by your neighbor's daylilies, get mauled by stray cats, or get hit by a car. Plus, there's the risk of getting infectious diseases outside (such as fleas, parasites, FeLV, and FIV).
- Also, cats are the number-one human-caused killer of songbirds outside, with an estimated 2.6 billion birds killed in North America each year. If you do let your cat outside, don't have any bird feeders! If you must let your cat outside, consider an enclosed cat net (sometimes called a "catio," or cat patio) or tent. At the very least, they should have a collar with a bell on it.

In general, indoor cats tend to live longer—15 to 18 years, as compared to just a few short years for the average outdoor cat.

The American Bird Conservancy has great resources on the Cats Indoors program for how to protect both cats and birds.

- If your cat has already tasted the great outdoors, talk to your veterinarian about certain additional requirements if you continue letting your cat outside, including a microchip, a collar and bell, additional vaccines, and preventative medication. An FeLV vaccine is a must for an indoor/outdoor cat, along with heartworm, flea, and tick preventatives—and that includes even while supervised on a leash or when your cat “just stays in the yard.”
- Finally, cats should not go outdoors at all if they have a contagious disease like FeLV or FIV, as they can spread their infections to other cats in the neighborhood. Also, if your cat is declawed, don’t let them out, as they can’t defend themselves from other cats, dogs, or wild animals.
- Ultimately, the decision to let your cat go outside is up to you, but weigh all the factors and make sure your cat is as protected as they can be.

Preventative Care

- If you keep your cat indoors, it doesn’t mean you can skip the veterinary visits! Your cat still needs preventative care. They need an annual examination every year of their life—just like you do. This is even more important once your cat is around 10 to 12 years of age. There are many things a veterinarian can pick up on during a physical exam that you won’t notice at home, such as the size of your cat’s kidneys, a goiter on their neck, dental disease, or a heart murmur. With any disease, the sooner the problem is identified, the better the outcome is and the less expensive it is to treat.

Once your cat is well protected or middle-aged, skip the vaccines but still make sure your cat is examined every year. By 10 to 12 years of age, blood work is recommended instead of vaccines to monitor for diabetes, kidney failure, and thyroid problems—three of the top diseases seen in aging cats.

- Another important part of keeping your cat healthy is water. Cats are desert creatures, so you don't see them drinking as often as dogs do. Cats have amazing kidneys that can filter and concentrate very well (which is why tomcat urine reeks so badly!). But being that chronic kidney failure is one of the top causes of demise in aging cats, always make sure to keep your cats well hydrated.
- To provide your cats with plenty of opportunities to hydrate, offer multiple water bowls at home, and make sure the bowl is emptied, washed with soap and water, and refilled with fresh water every few days. This is especially important if the bowl is shared with a dog. No cat wants to drink dog drool! You can also consider a cat water fountain, as long as you clean it at least two to three times a week.
- All cats should be trained to eat wet food. For decades, veterinarians have been saying that dogs and cats need dry food to help scrape off the tartar on their teeth, and that's generally true. However, since hydration is so important in cats, it's important to train cats to eat wet food as a snack—and you should water it down even more.
- When you buy wet food, you're really buying 60% to 70% water. But that's why it tastes so good; all that gravy tastes great! You can train your cats to eat canned food and slowly gruel it down with more hot water to make a warm concoction of stinky pate. That extra water in food helps hydrate them and flush out their kidneys and bladder.
- The last part of preventative care is grooming. One reason why people love cats so much is because they are low maintenance—but that doesn't mean neglecting them! Cats need routine grooming, but thankfully, that doesn't require baths. You don't have to bathe a cat the way you do a dog. Cats are such fastidious groomers that they take this on by themselves! But if they are obese* or geriatric or have osteoarthritis, they can't turn around to groom their rear end. This can cause an inability to defecate due to a large matt of feces and hair stuck to their rear end. This is uncomfortable and painful, and it's a simple problem to avoid with a little grooming.

* About 60% of pets are overweight to obese.

- If you can't commit to brushing your cat and trimming their nails once a month, you shouldn't have one. That's only 12 times a year to keep your cat healthy and happy. If you ask your veterinary clinic to do it at your pet's annual visit, now you only have to do it 11 times a year! Splurge on a great brush like a FURminator or a grooming glove and groom your cat while you're watching TV. The more you do it, the more your cat will get used to it and the better they'll feel!

Tips on Cats

- Cats are pretty low maintenance, especially for the amount of love and companionship they give in return. Here are just a few more tips to leave you with:

 **There's no such thing as a hypoallergenic cat.** The reason why people are allergic to cats is due to the cat allergen Fel d 1, which is produced in the salivary and sebaceous glands of cats. Even if your cat is hairless, they'll still transfer Fel d 1 while grooming their skin. This ends up being shed in the environment through your cat's dander. So, regardless of your cat's breed, hair length, color, sex, age, or size—or how much you paid for them—they'll still shed Fel d 1. But you can change how much Fel d 1 your cat sheds! Purina Pro Plan LiveClear is the first cat food that you can buy over the counter that reduces how allergenic your cat may be.*

 **It's not normal for cats to vomit.** If your cat vomits more than once a month, it's not normal. Of course, cats get occasional hairballs, but they still shouldn't be vomiting more than once a month. Chronic vomiting means that something is wrong, and most of the time it's fixable but warrants a medical work-up. Sometimes an overactive thyroid gland, inflammatory bowel disease, kidney disease, inflammation of the pancreas, or even intestinal cancer can

* When cats eat this diet exclusively, it reduces the amount of allergen in your cat's saliva that is transferred to the dander, skin, and hair. Studies have shown that this diet reduces Fel d 1 by an average of 47% within a month of feeding.

cause chronic vomiting. And that doesn't include more acute causes for vomiting, such as a urinary or intestinal blockage. When in doubt, check with a vet.



Don't travel with your cat. Cats don't like sudden change, like going for a car ride or airplane flight. They can't handle it well and get easily stressed.* In general, most cats don't enjoy traveling, so don't do it unless it's absolutely necessary. If you're just going to the beach for the weekend, your cat does not want to go with you. Your cat prefers to be sleeping at home instead of spending the trip being scared of loud noises and weird smells. It's better to get a cat sitter to stay at your house or even stop by once or twice a day to check in, if possible.

While most dogs are excited to go for car rides and weekend getaways, cats aren't.

- If you do have to travel with your pet—whether by car, train, bus, or plane—make sure to do so safely and legally. Don't fake that your pet is a service animal just because you want to travel with them. It abuses the system and invalidates those who truly need a service pet.
- And make sure to plan ahead. Depending on where you're traveling to, you may need a health certificate. Schedule this with your veterinarian in advance so that you're not frantically planning right before a stressful trip. While you're at your vet, ask for several doses of a sedative to take your cat's anxiety away. Both trazodone and high-dose gabapentin are safe and will help mellow your cat out for the trip. Also ask your vet to trim your cat's nails just in case your cat tries to scratch their way out of their carrier. Make sure your pet is up to date on vaccines, and make sure to carry your pet's vaccine records and health certificate with you at all times while traveling.
- If you're flying, call the airline in advance, as there is an additional fee for transporting animals, even in the cabin. And if possible, book a nonstop flight to minimize the travel time. You may also want to consider a nonpeak

* Stress manifests in cats with dilated pupils, an elevated respiratory rate, a fluffed tail, growling or meowing loudly, or even open-mouth breathing.

but direct flight to minimize stress. When flying, use a soft-sided carrier to put under the seat in front of you. Be aware that your pet has to stay in there at all times. This is for the health of people around you who may have severe allergies, but it's also for safety—to prevent them from escaping! Be aware that there is a weight limit for pets, and TSA can turn your cat away for being a few pounds over the weight limit.

- Most importantly, to make the travel as stress-free as possible, prepare weeks in advance to get your cat used to the carrier. Leave it out with delectable treats inside, and consider using a safe pheromone spray or wipe called Feliway in the carrier to minimize the anxiety of this strange environment. Get to the airport with plenty of time just in case of an emergency.

Lesson 9

Litter Boxes and Cat Hygiene

While it's a dirty job, taking care of your cat's litter box is one of the most important things you need to do when you own a cat. It's not so much about keeping your house smelling good as it is about preventing your cat from developing medical problems that can arise from having a dirty litter box.



Litter Box Complications

- There are two common complications from litter boxes you should be worried about: feline lower urinary tract disease (FLUTD) and the more life-threatening urinary blockage called feline urethral obstruction (FUO).
- In cats, signs of urinary—or, rarely, fecal—problems commonly include making multiple trips to the litter box (typically more than four to five times per day), crying or howling while near the litter box, and urinating in weird places (such as in the bathtub, on your laundry, in the bathroom sink, or in the dirt of a large potted plant). Other symptoms include vomiting, not eating, acting constipated, and bloody, smelly, or cloudy urine.
- If you notice any of these signs, then your cat may have FLUTD, an FUO, a urinary tract infection (UTI), or a fecal problem like bloody diarrhea or severe constipation. The difficult thing about these problems, however, is that they all look very similar. And while most can be handled by your family veterinarian during a scheduled visit, one of these is a life-threatening emergency that warrants a visit to the animal ER.
- FLUTD, also called cystitis or feline idiopathic cystitis (FIC), means your cat has a sterile inflammation of the bladder. FLUTD isn't life-threatening, but your cat has massive inflammation in their bladder. They constantly squat to pee when in fact their bladder is empty. Sometimes small drops of blood will come out. Treatment includes pain medication, buprenorphine, and hydration measures, such as fluids under the skin and eating canned food. Signs usually go away in 24 to 72 hours.
- The signs of FLUTD look similar to a UTI, but FLUTD is rarely due to a UTI. In fact, studies have found that only about 2% to 5% of the time is FLUTD due to a UTI, which means that your cat rarely needs to be treated with an antibiotic—at least in young, otherwise healthy cats. It's different in cats that are older than 10 years of age, who have a slightly higher risk of a UTI.
- The life-threatening urinary problem, though, is FUO. This is seen more commonly in indoor, overweight, young male cats. Since male cats have a urethra that is narrower in diameter than female cats, FUO becomes much

more of a problem. With an FUIO, the tip of your cat's penis is blocked with crystals, grit, or even small bladder stones. This prevents your cat from being able to urinate, which is extremely painful after 24 hours.

- With FUIO, the poisons that normally should be urinated out build up in your cat's bloodstream. Untreated, this can cause temporary kidney failure and severe electrolyte-balance abnormalities; it can even cause death. Even with treatment, rare complications can occur, such as a urethra tear, a bladder rupture, or even problems from sedation. Treatment includes aggressive intravenous fluids to flush out the kidneys and bladder, sedation to unblock your cat with a sterile urinary catheter, hospitalization, blood work monitoring, and pain medication. Some cats are so critically ill that they need to be hospitalized for two to four days in the veterinary ER, and rarely, cats require surgery or blood transfusions for this condition. This can cause serious damage to your cat, and it can be quite expensive. The recurrence rate for re-obstruction is approximately 25% for your cat, so you want to do everything possible to minimize this from happening.
- How can you tell whether your cat has the nonemergency FLUTD, the life-threatening FUIO, or the less common UTI? You have to get to a veterinarian, and maybe even an emergency veterinarian. Your cat will need a thorough examination to tell the difference, along with additional diagnostics, such as a urine sample, a rapid ultrasound of the bladder, or even x-rays.
- It's important to prevent, recognize, and treat a UTI in cats because if left untreated, it can result in a kidney infection, or a pyelonephritis. In rare cases, this can result in acute kidney injury. While UTIs are rare in young cats (less than 2% of the time), middle-aged to older cats with medical problems like chronic kidney failure, diabetes mellitus, or even hyperthyroidism are at higher risk for UTIs. If you notice any problems with your cat's urinary habits, get to the vet sooner than later!
- Simply keeping your cat's litter boxes clean—along with making sure your cat always has access to fresh, clean water—is the best way to prevent UTIs.

- Cats are fastidiously clean creatures, and the last thing they want to do is step into a dirty box. So if you don't clean the litter box, it's likely that your cat isn't going to step in there. Instead, your cat may only urinate once a day, instead of two to four times a day. If this happens, your cat's urine becomes more and more concentrated, resulting in urinary crystals, mucous plugs, white and red blood cells, and other urinary debris making up more of the urine itself. This could potentially result in clinical signs of FLUTD or FUO. That's why clean litter boxes are so important for the health of your cat.

Litter Box Rules

- Veterinarians and veterinary nurses typically don't have much time to talk to you about the rules of litter boxes on your first kitten visit. But here are four rules of litter box husbandry for cat owners:

 **Have $n + 1$ litter boxes per cat**, where n is the number of cats in your household. If you have an automatic kitty litter box, that's typically sufficient for up to five cats, since these provide a clean bed of litter each time any cat goes into the box. A Litter-Robot is an automatic kitty litter box that you only have to empty once a week, and it masks the smell of cat urine and feces well. Covered litter boxes are aesthetically friendlier, help keep the dust and smell in, and help minimize excessive litter flying out onto the floor. But some cats may

When it comes to picking litter boxes, splurge a little, as they last a lifetime. Studies have shown that bigger is better, but you want a box that is at least 2 feet wide and 3 feet long—approximately 1.5 times the length of your cat. Ideally, this is about the length from the tip of your cat's nose to the extended tip of their tail.

feel trapped in a covered litter box, especially if the cat is large.



Scoop daily. If

you don't like to scoop a lot, you may occasionally

catch your cat scratching outside the litter box instead of inside. This is their way of telling you that the litter box is disgusting and that they don't want to get their feet dirty while attempting to cover up urine or fecal clumps. You need to scoop daily, especially if you have a male cat. Scooping daily allows you to catch medical problems sooner rather than later.* If you can't commit to scooping daily, consider slowly weaning your cat onto an automatic litter box, but keep in mind that you still have to monitor how often your cat is using it. Some automatic boxes have apps that allow you to remotely monitor how often the box is being used.



Use clumping litter. There are reasons why clay litter is so much cheaper than clumping litter: It doesn't clump, it's environmentally unfriendly, and it's dusty—which isn't great for you or your cat to breathe in. With clay litter, instead of scooping, you have to dump the entire box once a week (or whenever it's full) into the garbage can and completely refill the litter box. But with clumping litter, you just scoop out the urine and

Without appropriate kitty litter husbandry, your cat can not only have medical problems like FLUTD and FUO but also behavioral problems.

In addition to scooping daily, veterinary experts recommend cleaning each litter box once a month with mild soap and water.

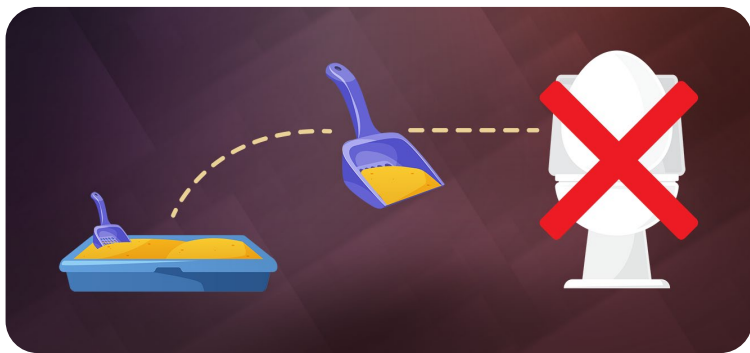
* If your cat isn't urinating, you will notice faster that there are no clumps for 24 to 48 hours and will know to take them to the vet. If your cat is having acute bloody diarrhea, or is totally constipated, you want to notice within 24 hours. If the clumps you're scooping out are consistently large—bigger than your fist or the size of your cat's head—blood work should be done to make sure your cat doesn't have diabetes, kidney disease, or even hyperthyroidism.

fecal balls and refill with more clean litter as the box slowly empties of litter.* Studies show that cats prefer fine-particulate clumping litter. They also prefer fragrance-free and dust-free litter. (You don't need the fragrance if you scoop often enough, and cats don't like the overwhelming smell, especially in a covered litter box.)

Cats hate sudden change, so if you're thinking of switching and experimenting with new litters or litter boxes, go slow. They are creatures of habit.

Is it OK to flush kitty litter down the toilet?

Even if it's marketed and labeled for flushing, don't flush it. Rare parasites like *Toxoplasma* that can be found in cat feces can get into your water system. There have been occasional reports of sea otters dying from toxoplasmosis.



* Most cats want several inches of litter in the box, so don't skimp when you're refilling



Provide appropriate environmental enrichment. Just as you probably don't want to eat your food right next to your toilet bowl, neither does your cat. Move the kitty litter boxes into a separate room or area away from where they eat. Likewise, cats don't want their litter boxes next to scary loud noises—especially when they happen intermittently, such as a water heater or clothes dryer turning on. Cats can develop litter box aversion thanks to a scary sound, and this can result in having urinary and fecal accidents around the house thereafter. So try to pick a few quiet, peaceful places to put your boxes.

Lesson 10

How to Train Your Dog

Good dog training provides environmental enrichment and makes your dog a well-mannered part of your family. It stimulates your dog's brain, which is good for them, and it makes dog ownership much easier and happier for you—like when they listen to your “down” command and don't try to jump on guests. Good training also keeps your dog out of danger—like when they want to chase a squirrel or run into the street, where they can get hit by a car, but instead they listen when you ask them to come back to you.



Training Your Dog

- Obedience school—which is typically a once-a-week, 10-class semester—is a very important way of training you, not just your dog. Once you graduate from puppy obedience school, you should do another semester of intermediate-level training. These two semesters of dog training are a fun, important opportunity to instill new habits in both of you, provide environmental enrichment, and make sure your dog is a good doggy citizen.
- How do you pick the right dog-training facility? Do your research. Check the online reviews and ask around. Also ask who your veterinarian would recommend. Avoid training schools that use negative reinforcement, such as pinch collars, choke chains, or painful shock collars. Instead, look for dog trainers who use positive reinforcement—such as delicious pieces of freeze-dried liver treats or microwaved hot dog slices!
- But what if you don't have time to train a dog? Can you pay someone to train your dog for you? There are doggy sleep-away training camps, where your dog is trained intensively for several days to weeks and then returned to you when they graduate. While it may sound great, you are supposed to train your dog, not someone else. And most dogs will only listen to the person that trained them. Plus, you need training, too. As a rule of thumb, if you don't have time to train a dog, you likely don't have time to have a dog.

Dogs have been bred to please humans, so most dogs will show lots of eagerness to follow commands.

When it comes to training pets, you should never use physical or verbal punishment—such as swatting, spanking, or yelling—as this can result in behavioral problems. Instead, use reward-based training so that your pet makes an association with something positive.



- Try to find dog trainers who are advocates for a unique collar called a gentle leader, a must-have tool for new puppies or new dog owners. It's a modified leash that looks like a muzzle—but it's not. It's much more humane. The gentle leader has two main straps: one that goes over the nose and mouth and one that goes around the back of the neck. The part that goes over the muzzle is the most effective part, as it mimics what happens naturally in the wolf hierarchy. In the wild, the alpha wolf exerts its dominance by grabbing the snout of the submissive dog, so this muzzle strap mimics that in a language that your dog will understand. Don't worry, though: Your dog can still open their mouth to pant, drink, eat, bark, and even bite with this strap on. The other part of the neck strap on the gentle leader is designed to prevent your dog from pulling on the leash while also making your dog relax; it mimics a mother carrying her puppy by the scruff. The gentle leader makes puppy training much easier and teaches your dog to walk properly on a leash. Consistently use the gentle leader when walking your dog for at least the first six to nine months of life and retire it once they've been adequately trained.

Common Training Mistakes

- Most people don't know how to train a dog. They think they do, but they don't. Here are some of the best tips for dog-training success:

 Use hand motions at the same time as verbal commands.

It's important to use simultaneous hand motions with verbal commands—that way, if your dog is far from you, you can still signal to them. It also gives your dog two opportunities to register the command: one verbally and one visually.

 Use short, concise commands.

There are only five commands you really need: sit, stay, come, heel, and down. Make sure your choice of words matches a consistent command. Be brief in your command. When you say “down,” you mean lay down. You don't mean get off the sofa. When you say “stay,” you have to give your dog a release command (like waving your hands by your knees) or they will just get up whenever you've forgotten about them.

 Train consistently.

It's important that you commit to instructing your dog for five to 10 minutes a day for the first year you have them. This will make responding to commands part of their daily routine, ingraining it into their behavior.

 Involve the whole family.

Take turns so each family member trains your dog. In other words, before anyone in your family feeds your dog, opens the door, puts on a leash, or opens the car door, they should always make your dog sit, stay, or lie down first. In addition to the consistency, it teaches your dog to respect all members of the family.

 Understand positive and negative associations with training.

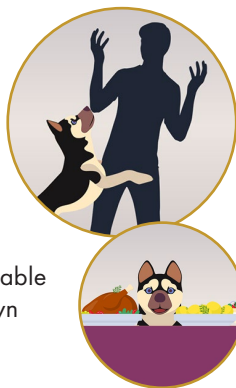
This has two parts. The first part is about timing. You only

If you walk to the kitchen to grab a treat after giving a command one minute ago, it's too late, as your pet can't make a direct association with the command by then.

have a few seconds to forge a positive or negative association. Let's say you found a poop pile in the house when you got home from work. You shouldn't punish your dog, as they have no idea what you're pushing them for! But if your dog is pooping on your shoe right in front of you, a quick "no!" helps them associate the behavior with an immediate verbal reprimand. The second part to this aspect of training is to use positive and negative association correctly. When you come home and open the crate when your dog is wildly howling and barking, you just taught your dog that if they bark and act crazy, they'll be rewarded by being released from the crate and getting lots of attention!

- When it comes to training your pet, it's important to avoid bad habits early. It'll save you a lot of grief in the long run.

- 🐾 Don't teach your dog to jump on you to give you a hug. While you might think it's cute, this trick only teaches them that it's OK to jump on everybody (which it isn't).
- 🐾 Don't teach your dog to shake, as this trains them to paw for anything they want.
- 🐾 Letting your dog eat off your plate or eat lots of table food makes your dog hold out on eating their own food and runs the risk of creating a picky eater.



Crate Training Your Dog

- The next important part of puppy training is appropriate crate training. Do it correctly or it could scar your dog for life! Veterinary professionals and animal trainers are huge fans of crate training early, especially when dogs are puppies.
- Crates are supposed to be the equivalent of a wolf den—a safe place for your pet. They also help keep your dog safe while you're out of the house by preventing accidental poisonings, household damage, and ingestion of harmful things like socks or blankets or carpeting.

- When getting a crate, the Goldilocks rule applies: Make sure it's not too big or too small, but just right. The crate should be tall and wide enough for your dog to stand up and stretch in but shouldn't be so large that they can walk across to the other side to defecate and urinate in it. Also, make the crate as puppy-friendly and comfortable as possible. Puppy-proof blankets, toys, treats, and meals should ideally always be offered in the crate so that your dog associates the crate with positive things. And when you're home, you should always leave the crate open so that your dog can choose when they want to go in on their own. It's good to always leave water in there, too.

Crates should not be used as punishment.

What about Training Your Cat? Is That Even Possible?

Some cats can be trained to walk on leashes and fetch and use toilets, but generally, you shouldn't waste too much time trying to train your cat—in large part because they don't care about pleasing you. Training a cat takes much more consistency than training a dog. It also takes more treats and lots of praise since they don't respond well to much else. However, there are a few things you should do when you get a new cat or kitten.

- Show them where the litter box is. Gently place them in the litter box, take their front paws, and gently scratch at the litter so they know how to cover their feces. Thankfully, almost 100% of cats figure out litter training immediately!
- Slowly acclimate your cat to a cat carrier. Simply leave the carrier in a room with the door open and put the occasional treat or toy in there. You can even occasionally place your cat gently into the carrier while leaving an amazing treat inside. Implement this training and adaptation the closer you get to a veterinary visit or car trip.

- When first crate training your dog, make sure to start with short time periods. The biggest mistake people make when it comes to crates is inappropriate positive and negative training. Again, do not let your puppy or dog out of the crate when you hear them whining or crying or pawing at the door. If you do, you just rewarded your dog for bad behavior! Instead, you want to wait until your dog is lying down and quietly sleeping in the crate to open the door; a quiet but affirmative “Good dog!” is all you need. Leave the door open for your dog to come out on their own. After that, gradually increase the time that you leave your dog in the crate, and you’ll soon find that a well-trained dog adjusted to their crate will often choose to sleep in the crate when the door is open.
- You should crate a puppy for the first six to nine months of their life and gradually let them out to be on their own in the house in small trial periods (like when you leave for a quick errand). Once you know that you can trust them to be free in the house (which should be pet-proofed, of course), you can get rid of the crate.
- If you’re adopting or rescuing an older or adult dog that’s never been in a crate, be aware that they will probably freak out! Some adult dogs are hard to crate train, especially if they came from a shelter setting, so go slow, be patient, stick with positive association, and work with an animal trainer, behaviorist, or your veterinary professional if you need help. Using gates to create a well-secured, comfortable area in the kitchen can work instead of a crate when you’re not home.

Tips for Collars and Leashes

- Keep a comfortable, clean, snug collar on your pet—dog or cat—at all times. This applies even to indoor cats. If the tags on the collar jingle, use a rubber band to secure them together. If the collar is uncomfortable for you when your dog or cat snuggles with you on the couch, find a collar that you can live with. Don’t leave your furry family member unprotected because a collar inconveniences you.

- When it comes to walking your dog (or cat) on a leash, keep in mind that it's not an innate trait to walk attached to a rope. Start by training your dog to walk by your side. Start with a six-foot leash that is secured to a snug collar. In the initial training stages, use a gentle leader attached to the leash to train your dog not to pull. As for what type of leash to use, you want a leash that you can control a dog on. This is usually a sturdy, six- to eight-foot leash with a handle for you to grab tightly. It's not usually a flexible, extended leash, as they are too long. With these types of leashes, you often don't have enough control of your dog when another dog approaches or when a squirrel or jogger runs nearby.*
- How do you let your dog interact with other pets on a leash? First, make sure to socialize your dog appropriately so that they know how to behave around other dogs. Next, keep your dog at a comfortable distance on a loose but controlled leash, as dogs will often pick up cues from the tension of the leash. If you do want the dogs to meet, always ask the other owner's permission first. Make sure to monitor each dog's body language. Finally, if the dogs do interact, prevent the leashes from getting tangled. If you need to control your dog quickly, it will be much harder to do so if their leash is bound up with the other.**

* Generally, if you're not sure that your dog will return on a "come" command, you don't have time to reel your dog in quickly enough with such longer, flexible leashes.

** Recently, there's been a movement to include a yellow ribbon on dog leashes to indicate caution. It doesn't necessarily mean that the dog is aggressive; it indicates that the dog needs extra space.

Lesson 11

Diet and Nutrition for Dogs and Cats

Nutrition plays an important role in your pet's longevity and health. You want to make sure to feed your dog or cat a nutritionally balanced pet food that won't break the bank, gives them a great coat, and makes them defecate only once or twice a day.





Rules of Nutrition

- It's recommended that you feed a science- and research-based dry food to your pets, with occasional wet food as treats. Dry pet food is more convenient, doesn't need to be refrigerated, is more ecofriendly, has a lower carbon footprint, is less expensive, and is sold in larger portions, meaning you need to make fewer trips to the grocery store or veterinary clinic. If you want to feed a frozen food, that's fine too, as long as it's balanced and, ideally, cooked.
- Whether you prefer to feed dry or wet food, here are some rules of nutrition:
 - 🐾 **Use an AAFCO-approved food.** AAFCO stands for the Association of American Feed Control Officials, which is a nonprofit, private organization that works with the US FDA and state governments to make sure that pet, livestock, and animal feeds are safe and balanced. AAFCO establishes what nutrients an animal needs based on the species and life stage, but they don't actually test

pet food. That said, they offer the best guidelines currently for making sure the correct ratio of protein, fat, minerals, and other dietary requirements are met.

 Feed a pet food that is backed by research and science.

You want to make sure that the food undergoes strict testing and is backed by extensive research from veterinary nutritionists. Also, keep in mind that just because it says “veterinarian recommended” on a bag of pet food or on a company’s website, that doesn’t mean much. You also want a pet food company that’s been around for a while. Many companies pop up as they realize that the pet food industry is a multibillion-dollar industry. They want to make profits, but they may not understand the science behind nutrition as well as established companies do.

 Feed a nutrient-dense food that is appropriate for the age of your pet.

Nutrient-dense foods are typically considered premium to super-premium foods that you can find at grocery stores or pet specialty stores but not typically at feed or discount stores. Premium and super-premium pet foods are generally moderately priced and use a good source of protein, such as chicken, poultry, fish, lamb, beef, or brewers’ rice. Nutrient-dense ingredients are highly digestible, so your pet uses more of the nutrients and produces less stool. If your dog is having a bowel movement more than twice a day, or if your cat is having one more than once a day, that often means your pet food has a lot of filler in it, which is not good, unless it’s for medical reasons, such as needing more fiber to combat chronic constipation. Nutrient-dense foods are especially important depending on the age of your dog or cat. Keep puppies on puppy food until one year of age and kittens on kitten food until nine months of age.* After that, gradually mix in adult food slowly over a few days to weeks.**

* In giant or large-breed dogs, you should look for a large breed–specific puppy food. Consider feeding this until two years of age as you carefully monitor weight and growth.

** If your dog or cat is neutered or spayed, you’ll want to carefully decrease the amount that you are feeding due to their slowed metabolism after desexing.

-  **Make sure to feed your pet the right amount.** There is a growing problem with pet obesity, as owners often feed according to the bag directions but misunderstand that they should give the amount for their pet's ideal body weight, not current weight. Also, it's best to use an actual measuring cup for accuracy.
-  **If the food isn't working, try another food** (albeit gradually)! When in doubt, talk to your veterinarian. You can get pet food from online sources or from pet stores, but know what you're getting. Also, keep in mind that while variety is the spice of life for you, you don't need to mix up flavors and brands too often when feeding your pet—you'll only create a more finicky pet.

Grain-Free Diets

- The term *grain-free* is largely a marketing ploy. There is no scientific support to suggest that grain-free diets have any health benefits for dogs or cats over traditional grain-based diets. Grains are beneficial for most dogs, as they provide carbohydrates, fats, and antioxidants. They are also packed with nutrients and are more ecofriendly because fewer farm animals have to be sacrificed to feed your pet. Anatomically, dogs are omnivores for a reason and can get their nutritional requirements from different meats, grains, and fruit sources.
- Fewer than 1% of dogs have a gluten allergy. It's inherited in the Irish setter but rarely seen in other breeds. While wheat-gluten allergies and intolerances may be on the rise in humans, this isn't common in dogs or cats. Going grain-free in pets is nothing more than a fad that isn't supported by veterinarians or veterinary nutritionists. If your pet does have a food allergy, it's typically due to the meat protein found in chicken, beef, eggs, or fish—not the grain.
- More importantly, there are health risks associated with grain-free food. Some of the newer boutique pet food companies were promoting grain-free foods and used more exotic ingredients, such as peas and legumes, instead of things like rice and wheat. Sadly, dogs and cats have died as a result of this, as some of these grain-free diets were causing heart

failure from dilated cardiomyopathy (DCM), which prevents the heart from pumping blood properly. Go to the FDA website to see which diets were implicated with these DCM heart-related changes.

- What about cats and grain-free diets? Cats are true carnivores. They not only like meat but need it. Unlike dogs, who can synthesize some of their own amino acids, cats need to get all of their essential amino acids and other trace minerals and vitamins from their food, or they can develop severe health-related complications (such as DCM). Cats can eat small amounts of carbohydrates, which are also necessary to make a dry kibble shape. When in doubt, talk to your veterinarian about the best diet for your cat.

Home-Cooked and Raw Diets

- Home-cooked diets can be a great way of providing for your pet, especially if they have certain medical conditions, such as kidney failure, liver problems, cancer, or inflammatory bowel disease. But if you do cook for your pet, make sure it's a balanced diet with the correct number of calories, minerals, vitamins, and proteins. If you want to cook for your pet, their diet should be balanced by a board-certified veterinary nutritionist.
- What about raw-meat diets or BARF (bones and raw food) diets? Raw-food diets likely have their place with working or elite sports dogs or even the rare pet with complex health issues, but these diets should never be used when your dog or cat is pediatric or geriatric—and never in households with immunosuppressed two-legged or four-legged members!
- Raw-meat or BARF diets have become popular. BARF diets use uncooked meat, eggs, and different parts of a farm animal's body, including by-products like liver, trachea, neck, and organ meat. The problem with BARF diets is that they aren't balanced or AAFCO approved, and mineral and vitamin deficiencies or even toxicities can develop from such diets. Another concern is that dogs can get physically hurt from the BARF diet. Uncooked bones can fracture teeth, cause injuries to the mouth and tongue, get lodged around the jaw, get stuck in the esophagus and gastrointestinal tract, or even cause constipation. Most veterinarians and almost all

The word *by-product* refers to ingredients produced over and above the market demand for human food. Not all by-products are bad. Some by-products are good, high-quality, nutrient-dense ingredients that pets love—think organ meat and parts of the animal that humans don’t typically eat.

Most of the top pet food companies only use high-quality by-products—such as hearts, livers, kidneys, lungs, and spleen—which are excellent sources of protein, vitamins, and minerals and boost the nutritional value of pet food. Meat by-products are not hide, hooves, horns, or teeth.

In addition to fortifying food, by-products help support common sustainability goals by using the wholesome parts of a farm animal to meet a pet’s nutritional needs.

veterinary nutritionists are against raw-food diets because of the risk of the uncooked meat harboring dangerous bacteria. Just as you have to use appropriate hygiene when handling raw chicken, you have to do the same when handling these BARF diets—especially in households with children, the elderly, or the immunosuppressed.

- Before considering a homemade raw-meat or BARF diet, do your homework. You should consult with a board-certified veterinary nutritionist to make sure you’re feeding a balanced diet. You can go to the American College of Veterinary Nutrition website ([ACVN.org](https://www.acvn.org)) and find a nutritionist that fits what you need. Most veterinary nutritionists perform telemedicine consults and don’t even need to be in your state!
- Veterinary studies have found that homemade diets and raw-meat diets are often deficient in minerals, vitamins, and calories. In one study, 60% of these diets had major nutrient deficiencies. These diets typically contain too much protein, fat, and phosphorus and not enough calcium. This can result

in gastrointestinal issues, secondary pancreatitis, bone abnormalities, loose teeth, spontaneous fractures, and impaired growth. This is especially dangerous in growing puppies and kittens.

- If you feel that passionately about your pet's food, feed a homemade cooked diet or at least a flash-frozen or freeze-dried diet to minimize the secondary bacterial risk.

No scientific studies have demonstrated the health benefits of raw diets, but there's a rather large body of research showing that there are more risks.

Obesity

- Obesity is one of the biggest health concerns in pets. According to the Association for Pet Obesity Prevention, around 60% of dogs and cats in the United States are overweight or obese, which means that they are at least 20% over their ideal body weight. The cause of obesity is usually from excess caloric intake, genetic predisposition, or endocrine imbalance, such as thyroid or pituitary dysfunction.
- **Chances are good that your dog or cat falls into the obesity category.**
- Studies have shown that obesity shortens your pet's lifespan and adds more stress to their heart, lungs, and musculoskeletal system. It puts them at a much higher risk for diabetes, osteoarthritis, and other conditions. Overweight cats are at very high risk for diabetes mellitus, pancreatitis, and secondary liver problems.
- Purina conducted a unique lifetime diet-restriction study in dogs over a 14-year time period and showed that feeding a dog to maintain an ideal condition and weight can help them live longer by 15%, or 1.8 years! Such a study hasn't been done in cats, but the findings would likely be similar.

Meal Timing

- You should usually start puppies and kittens with ad-lib food—meaning that their food is always left out—and transition them later in life to split feedings, depending on the personality or the food-motivated nature of your pet. It is generally OK for you to keep food out and fill the bowl as needed, as long as your pet can exert self-control and self-regulate without becoming overweight.
- If your pet lacks self-control, is a gorging, is overweight, or is very food motivated, you'll want to split up your pet's feedings. Feed dogs once or twice a day, depending on how hungry they are. If your dog is constantly begging, you can split up the meals into two or three smaller feedings per day so that they feel more satiated.
- Feed cats four to five small meals, if possible, depending on what type of food you are feeding, as cats are grazers. If you're not home, consider an automatic feeder that dispenses a certain amount of food four or five times a day. However, recent studies have found that diabetic cats are better regulated with once-a-day feeding.

Lesson 12

Tips for Better Pet Budgeting

The initial purchase price of your pet is insignificant compared to what you are going to spend in the first few years of their life. For that reason, if money is a concern, take the money you might've spent on an expensive purebred and save it for long-term wellness and medical care. When you purchase or adopt a new puppy or kitten, they'll still require three to five additional vaccines; an annual examination (for the next 10 to 20 years); heartworm, flea, tick, and other medications; a spay or neuter; multiple collars, leashes, and toys; pet food; treats; pet licensing fees; pet sitter fees; beds; an emergency fund; and more!



Cost-Saving Tips

- Know what breeds can affect the long-term cost of your pet.** When you pick a pet, know that due to genetics and inbreeding, certain breeds are notorious for having expensive-to-treat medical problems. Some of the most expensive breeds are the English bulldog, French bulldog, golden retriever, Doberman pinscher, Cavalier King Charles spaniel, Yorkshire terrier, and Chihuahua. These breeds have congenital or inherited medical problems, for which you should save between \$5,000 and \$10,000 over the lifespan of your pet. Mixed-breed dogs have enhanced general health due to outbreeding, but mutts have medical problems, too, so you have to save.
- Don't let your pet get obese.** In the past decade, Banfield Pet Hospital has seen an increase of more than 150% in overweight dogs and cats. Sadly, pet owners are overfeeding their pets or using treats or table food to show their love. Instead, you should show your pets love by exercising them more! Humans and their pets are both under-exercised, which further contributes to obesity. The biggest mistake that contributes to obesity is feeding too many calories. Most pet owners look at the back of the bag of food and feed for their pet's current weight—but you should be feeding for your pet's ideal body weight. The extra strain on your pet from obesity is scientifically proven to cost your pet precious time,* and it's associated with an increased cost to you.**

Pet ownership shouldn't be a luxury. Everyone should have the right to experience the happiness, joy, and love from a pet. And with a few smart choices, it doesn't have to break the bank.

* Several lifespan studies conducted in dogs found that overweight and obese dogs die sooner.

** According to Banfield Pet Hospital, dog owners spent 17% more on health care and 25% more on medications, with an additional \$2,000 per year for dogs with obesity-related conditions. Owners of overweight cats spent 36% more on diagnostic procedures and paid an average of \$1,200 more per year due to obesity-related conditions.

- **Take advantage of preventative medicine and catch things early.** Having an annual examination is key so that your veterinarian can pick up on abnormalities as soon as possible. And keeping your pet up to date on their vaccines—or, as they age, getting routine blood work on your pet once a year—is also vital. Of equal importance is your own vigilance:

Most people underestimate their pet's body condition, which prevents them from being able to adequately manage their pet's weight.

If you notice anything out of the ordinary in your pet, such as drinking and urinating more than they normally do, it warrants a veterinary visit or at least a phone call. To avoid a costly visit to the veterinary ER, don't wait too long to get to a vet. It's cheaper if you are proactive and get your pet medical attention earlier.

Pet Insurance

- Another way of saving money with your pet is by getting pet insurance. It has been around for almost 40 years in the US, but most people don't have it. You should consider pet insurance because it's usually more economical in the end than paying out of pocket.
- More medical problems arise as your pet ages, so getting insurance when your pet is older is much more expensive than when you get it for a young puppy or kitten.
- Pet insurance is completely different from human medical insurance. It's a reimbursement model, which means that you pay your veterinary clinic out of pocket and then seek reimbursement by submitting a claim to the insurance company. Because of this, it's accepted at almost all veterinary hospitals, because they typically aren't bogged down with paperwork or very involved in the reimbursement process. Also, unlike human health

Fewer than 2% of American pets are covered by pet insurance.

insurance companies, which are part of the decision-making process in the care you receive, the medical care for your pet is up to the discretion of you and your veterinarian.

- The amount you're reimbursed can vary dramatically between companies, as well as on the parameters you select. You can get reimbursement anywhere from 10% to 90%. Obviously, you want the one that is closer to almost full reimbursement, but the policy may cost you more.
- Make sure to read the fine print. Not all insurance policies will cover everything. If your pet has a preexisting condition, you likely won't be covered for that condition on future visits. This is why it's important that you get pet insurance early in your pet's life—before anything happens or before anything is diagnosed.* Some pet insurance companies also won't cover certain breed predilections or inherited genetic conditions.
- All that said, pet insurance is very helpful for emergencies that you aren't prepared for—like when your dog swallows a corn cob at a barbecue or your cat eats a bunch of hair ties and requires emergency surgery. Having pet insurance can also be lifesaving if your dog gets hit by a car and needs pelvis surgery and treatment for a lung tear or internal bleeding, which could easily be \$8,000 to \$10,000. With pet insurance, you could get the vast amount of that reimbursed.
- Veterinarians don't want to have to do economic euthanasias, especially when they know that some problems are treatable. As the cost of veterinary health care grows over time, the cost of owning a pet will increase—and you want to be able to treat your dog or cat with the best care possible. Having pet insurance provides the freedom for veterinarians to perform the necessary tests, which helps lead to a more rapid diagnosis, a faster treatment response, and a potentially better outcome for your pet.
- Why do so few pet owners have insurance? Since it works out to be about \$2 to \$5 a day, all pet owners tend to see is paying the equivalent of a Starbucks coffee a day without the immediate benefit.

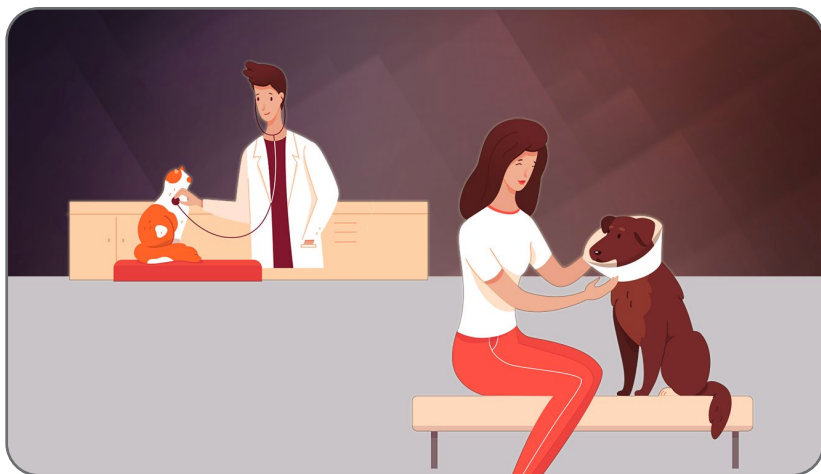
* Don't ask your veterinary clinic to alter your pet's medical record—that's insurance fraud!

- Here are a few tips on saving with pet insurance:
 - 🐾 You can save more if you have multiple pets, as there's typically a 5% to 10% multi-pet discount.
 - 🐾 You can also get some cost savings with some pet insurance companies by having a higher deductible, so use a pet insurance calculator to make sure you get the best coverage.*
- While you may not see any direct benefit of having pet insurance, know that you are helping to provide the best care for your pet. You might not see any direct benefit from having homeowner's insurance or car insurance, but it protects you if something goes horribly wrong. Pet insurance is especially important if you have an accident-prone pet.
- In a 2016 study, 56% of veterinarians said they wished their pet owners had pet insurance. It can be a lot to research, as some companies come and go, so ask your veterinarian, your colleagues, or your friends. Keep in mind that there are many different companies and a lot of variability in what they cover. Some pet insurances cover vaccines and wellness appointments, while some only cover catastrophic emergencies. Some newer pet insurances have tried to add more value with preventative packages. So do your research to find the best one for you and your four-legged family member.

Wellness Plans

- Pet insurance is completely different from a wellness plan, and as an educated pet owner who is trying to be an advocate for their dog or cat, you need to know the difference. A wellness plan is what it sounds like: a plan for well pets.

* Keep in mind that some pet insurance companies have waiting periods before the insurance kicks in, while others have benefit limits or exclusions.



- With wellness plans, you sign up and pay a monthly payment toward your pet's health. Wellness plans typically include unlimited office visits, wellness exams, all recommended vaccinations, screening for parasites (like fecal tests), and some diagnostic tests. Some wellness plans even include heartworm medication, flea and tick preventatives, an annual dental cleaning, and spaying or neutering. Some include x-rays, eye pressure tests, ECG monitoring, and DNA tests—but the more you add on, the more you pay each month.
- One benefit of wellness plans is that many pet owners like having their veterinary bills spread out monthly in order to help with budgeting. It also keeps your pets healthier, as you aren't inhibited about seeking veterinary care. Some wellness plans come with additional discounts or offers, such as loyalty points or discounts off certain products or services.

Banfield Pet Hospital, one of the largest veterinary practices, has one of the oldest, most well-established preventative pet health-care wellness plans, and you can tailor it for your pet.

- The bad news is that wellness plans are not pet insurance and do not cover sick pets. So, if your dog is vomiting or your cat is peeing outside of their litter box, these visits are not covered.
- It's often too expensive to have both pet insurance and a wellness plan. If you like the idea of having wellness visits covered, keep in mind that some pet insurance companies will cover these, too. When in doubt, talk to your veterinarian about this or do your research, but know that there are great options. Generally, wellness plans are great if you have a healthy dog that isn't accident prone, mischievous, a chewer, or an escaper or if you have a cat that likes to use up their nine lives.
- If you don't want to pay for pet insurance or a wellness plan, just do your best to keep your pet healthy. That's the easiest way to save money with a pet. Simply having fresh water readily available and keeping your pet well exercised and in lean body condition are great places to start. Feeding a well-balanced, veterinarian-recommended food, but not so much that your pet is overweight, is key—as is not feeding table scraps, fattening food, or bones. Other things that are easy to do include keeping your cat indoors, keeping your dog on a leash and making sure they're obedience trained, keeping your pet microchipped and up to date on appropriate vaccinations, and making sure your pet is on preventative medications. And don't forget to provide environmental enrichment and minimize stress in your cat's life. Top it off with having a savings account for your pet, where you sock away a dollar or two a day for their care, and you have a winning formula.

Lesson 13

◀◀◀ Table of Contents

Common Maladies in Cats and Dogs

Pet insurance companies come up with an annual list of the top 10 diseases in dogs and cats, comprised of the claims they receive from veterinary clinics.* When it comes to many of these ailments, there are several things you can do to potentially prevent them, or at least manage them early before they become severe.

* Keep in mind that this list is comprised by pet insurance companies and is biased toward pet owners who have pet insurance and seek veterinary care more often. That said, pet insurance companies are tracking these top conditions because they have to pay out based on these problems.



Top 10 Medical Problems for Cats

- | | |
|--------------------------|------------------------------|
| 1 Dental disease | 6 Diarrhea |
| 2 Urinary tract disease | 7 Diabetes |
| 3 Chronic kidney disease | 8 Inflammatory bowel disease |
| 4 Vomiting | 9 Skin allergies |
| 5 Hyperthyroidism | 10 Heart disease |

Top 10 Medical Problems for Dogs

- | | |
|----------------------------|----------------------------|
| 1 Skin allergies | 6 Dental disease |
| 2 Ear infections | 7 Vomiting and diarrhea |
| 3 Noncancerous skin masses | 8 Urinary tract infections |
| 4 Skin infections | 9 Heart disease |
| 5 Arthritis | 10 Anal glands problems |

Allergies

- Allergies, skin infections, and ear infections have topped the list of medical problems in dogs every year for the past decade. The reason that three of the top 10 medical problems in dogs are related to dermatology is because these problems are all related. If you notice your dog licking their paws, having brown saliva staining on their paws, scratching, having chronic ear infections, or developing hair loss, you have an allergic dog.
- Allergies are frustrating to diagnose and treat for both the veterinarian and the pet owner, and they require frequent veterinary visits and follow-ups, compliance, and long-term management. So, before you even purchase your dog, do your research to see if they have inherited allergies in their line.

- Pets with underlying allergies are more predisposed to getting skin and ear infections. This is because their immune system is hyper-triggered, and their skin balance is abnormal, putting them at higher risk for secondary bacterial or yeast infections. Signs of a secondary skin or ear infection include red bumps on the skin, an increase in licking or itching, pain when touching your pet's ear, red scratch marks on the inside of the ears, abnormal discharge or odor from the ears or skin, or constant shaking of the head, especially after swimming.
- For pets with chronic ear infections, you should flush their ears immediately after swimming with a prescription ear cleaner. If you do this, never touch the tip of the cleaner's bottle to the ear or skin, as that can spread the infection to the other ear. Also, don't use cotton swabs; instead, flush several teaspoons of cleaner in, massage the ear, and let your pet shake the rest out. When they're done, gently clean the inside of the ear with a soft gauze. Because of the potential for mess, you might want to do this outdoors.
- Keep in mind that you don't want to underclean or overclean pets' ears, as that can lead to a yeast infection or other problems. When in doubt, talk to your veterinarian. Ask them to show you how to correctly flush and clean ears, how often to clean, and which types of ear flush you should use.
- As for the causes for itchy dogs, the three main reasons are flea allergy dermatitis, atopy, and food allergies.

🐾 In flea-allergic dogs, the saliva from even one flea bite can cause intense itchiness, so it's always better to prevent it than to have any flea exposure.

🐾 Atopy is the equivalent of hay fever in humans. Instead of sneezing and having runny eyes, dogs will lick, itch, and scratch instead. Atopy is seasonal, which means you may notice your pet itching more in the spring and fall.

Because there are many medical problems that pets can get from fleas, make sure to keep your pets on year-round preventative medication.

 Pet owners tend to blame medical problems on nutrition, but food allergies are relatively rare. So before you start switching your pet's diet, consult with your veterinarian. To confirm a diagnosis of food allergies, your dog or cat should be fed a novel protein—a protein source they've never been exposed to before—for eight to 12 weeks as part of a food trial.* Food trials need to be conducted using a prescription diet from your veterinarian to be effective. This food should be the only thing that's going into your pet's mouth for the length of the trial.** If your pet dramatically improves while on this food trial, then your pet has a food allergy.

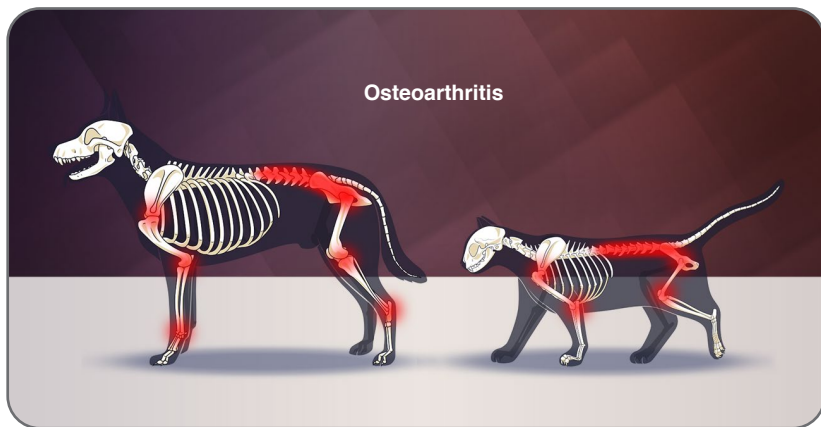
- Generally, when it comes to skin, if it's wet, it should be dry, and if it's dry, it should be wet. So, if your pet is developing a skin problem like a moist, oozing, inflamed hot spot, you could make it worse by putting antibiotic ointment on it.
- Save your money and don't buy Benadryl for your dog's allergies. Many pet owners medicate their dogs with this to try to help with allergies, but numerous veterinary studies show that over-the-counter antihistamines don't work well for this. Talk to your veterinarian about prescription-strength medications that might help more.

Arthritis and Skin Masses

- Another two common causes for medical problems in dogs are arthritis and skin masses. Osteoarthritis can be debilitating for dogs and cats, and overweight pets are more predisposed to osteoarthritis and have a shortened lifespan due to the extra strain on their musculoskeletal system. Rather than spend hundreds of dollars a year on arthritis medication and blood work at your vet, it's better to keep your pet in good body condition so that they aren't overweight or obese to begin with. Make sure to feed your pet the correct amount so that you can keep them at a healthy weight.

* Keep in mind that grain-free diets that you buy in a supermarket don't count here and shouldn't be used as part of a true food trial.

** Even heartworm medication, bones, and treats can mess up the diagnosis.



- As for skin masses, the general rule is that if it's bigger than the size of a pea, it needs to be assessed by your veterinarian. With skin masses, vets can't tell if they are benign or malignant unless they stick a needle into them to aspirate a few cells for analysis. If you're worried, or if the skin mass is getting bigger, it should be removed. The sooner a vet diagnoses it and removes the mass, the sooner they can treat it if it turns out to be cancer.
- Sometimes pet owners pay for skin mass surgery only to decline submitting the mass for pathology analysis. Don't ever do that. You always want to identify what type a mass is to rule out cancer. Certain types of cancer, such as mast cell tumor, feel like a benign fatty mass but are much more aggressive and require chemotherapy or surgery.

Dental Disease

- Both dogs and cats are susceptible to dental disease. In addition to brushing your pet's teeth regularly, it's important to have your pet's mouth examined by your vet once or twice a year, as most pets need to undergo a dental cleaning at least a few times in their lifetime. This is even more important if you have a greyhound, Yorkshire terrier, Chihuahua, or a few other breeds that can develop severe dental disease.

- If you notice tartar buildup or red lines around your pet's gums, it means that your pet has gingivitis. Even more rarely, it could indicate mouth cancer. Gingivitis can result in secondary bacterial infections in the bloodstream, heart valve problems, and systemic problems overall.

Heart Problems

- Another common problem affecting both dogs and cats is heart disease. When your vet uses their stethoscope to listen to your pet's heart, they're making sure that the heart rate, rhythm, and sound are normal. A dog's normal heart rate should be 60 to 120 beats per minute at rest; for a cat, it should be 120 to 200 at rest.* Normally, the vet should never hear a heart murmur, which means that the blood flow through the heart and valves is abnormal.
- Unfortunately, it's estimated that one out of every 10 dogs will develop some type of heart disease during their lifetime, and 80% of the time, it's due to a disease called mitral valve insufficiency, or chronic valvular heart disease. In cats, heart murmurs are typically due to abnormally thickened heart muscle, which is due to a disease called hypertrophic cardiomyopathy (HCM), or unclassified cardiomyopathy. This can occur when the heart valves work fine but the heart muscle can't relax appropriately. Regardless of what type of heart disease your pet is diagnosed with, it can lead to fluid accumulation in the lungs, abnormal heart rhythms, blood clots or strokes, and even sudden death.
- With dogs, chronic valvular heart disease is especially common in small- to medium-sized breeds, such as miniature poodles, Cavalier King Charles spaniels, Pekingese, terriers, and beagles. In human medicine, you'd get in line for a new valve, but that's not a common or affordable option in veterinary medicine. In cats, HCM is seen more in young male cats, especially larger breeds, such as Maine coons, where it's thought to be inherited.

* At the veterinary clinic, your pet's heart rate is often a bit higher from excitement.

- Heart murmurs are graded on a scale of one to six, with six being the loudest. As your pet ages, it's important to monitor if a heart murmur is getting louder. If it is, a work-up is warranted.

Heart Murmur Grading		
Intensity	Grade	Loudness
Low	1	Very soft murmur can be heard only after careful auscultation in a quiet environment
	2	Soft murmur that is audible with careful auscultation
Moderate	3	Moderate murmur audible with auscultation
	4	Loud murmur without a thrill
High	5	Loud murmur with a palpable thrill
	6	Audible with stethoscope held slightly off chest wall

Vomiting and Diarrhea

- Vomiting and diarrhea are both common medical problems in dogs and cats and can occur from many underlying causes, such as parasites, infectious diseases, dietary change, dietary indiscretion, foreign bodies, inflammation of the gastrointestinal tract, intestinal cancer, or other underlying metabolic problems. Some gastrointestinal problems are inherited and more common in certain breeds, such as German shepherds, Boxers, Yorkshire terriers, wheaten terriers, Siamese cats, Schnauzers, and Shetland sheepdogs.

- Most of the time, vomiting and diarrhea can be treated easily with deworming, dietary changes, antibiotics, or certain medications. The prognosis will vary depending on what the underlying cause is, but ultimately you want to identify and fix the problem earlier than later. Untreated, some of the diseases can result in severe complications.
- If you notice gastrointestinal signs going on for more than a few days—or multiple episodes happening—you need to get to a vet for an appropriate work-up.

Kidney Disease

- Kidney disease, specifically chronic kidney disease (CKD), is one of the top reasons that cats decline as they age. Dogs also can develop this, but they don't seem to tolerate kidney problems as well as cats do. Cats can live with kidney disease for years, but this is less the case in dogs.
- The kidneys filter out waste products and toxins from the blood in the form of urine, and without adequate filtration, these toxins remain in the blood. Whether it's due to age, or untreated urinary tract infections that migrate up to the kidneys, or certain infectious diseases, CKD can be deadly.
- One of the earliest signs of CKD is excessive urination and thirst. That's because the kidneys aren't able to absorb as much water as they should, and this results in more dilute urine. If you notice that the clumps in the litter box are getting bigger, or if you notice that you're filling the water bowl more frequently, blood work and urine tests are a must.
- Blood work screening in middle-aged to geriatric pets is key to help detect any kind of underlying medical problems. To catch things like kidney disease early, do a physical exam and blood work twice a year as your pet ages.
- Also, feed your cats wet food. Not only does it have less carbohydrates, but it has more moisture content, which is important for keeping your cat hydrated. Train your cat to eat canned food as a snack, and gruel it down to a soupy consistency to help increase water content.

- Wash your pet's water bowls at least once a week to make sure they're fresh and clean. If you're using cat water fountains, it's important to dismantle them and clean them weekly to prevent mineral or algae buildup.
- Water balance is so important, so do everything you can to help enhance your pet's—especially your cat's—water intake and hopefully prevent CKD down the line. There's a Purina supplement called Hydra Care that can help your cat drink more, too.

Urinary Tract Infections

- When it comes to your pet's health, you also want to carefully monitor your pet's urinary habits. This is so important that an entire lesson is dedicated to kitty litter ([lesson 9](#)). But dog owners aren't off the hook—especially if you have a fenced-in backyard. While it's convenient to just let your dog outside to urinate and defecate, you aren't able to monitor your pet's toilet habits as carefully. If you have a fenced-in yard, try to leash-walk your dog or at least look out the window to make sure your dog isn't straining or making multiple attempts to eliminate.
- Urinary tract infections (UTIs) are an infection in any part of the urinary system, meaning the bladder, kidneys, ureters, and urethra. It's typically due to bacteria but rarely can be a result of a fungal infection.* Dogs and

If your pet was diagnosed with a problem and you get pet insurance after the fact, know that any problems before you had pet insurance are considered preexisting. That's why it's important to get pet insurance as early as possible: The sooner you get it, the fewer conditions that will be considered preexisting.

* Keep in mind that urine is normally sterile.

cats are often more predisposed to UTIs due to underlying medical problems, such as kidney disease or diabetes. Untreated UTIs can result in bladder stones in dogs. So keep an eye on your pet's toilet habits to be safe.

Anal Glands

- Anal glands are two scent glands located at approximately three o'clock and nine o'clock inside your pet's rectum. Cats have them, too, but they're less likely to have medical problems with them. Normally, anal glands have a duct or tube that excretes a black-to-brownish foul-smelling liquid directly into the feces when your pet defecates. In some dogs, these anal glands become impacted, which means that the liquid can't come out. This results in clinical signs of discomfort, excessive licking of the perineal region, and scooting of the rectal area.
- While groomers often will express anal glands, this is a task that should generally be left to the veterinary professional. Don't attempt to express your pet's anal glands at home, as it can be painful, or even abscessed. With severe infections, the glands can rupture, resulting in bleeding and pain. Sometimes your veterinarian can flush these anal ducts and infuse them with steroids to reduce the inflammation. At times, dietary changes—such as shifting to a higher-fiber diet—can help with emptying these glands. But if it's a monthly problem that

When it comes to keeping your pets healthy, home remedies like coconut oil, antibiotic ointment, or other concoctions often don't help—and sometimes, they can actually make things worse. Some home remedies, such as tea tree oil, can even be poisonous to your pet! The exception is witch hazel, which works great for cats who suffer from feline acne.

isn't responding to medical management, surgery may be an option. The surgery can be complex, and very rarely, fecal incontinence can be a side effect, so look for a board-certified surgeon to treat your pet.

Lesson 14

Diabetes and Endocrine Disorders

Endocrine disorders are some of the most common and serious diseases pets can have. As the pet population ages and as the prevalence of obesity increases, vets are seeing a dramatic increase in these diseases. The endocrine system consists of the hormone-producing glands of the body, which regulate a wide range of effects, such as blood sugar levels, metabolism, weight, fluid balance, and appetite. Interestingly, endocrine diseases in humans and animals are the same—from problems with insulin, to thyroid hormone, to cortisol levels, and more.



Hypothyroidism

- In dogs, one of the most common endocrine diseases is hypothyroidism. This is when the thyroid gland is underactive, resulting in decreased levels of thyroid hormone, specifically T4 and T3. This is the opposite of what cats get: hyperthyroidism.*
- Clinical signs of hypothyroidism include sluggishness, exercise intolerance, weight gain, a dry and thin hair coat, heat-seeking behavior, a slower heart rate, infertility, and even some less common neurologic signs.
- Hypothyroidism is relatively easy to diagnose based on history, clinical signs, a thorough physical examination, and blood work. The prognosis for hypothyroidism is excellent, as it just requires daily supplementation in the form of a pill called levothyroxine. This typically needs to be given for the rest of your dog's life, but it's a tiny pill that's inexpensive.**
- In the long term, your veterinarian will have to monitor the thyroid hormone levels in your dog's blood to make sure the right dose is being used, as side effects can happen with under- or overdosing. The first blood test should be done one to two months after starting the supplementation and then a few times a year thereafter.

The prognosis for hypothyroidism is excellent, provided the endocrine disease isn't from a rare thyroid cancer. And this endocrine disease is very inexpensive to treat.

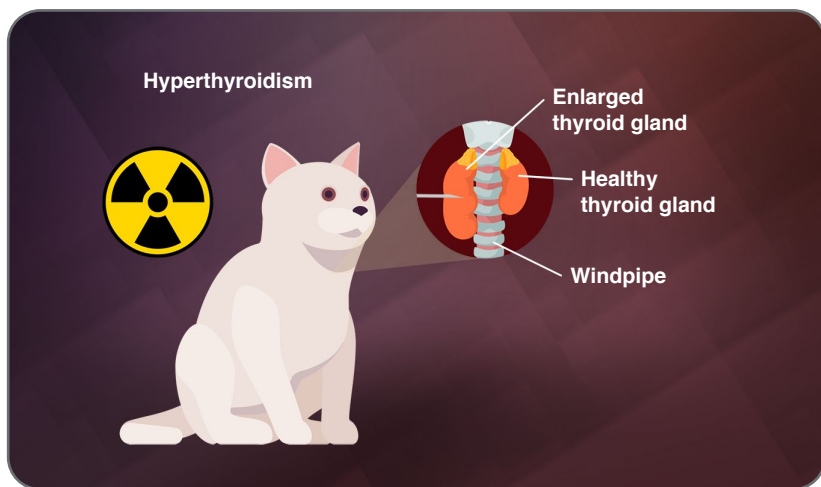
* This is also common in golden retrievers, dachshunds, Doberman pinschers, Great Danes, poodles, and several other breeds.

** There are both brand-name and generic thyroid supplements, and there are significant differences in how dogs respond to these—so stick with one type of medication, as changing them can make your dog harder to regulate.

Hyperthyroidism

- The opposite of hypothyroidism is hyperthyroidism. This is seen in cats and results in an overactive thyroid gland and too much thyroid hormone. This is one of the most common endocrine problems in cats, and it's almost always from a benign thyroid goiter. Very rarely, it can be a cancerous thyroid mass. It's seen more in middle-aged cats and can result in signs of an overstimulated metabolic system, which means that the kidneys filter faster, the heart beats faster, and calories burn quicker.
- If your cat is losing weight, acting hungrier, hyperactive, meowing or yowling more, restless, drinking and urinating more, vomiting more frequently, or experiencing a poor hair coat, then a thyroid test is a must.
- The diagnosis of hyperthyroidism is generally easy. It's based on history, clinical signs, a thorough physical examination, and a T4 hormone test. Additional thyroid tests may need to be done in atypical cases.

If your cat has a palpable thyroid nodule under the chin, it means that they may eventually have hyperthyroidism.



- Unlike hypothyroidism in dogs, more extensive blood work and testing is required for hyperthyroidism, including a general health screening with a complete blood test and chemistry panel, along with a urine test, blood pressure check, and maybe even chest x-rays.
- Hyperthyroidism can have serious effects on your cat's body, even with treatment. Hyperthyroidism can result in complications with kidney failure and result in high blood pressure with secondary cardiac complications, such as arrhythmias, heart enlargement, congestive heart failure, and even strokes. That's why you want to get it diagnosed and treated sooner rather than later.
- Treatment for hyperthyroidism includes one of four options: oral medications once or twice a day, radioactive iodine therapy (known as I-131 therapy), an iodine-restricted prescription diet, or surgical removal of the thyroid goiter.



The main oral medication is called methimazole (under the common brand name Tapazole), which interferes with the production of thyroid hormone. While methimazole is safe, there are rare side effects, so blood work needs to be done at your vet frequently to make sure that it is being dosed correctly and that there are no complications from it. Initially, you should do blood work one to two weeks after starting the medication, then one month later,

Having a pet with an endocrine disease is a big commitment—both financially and mentally. Unfortunately, there's not much you can do to prevent them, aside from preventing obesity to avoid diabetes. Otherwise, a lot is likely inherited. But the good news is that the majority of these types of endocrine diseases are treatable.

and then every three months for one year. Once your cat is doing better and the thyroid hormone is more stable, blood work once or twice a year is sufficient.

 If your cat hates going to the vet that frequently, or if you can't pill your cat twice a day, using the I-131 therapy can be a great alternative. This is when your cat gets an injection of a radioactive isotope that destroys the overactive thyroid tissue. But since your cat is radioactive for a week, they need to be hospitalized in a specially licensed facility for between one and two weeks. I-131 can be expensive, but long term it becomes a wash, as you're not paying for blood work and veterinary visits as frequently.

 A prescription diet made by Hill's called y/d is a low-iodine diet that can help with mild cases of hyperthyroidism. But be aware, your cat can't eat anything else while on this diet—which means no snacks, treats, or other cat food! Per the manufacturer, this can improve thyroid levels within three weeks.

 A thyroidectomy is a surgery where the thyroid glands are removed. Unfortunately, about 75% of hyperthyroid cats have goiters in both glands, so both glands may need to be surgically removed.

- While these options might sound overwhelming, the prognosis is good with treatment.

Diabetes Mellitus

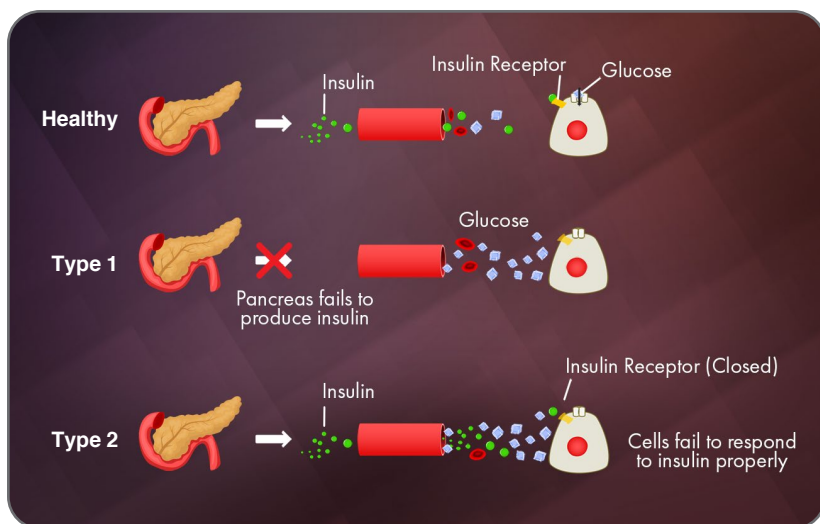
- Diabetes is a costlier and more labor-intensive endocrine disease to treat. That said, know that if your pet was recently diagnosed with diabetes mellitus, it's not a death sentence! Also know that diabetes mellitus is different from diabetes insipidus, which is rare and affects water balance. Diabetes mellitus is more common in middle-aged, obese dogs and cats and is seen more in certain breeds of dogs* and in female dogs.

* This includes Samoyeds, miniature poodles, dachshunds, terrier types, Keeshonds, and Schnauzers.

- Untreated, diabetes can be fatal, so the sooner it's diagnosed, the sooner it can be treated with insulin.
- Dogs and cats have different types of diabetes. Once a dog is diagnosed with diabetes, they'll have it for life. Contrast that with cats, who may have it transiently. Cats often have insulin resistance due to obesity, so with insulin, appropriate nutrition, and weight loss, they can potentially go into remission. Cat owners should be highly motivated to treat diabetes aggressively, as the more aggressively and carefully it's treated, the more likely the diabetes will go away and the fewer injections you have to give.
- Diabetic dogs and cats can live long, healthy lives with appropriate care and treatment. Just know that they'll need more frequent trips to the veterinarian to regulate blood sugar and that you'll need to be diligent with twice-a-day injections of insulin.
- Signs of diabetes are related to having excessive blood sugar levels. Typical symptoms include lethargy or weakness; drinking, eating, and urinating more often; a poor hair coat; having urinary accidents in the house; and increased whiteness in the eyes due to cataracts—or even blindness.

**What exactly is happening in the body
if your pet has diabetes?**

With diabetes, the pancreas isn't making enough insulin, which is the hormone necessary to push glucose, or sugar, into the cells of the body to be utilized. Without insulin, cells are starving, and the body is stimulated to produce more and more glucose in an attempt to feed the cells. Unfortunately, this results in hyperglycemia—an elevated blood sugar. However, without insulin in the body, the sugar can't get into the cells.



- If diabetes isn't diagnosed promptly or goes untreated, it can result in more life-threatening clinical signs and an expensive ER visit. Untreated diabetes can lead to electrolyte abnormalities, fatty changes to the liver, inflammation of the pancreas, abnormalities in the nerves called peripheral neuropathy, urinary tract infections (UTIs), kidney infections, and life-threatening complications, such as hyperosmolar syndrome or diabetic ketoacidosis.
- The diagnosis of diabetes mellitus is based on history, clinical signs, physical examination findings, and blood work changes. The number-one sign is an elevated blood glucose level and presence of glucose in the urine.
- Because diabetes can affect other organs, general health screening tests should be done. A sterile urine culture is also recommended to rule out a UTI,* and x-rays or an ultrasound might be done on other organs to make sure there aren't any other related problems.

* Diabetic pets are at slightly increased risk for UTIs from all that extra sugar that spills over into their urine.

- As for treatment, that's where diabetes becomes more labor intensive than other types of endocrine diseases. Treatment will include insulin, nutritional changes, weight loss, and maybe oral medications.
- The most important of the treatments is insulin—in the form of twice-a-day injections. This might sound intimidating, but it's a miniscule needle, and your pet will barely feel it. Ask your veterinary technician to show you how to give it, and practice drawing up the insulin and administering it in the exam room. Consider recording this instruction with your smartphone so that you can always refer to the video later. Ask your vet to shave an area on the back of the neck, as that helps you see where you're injecting.
- Next on the treatment list is gradual nutritional changes, as this will help slow the absorption of sugar from the intestinal tract of your pet. In dogs, give a high-fiber diet to allow for a slow release of carbohydrates. In cats, give a low-carbohydrate, high-protein canned food. Canned kitten food or even Fancy Feast in the right amount can also help with regulation.
- You want to calculate the exact number of calories ingested, as weight loss in cats is key to regulating diabetes. Most cats require about 200 calories per day. Check with your veterinarian to make sure you are feeding the ideal diabetic food while simultaneously helping your cat lose weight. Cats can lose 1% to 2% of their total body weight per week. And keep in mind that cats hate sudden changes, so make sure to slowly introduce the new diet.
- There are some oral medications called hypoglycemic agents that are designed to help lower blood sugar—but they work only in cats, not dogs. And cats don't like taking these oral medications, so veterinary medicine doesn't use them quite as much as human medicine does.
- In the long term, you'll monitor blood glucose curves to see how your pet's body is responding to the insulin, along with a fructosamine blood level, which looks at the effect of blood sugar on the body's protein levels. Ultimately, the goal of treating a diabetic pet is to resolve the clinical signs of excessive thirst and urination, while minimizing complications of a diabetic crisis or a hypoglycemic episode.

- The prognosis for diabetes is fair. Some patients respond well and stabilize quickly, while in pets with more complicated, concurrent diseases, this can be harder to control. Some can be stabilized by your vet, but if your pet has another disease, such as chronic kidney or heart problems, often an appointment with an internal medicine specialist is recommended for long-term control.

Cushing's Disease

- Cushing's disease, otherwise known as hyperadrenocorticism, is a commonly suspected but underdiagnosed and undertreated endocrine problem. The problem arises in the adrenal glands, which sit near the kidneys.
- In the majority of dogs with Cushing's disease—almost 80%—there's a small tumor in the pituitary gland in the brain that is secreting too much adrenocorticotrophic hormone (ACTH), which stimulates the adrenal glands to produce too much steroid. In about 20% of the cases, a mass on the adrenal gland itself is directly releasing too much steroid. Sometimes, hyperadrenocorticism occurs when your pet is on chronic prednisone, a steroid commonly used in veterinary medicine.
- Regardless of what the cause is, with this condition, the body is producing or getting too much cortisol, also called cortisone. Hyperadrenocorticism is frustrating to diagnose and treat, as it's extensive and expensive. That said, it should be treated, since it can be fatal due to rarer, but more dangerous, side effects of blood clots, pulmonary embolism, and stroke. Certain dog breeds—especially as they approach nine years of age or older—are more prone to developing Cushing's.*
- Cushing's disease has similar symptoms to both diabetes and hypothyroidism put together; they include increased thirst and urination, constant panting, a pot-bellied appearance, hair loss, lethargy, seizures, and a sandy, gritty feeling on the skin called calcinosis cutis.

* This includes Boxers, Boston terriers, poodles, dachshunds, and miniature Schnauzers.

- Diagnosis is based on history, clinical signs, physical examination findings, and blood tests or more advanced diagnostic tests. Routine health panels may reveal elevated red blood cell, white blood cell, and platelet counts, along with an elevated liver enzyme called an alkaline phosphatase. Additional tests will also need to be done, including a urine cortisol/creatinine ratio, an ACTH stimulation test, a low-dose or high-dose dexamethasone suppression test, a blood ACTH concentration test, or even an ultrasound or CT scan of the pituitary region under anesthesia.
- Treatment for Cushing's disease includes medications like mitotane or trilostane, which lower the amount of steroid produced in the body. Untreated, there are some side effects—with some being potentially fatal—but many dogs aren't treated for hyperadrenocorticism due to the significant financial commitment involved with testing. These dogs should be treated but often aren't. Treatment for Cushing's disease has improved over the years, although it still requires extensive blood tests several times a year to monitor response to treatment.

Be patient when it comes to diagnosing and testing for Cushing's disease, as one standalone test won't do it.

Addison's Disease

- Addison's disease, involving an underactive adrenal gland, is easy to diagnose and easy and inexpensive to treat. Hypoadrenocorticism is the opposite of Cushing's disease: It's when the adrenal glands aren't producing enough hormones like steroids or aldosterone, which are important for salt balance. While this can be seen when you acutely stop long-term steroid administration in your pet, it's more commonly seen from the body attacking its own adrenal glands. Addison's is also likely inherited, as it's seen more in certain breeds* and in younger to middle-aged dogs, with 70% being females.

* This includes the black standard poodle, Leonbergers, Nova Scotia duck tolling retrievers, German shepherds, Great Danes, and wheaten terriers.

- Clinical signs of hypoadrenocorticism are from the lack of cortisol and aldosterone in the body. Cortisol is a vital hormone that's necessary to keep the body happy and to be able to function normally. Your pet's body needs just the right amount—not too much and not too little. Signs of hypoadrenocorticism include weakness, vomiting, diarrhea, excessive thirst, inappetence, and lethargy.
- Unfortunately, hypoadrenocorticism can look like a host of other problems, so extensive blood work needs to be done to look at kidney and liver function, white and red blood cells, salt balance, and more. Sometimes a fecal test, an ultrasound, or x-rays may need to be done.
- The most helpful tests for diagnosing hypoadrenocorticism are a baseline cortisol and an ACTH stimulation test, which measure the amount of steroid in the body. With hypoadrenocorticism, the levels will be extremely low. These tests can cost a few hundred dollars, but the treatment for this endocrine disease is inexpensive. It's pennies a day in the form of prednisone replacement therapy. You can work with your veterinarian to get your dog stabilized on the lowest effective dose as possible to help save some money.
- With Addison's disease, routine monitoring of electrolytes and blood work will need to be done initially more frequently and then once every six to 12 months for life.
- Dogs do well with this disease. However, any stressful event—such as going to the groomer or vet—can make them relapse. To help with this, veterinarians will send you home with extra doses of prednisone to give in case of an emergency. Regardless, the prognosis for hypoadrenocorticism is excellent with supportive care.

Lesson 15

Preventative Care for Your Pet

How do you help your pet live as long as possible? There are certain problems that can be prevented through proper care and nutrition, such as keeping your pet on preventative medications; preventing obesity, which can make your dog live 1.8 years longer on average; splurging on blood work and maybe even x-rays instead of vaccines as they age; and scooping your cat's litter box every day.



General Preventative Care

- Preventative care is vital to your pet's health. In general, keep your pet on year-round heartworm, flea, and tick medication; keep them up to date on their vaccines; and take them for an annual exam. [Lesson 5](#) provides more detailed information on vaccinations.

- Another way to keep your pet healthy is by pet-proofing your home. You almost certainly have pet poisons lurking in your house. Thankfully, about 90% of poisonings in pets have a good prognosis. But there are a few that can cause

chronic injury to your pet, including poisons that damage the kidneys, such as grapes, raisins, and lilies. Even if your pet is treated for the acute poisoning, it can potentially cause underlying damage and secondary chronic damage, potentially shortening your pet's life. So, simple pet-proofing can help your pet live longer.

With proper care, nutrition, and screening, you can help your pet live a longer, more comfortable life.

Preventing Obesity

- It really doesn't matter what you feed your pet as long as the food
 - 🐾 has never been on the FDA recall list,
 - 🐾 is balanced,
 - 🐾 gives your pet a good hair coat, and
 - 🐾 makes your pet defecate no more than twice a day.
- But how much you feed your pet is what's really important. Obesity is so common that you should almost certainly be feeding your pet 25% less.
- Dogs vary from a teacup Chihuahua to a huge Great Dane, so it's hard to estimate what ideal body weight is. But generally, the standard-size Labrador retriever and golden retriever should weigh between 65 and 80

pounds for a male and from 55 to 70 pounds for a female. A standard-size Yorkshire terrier should be 7 pounds. If they are 9 pounds, it doesn't sound too bad—but that would be more than 20% of their ideal weight, meaning that they are obese. And all that extra weight puts a lot of strain on the body.

The American Kennel Club website lists the standard weight and height for each breed of dog.

- Ask your veterinarian about your pet's body condition score (BCS), which was pioneered by Purina on a 9-point scale, with 9 being morbidly obese and 1 being emaciated. Most pets should be a 4. The Purina BCS uses three easy guidelines for scoring:

 **Feeling the ribs.** Ribs ideally shouldn't be seen but can be easily felt.

 **Looking at the waist of your dog when viewed from above.** Ideally, a defined (hourglass-shaped) waist is present behind the ribcage.

 **Looking at your pet from the side.** Ideally, the stomach tucks in behind the ribcage.*

- Ask your veterinarian to score your pet—but keep in mind that vets often underestimate the BCS because they are so used to seeing obese pets that being overweight or obese seems normal.

* When looking at your dog from the side, there should be an abdominal tuck; you shouldn't be able to trace a straight line along their belly from the elbow to the knees. There also shouldn't be an abdominal fat pad—the equivalent of a beer belly in your cat. When touching your dog's rump, you should be able to feel the bony structures of your dog's hips and pelvis under a thin layer of skin. If you have to palpate deeply for this, it means your pet is overweight.

- How much should you feed your pet to keep them at a BCS of 4? You should be following the feeding directions on the back of your pet's food bag based on ideal body weight—not current weight. This will depend on your pet's metabolism, activity level, health, age, and neutered status.
- When in doubt, feed your pet, not the bowl. In other words, don't just dump in the same amount of food every day, but instead base the amount on how old your pet is and whether they are energetic, pregnant, or lactating or have underlying medical problems, such as an underactive thyroid gland or osteoarthritis.
- When it comes to nutrition, if your veterinarian prescribes a food for your dog or cat, there's a reason why. One of the biggest mistakes pet owners make is when they stop feeding the prescription food. Another mistake is giving other types of cat treats with the prescription food. Unfortunately, this negates the benefits of the prescribed diet. Whenever you feed even small amounts of snacks while your pet is on a specific prescription diet, it won't work anymore. Talk with your veterinarian, as there is a specific medical rationale for why they are prescribing a particular food for your pet.

Weighing Your Pet

- Weigh your pet once a month. If your pet isn't too big for you to lift, you can weigh your pet and yourself together on a digital scale at home and subtract your own weight by weighing yourself alone afterward. You can set a monthly reminder in your phone's calendar and record your pet's weight.
- Weighing your pets once a month can help you pick up on diseases much sooner. This is especially important to do for cats as they approach middle age to geriatric, which is around 10 years of age. Weighing dogs monthly may be harder, depending on their size. If your dog is a toy breed or weighs less than 20 to 30 pounds, you can easily do this at home. But if you have a larger dog, it may be too hard to get accurate results. If your dog loves going for car rides, consider a monthly, or at least quarterly, visit to your veterinarian just to weigh in. Your vet won't charge for this—or, at least, they shouldn't—and it would be a great way to monitor your dog.

- Weighing your pet monthly is especially important if you're trying a weight-loss regimen for your pet. And if your pet has any chronic medical problems, such as inflammatory bowel disease, hypo- or hyperthyroidism, kidney disease, diabetes, or obesity, these weight check-ins are a must, as they'll help you keep better track of your pet's health.

Heart Murmurs

- Next on the list of common maladies that can be prevented with proper care and nutrition is heart murmurs. Unfortunately, it's estimated that one out of every 10 dogs will develop some type of heart disease during their lifetime. And 80% of the time, it's due to mitral valve insufficiency,* which means that a heart valve is leaking.
- Small dogs—especially the miniature poodle, Cavalier King Charles spaniel, Pekingese, terrier, and beagle—are more commonly diagnosed with heart murmurs. Some middle-sized to large-breed dogs can get this, too, but less commonly so. Humans also can develop murmurs, and if severe enough, you'd get in line for a new heart valve. This isn't a readily available or affordable option in veterinary medicine, so you're left with just management with medications.
- Heart murmurs are graded on a scale of 1 to 6, with 6 being the loudest and 0 being normal. As your pets age, it's important to know if the heart murmur is getting increasingly louder. If it is, chest x-rays are a must. Depending on what your pet's heart size is on x-ray, your vet might start your pet on heart medications that make their heart beat more efficiently.
- Even with treatment, the leaky valve will likely one day result in fluid backing up into the lungs, resulting in difficulty breathing. Diuretics—medication that helps prevent this—along with medications that make the heart beat more efficiently and help control the blood pressure can help extend the lifespan of your pet. Keep in mind that these medications don't cure the heart disease, but they do help prevent it from getting worse.

* This is also called chronic valvular heart disease, officially called myxomatous mitral valve degeneration (MMVD).

- Consider getting chest x-rays at your veterinarian and having a board-certified cardiologist do an ultrasound of the heart to help chronically monitor this. These medical professionals can identify whether it's appropriate to start your pet on heart medications. Typically, your dog will need blood work twice a year and an annual exam and chest x-rays for long-term monitoring.
- It's important to get a heart murmur diagnosed and worked up earlier than later. Prevention through careful monitoring is key!

Geriatric Pets

- Dogs are considered geriatric when they're more than seven years old (depending on the size), and this is true for cats when they're more than 12 years old. If your pet has gone through their entire puppy or kitten series of vaccines, followed by annual vaccines for several years, you can reduce the vaccines once they're geriatric.
- Your pet should still go in for an annual examination, which is extremely important for picking up any abnormalities, including heart murmurs, thyroid nodules, and dental disease. But as your pet ages, their immune system should be well protected from infectious diseases, so you can



typically move to vaccinating every three years once your pet is middle-aged. That said, make sure you abide by the state requirements for vaccination, especially the rabies vaccine, which you should never let lapse. Instead of getting your pet the other vaccines, splurge on blood work, especially since your pet is more likely to have metabolic problems, such as underlying liver or kidney issues, in their older years. Doing routine blood work can help pick up problems earlier, allowing you to treat the medical condition more successfully.

- Certain breeds, including golden retrievers, flat-coated retrievers, and Bernese mountain dogs, have a higher inherited risk of cancer. For these breeds, you should do more, including splurging on abdominal x-rays or even ultrasound scans.*

There is a blood test available at Texas A&M University that helps diagnose two common types of cancer in dogs, lymphoma and hemangiosarcoma, which make up about 30% of the cancer types that dogs get at some point in their lifetime. This screening test offers an easy way of detecting cancer in breeds with a high risk or during annual wellness exams in geriatric dogs.

* These two tests can be costly and range up to \$1,000 each time.

Lesson 16

The Veterinary Emergency Room

There are many situations where a costly veterinary emergency visit could potentially be avoided. Simple things like leash-walking your dog or keeping your cat inside can prevent all kinds of problems, as can crate-training your dog, pet-proofing your house, and getting your pet neutered or spayed at some point. Just by doing some simple things, you can save your pet a lot of pain and medical problems—and you can save a lot of money, too.



How to Avoid Costly Visits to the ER

- Here are some of the most important ways to avoid unnecessary trips to the veterinary ER:

 **Try to avoid trauma.** By simply keeping your dog on a leash and your cat inside, many trauma cases—such as a dog getting hit by a car or a cat being attacked by another animal outside—can be avoided. Trauma can result in things like lung tears, pulmonary contusions, fractures, extensive soft tissue wounds, or internal bleeding from a perforated spleen or lacerated liver.

 **Pet-proof your house.** Whether it's from accidentally ingesting your human medications or eating mouse and rat poison, pet poisonings are common. There are many everyday household items lurking in your house, yard, and garage that are poisonous to your pet. Pets frequently need expensive intestinal surgery for eating things that can get stuck in their gastrointestinal tract. By crate training your dog, hanging up your purse or backpack, keeping your prescription medications in a raised cabinet, keeping human food off counters, and securing your trash in the kitchen pantry or having a can with a lid, you can keep your pet safe and prevent accidents.

 **Get preventative care.** Find a veterinarian that you'll have a long-term relationship with; they'll be the lifeline to your pet's health. Work with your veterinary medical team to make sure your new puppy or kitten is appropriately vaccinated and protected with preventative heartworm, flea, and tick medication. Talk to your veterinarian about when to consider getting your pet spayed or neutered to prevent reproductive problems as they age. As your pet ages, talk to your veterinarian about changing your pet to a three-year vaccine schedule, depending on your state's rabies law, and shifting to annual blood work and physical examinations instead.

Pet-proofing is especially key if you have a mischievous, playful, young chowhound that likes to get into things.

-  **Address things sooner rather than later.** Pick up on medical problems sooner rather than later. It will cost you a lot less when diagnosing and treating it with your veterinarian instead of in the ER. The prognosis will be better, and your dog or cat can potentially be treated on an outpatient basis versus requiring 24-hour care. Of course, there are some things that can't be avoided, such as internal bleeding or acute medical problems, but perhaps half of the issues treated in the veterinary ER could have been avoided if they had been addressed earlier.
-  **Don't change the routine.** Pets—especially cats—don't like sudden change, so don't change things suddenly, if possible. For example, if you have to change your pet's food, this should be done gradually over the course of at least two to three weeks. Moving or adding a new pet or roommate should be done slowly and carefully, under supervision, and with the use of holistic supplements or prescription medications to minimize any stress related to the change.

When to Go to the ER

- Here are some signs to look for in your dog or cat that warrant an immediate trip to the veterinary ER:

-  Signs of potential organ problems include lethargy, weakness, breathing harder, vomiting, or jaundiced (yellow) gums or eyes.
-  Signs of cancer or internal bleeding include acute collapse or the inability to get up, vomiting more than four to six times in a short period, or pale gums.
-  Signs requiring emergency surgery may include a racing heart rate, retching, having a distended (bloated) stomach, abdominal pain, or restlessness.
-  Signs of poisoning may include walking with a stagger, drooling excessively, bleeding anywhere, or neurologic signs.

**Any trauma,
any poisoning,
or anything
that makes you
worried warrants
a trip to the
veterinary ER.**

- While these signs aren't all-inclusive, there are also a few cat-specific clinical signs that warrant an emergency visit, including

-  hiding in unusual places, such as under the bed or in the closet;
-  not moving;
-  constant coughing that sounds like hacking up a hairball;
-  excessive grooming of the rear end with the penis sticking out;
-  lack of urine and feces in the litter box over several days; and
-  sitting over the water bowl and not moving.

- To be safe, you should always call your veterinarian or emergency veterinarian, as the receptionist or veterinary technician may be able to help guide you over the phone. For

Preprogram the contact numbers for your vet, your ER vet, and the ASPCA Animal Poison Control Center into your phone.

poisoning-related matters, call the ASPCA Animal Poison Control Center. If you're worried, bring your pet into the veterinary ER because you know your pet the best. The extra cost is a small sacrifice for your pet's health—and your peace of mind.

Veterinary ER or Regular Vet?

- What's the difference between a veterinary ER and a regular veterinarian? Most general practitioners are typically open from 8 am to 6 pm. Some may have limited weekend or evening hours, but the majority are not staffed at night. If your pet needs to be hospitalized at your family veterinarian's office, sometimes a technician may be there or may stop by to check in on them at night. That's different from veterinary emergency rooms (ERs).
- They are two types of veterinary ERs. Some are only open for limited hours—after 5 pm or 6 pm, weekends, and holidays—and are closed during the day. In these cases, your pet may need to be hospitalized during

the day at your family veterinarian and be transported to the ER at night and back again to your family veterinarian at 8 am. The other type of veterinary ER is open all the time: 24 hours a day, 7 days a week. If your cat or dog is critically ill, these 24/7 veterinary ERs offer less stress for everyone, as there's no need to transport your pet back and forth.

- Why are veterinary ERs so much more expensive than your regular veterinarian? It's mainly because veterinary ERs have to run 24/7. They have to pay for utilities, such as gas, heat, electric, and water, around the clock. They have to provide shift differentials to have qualified people always on staff. They have to pay for medications, antidotes, laboratory and imaging equipment, and supplies that family veterinarians don't carry.

Tips for the ER

- When you do have to visit the veterinary ER, here are some tips:

 **Be prepared for a wait.** And try to be patient. As with human ERs, animals are triaged, meaning that they're seen based on how stable they are, so the sicker ones are seen first. Bring a book, your phone charger, a laptop, snacks, and water.

Sundays are the busiest days in the veterinary ER.

 **Bring your pet's medical record.** Especially if you were recently at your veterinarian, bringing copies of x-rays and blood work results is helpful to have on file and may save you the cost of additional tests being done in the ER. Even an invoice is helpful as a list of what medications or injections were given. If your pet has a long, complex history, ideally you should have it already typed up so that you could bring a copy. If your pet got into something poisonous, bring the poison, label, vial, or container—or even the vomit or feces in a secured plastic bag so that it can be evaluated. If your pet is on medication, bring it. Also, make sure everything is well labeled so that if your pet is hospitalized, they can potentially use the medication you brought, depending on the rules of the hospital. This may save some costs, too.

 Fill out the check-in paperwork as completely as you can.

There are usually two forms. One asks for your information, address, and pet's name, and you want to submit this accurately, legibly, and quickly. All things being equal, whoever turns in this form fastest is typically seen sooner. The second form is usually a patient history. This one you can fill out thoroughly once you've submitted the first one. The more information you provide, the smoother things will go.

 **Know your options.** You have the option to be "triaged away." In other words, if you've been waiting for a while or the line is long, you can ask if you should be triaged away to recheck with your veterinarian the following day. If your pet is pretty sick based on triage, you will often be told so, and it will be recommended that you and your pet stay. You also have the option to authorize things as soon as you bring your pet to the ER. Most front desk staff will ask for immediate permission for procedures like inducing vomiting if it's a poisoning or getting x-rays if your pet is vomiting. They'll ask for authorization for lifesaving care, such as an intravenous catheter and IV fluids. In general, you should authorize these things, as the doctor will assess what is appropriate, and it will help your pet get the treatment they need sooner. Otherwise, you might wait a few hours for the doctor to talk to you and ask permission for x-rays—only to wait another few hours for those x-rays.

Saving Money in the ER

- The average veterinary ER visit ranges from \$500 to \$1,000—and that's just for the first few hours of work-up. The first few hours are the most expensive, as that's when the diagnostics, IV catheter, initial medications, and stabilization are being done. How aggressive the work-up will be depends on the pet's age, clinical signs, physical examination findings, and level of stability.
- You can potentially save some money by declining blood work and x-rays at the ER and having these done at your family veterinarian. But while this may save you a few hundred dollars at most, you'll need to get an appointment at your veterinarian the next day, and it may take another 24 hours to get the lab results. As long as your pet isn't too sick, this is fine.



- Another way you can save money is by declining hospitalization and trying outpatient treatment instead. Again, this will depend on how sick your pet is. Mild symptoms can often be treated on an outpatient basis, and you can follow up with your veterinarian the next day if there is no improvement or if you're still worried. You won't have the option of taking your pet home if your pet is critically ill. More severe symptoms must be treated in the hospital, as your pet can deteriorate or even die at home.
- Not every pet owner can afford the cost of a full work-up in the veterinary ER. If cost is a concern, ask for two or three plans of attack: one that is a gold standard, where you do everything that's medically warranted, and one or two where you step back a little due to financial limitations.
- Know that you have several options in the ER, so work with your emergency vet to find out what works best for you, your pet, and your wallet. Unfortunately, end-of-life decision-making and euthanasia may be a consideration, depending on what else is going on.
- The last way to avoid a costly visit in the veterinary ER is to consider pet insurance early. This will help save you money, particularly if you have an accident-prone dog or cat. Pet insurance is especially helpful with emergencies, as most people aren't prepared for a several-thousand-dollar bill.

Lesson 17

Most Common Pet Emergencies

Pets visit the veterinary emergency room (ER) for anything from minor complaints to life-threatening situations. About a quarter of pet owners go to the ER to get a backdoor visit to a veterinary specialist. About half of what's seen in the ER can generally be treated on an outpatient basis, with the remaining patients having to be admitted into the hospital for 24/7 overnight care and monitoring. So, how do you know if your pet is having a minor or major emergency?



Top ER Vet Visits

- The top 10 visits to the veterinary ER for both cats and dogs are comprised of the following:

1 gastrointestinal problems	6 urinary problems
2 organ failure	7 allergic reactions or skin problems
3 poisoning situations	8 seizures
4 different presentations of cancer	9 difficulty breathing
5 trauma	10 limping or walking problems
- While some of these visits to the ER can be managed on an outpatient basis, many of these require prompt treatment, because left untreated they can be very painful or even fatal.
- In general, the biggest mistake pet owners make is waiting too long to seek veterinary attention. The sooner you recognize a problem, the sooner it can be treated, and the less dangerous it is for your pet—and your wallet.

Gastrointestinal Problems

- The list of top reasons for visiting the veterinary ER starts with bodily fluids, such as vomiting and diarrhea. Problems related to the gastrointestinal (GI) tract can result in secondary drooling, pawing at the mouth, vomiting, regurgitation, diarrhea, belly pain, or constipation.
- There are numerous causes for GI problems, depending on the age of the pet. Puppies and kittens, especially those that haven't had their full vaccine series, are more at risk for parasitic or infectious causes, such as parvovirus, worms, and panleukopenia. Younger adult dogs and cats are more mischievous and more likely to have dietary indiscretion from getting into the trash or chewing on things in the house. Older pets are more at risk for having metabolic problems or organ issues.

- GI problems in dogs and cats range from mild inflammation of the GI tract—what’s vaguely called gastroenteritis—to more severe, life-threatening problems, such as a ruptured intestine, which leaks feces into the abdomen.
- Some GI problems are more seasonal, occurring around Thanksgiving or the holidays. Inflammation of the pancreas, called pancreatitis, can occur when dogs are fed fatty table scraps like bacon, turkey, skin, or bones. Pancreatitis is more common in breeds like the Shetland sheepdog, miniature Schnauzer, and Yorkshire terrier. Pancreatitis can range from mild to life-threatening, with signs of vomiting, diarrhea, dehydration, and even shock.
- Sometimes GI signs are seen after ingesting a foreign body, such as a stick, a sock, a pair of underwear, a toy, carpet, hair ties, pacifiers, a rawhide bone, plastic toys, rocks, coins, or trash from the bathroom or kitchen garbage. Foreign bodies typically need to be surgically removed from the GI tract.
- For cats, tinsel, sewing thread, dental floss, and even the ribbon hanging off a balloon can be dangerous threats and result in a several-thousand-dollar emergency surgery to fix what’s called a linear foreign body. These are particularly dangerous, because the string saws through the intestines as they contract normally, resulting in an overwhelming bacterial infection in the abdomen, called a septic peritonitis.
- Sometimes, GI signs are the first sign of metabolic, organ, or endocrine problems, such as disease affecting the liver, kidneys, or adrenal glands.
- Another danger is hemorrhagic gastroenteritis (HGE), which is just a fancy term for bloody diarrhea. There’s no known cause for it, but it seems to be more common in smaller-breed dogs. HGE can result in severe, acute dehydration and shock within even just a few hours and often results in life-threateningly low blood sugar.
- Another common GI problem is massive inflammation of the colon, called colitis, resulting in signs of increased urgency to defecate, with only tiny amounts of mucous and blood coming out.

Gastrointestinal problems are common, regardless of the age of your pet.

- The opposite, severe constipation, is seen more in cats than dogs. There's often an underlying cause—such as kidney disease, diabetes, or hyperthyroidism—resulting in abnormal water balance that is causing the constipation. Rarely, some cats get megacolon, when the colon becomes too dilated and floppy and can't contract well to propel feces out. This can be a chronic, frustrating problem to treat.
- Whichever bodily fluid is coming out, the first thing to do is withhold food for at least 12 to 24 hours. If your pet is vomiting but normally healthy—in other words, doesn't have kidney problems or diabetes or anything else going on—you should also withhold water for 4 to 12 hours. If your pet continues to vomit more than six to eight times in a 24-hour period, develops pipe-stream or bloody diarrhea, becomes lethargic, or just seems off, a veterinary ER visit is a must.

Organ Failure

- When it comes to organ failure, there may be fluid accumulating in the lungs due to congestive heart failure or severe malaise due to kidney failure. Unfortunately, dogs and cats hide their signs well and often don't show signs until their disease is very advanced.
- Depending on which organ is failing, signs of worsening disease may include lethargy, weight loss, excessive drinking, weakness, not eating for more than 24 hours, vomiting/diarrhea/constipation, coughing more often, difficulty breathing, jaundice, shivering, or hiding.
- In cats, the top organ problem is chronic kidney failure, which is when more than 75% of both kidneys aren't working. Unfortunately, some cats don't show signs of this until they have an acute crisis, often called acute-on-chronic renal failure. As cats with kidney failure are at a higher risk for urinary tract infections (UTIs), sometimes these infections can migrate up to the kidneys, resulting in pyelonephritis and sudden deterioration.



- In dogs, the top organ problem is congestive heart failure secondary to leaky heart valves, called chronic valvular heart disease. This results in blood backing up in the heart and excessive fluid accumulating in the lungs, causing difficulty breathing, coughing, exercise intolerance, and signs of shock. This can be fatal without treatment and requires emergency diuretics to remove the excessive fluid from the lungs.

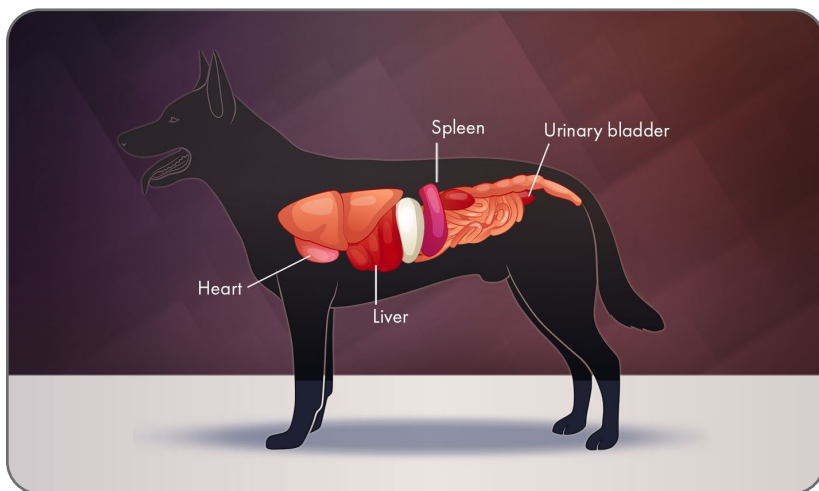
Poisonings

- There are so many common household chemicals, foods, and products that are readily available around the house, yard, or garden that can result in pet poisoning.
- Poisons are so common that the next two lessons are dedicated to them. In the meantime, avoid a visit to the ER by making sure to pet-proof well.

When it comes to accidental poisonings in dogs or cats, the ASPCA Animal Poison Control Center helps almost 250,000 animals a year.

Cancer

- Golden retrievers, Labrador retrievers, and German shepherds are at especially high risk for an aggressive type of cancer called hemangiosarcoma, which likes to grow on bloody organs like the spleen, liver, and right atrium of the heart. Hemangiosarcoma results in internal bleeding, seen as acute collapse, not moving or getting up, vomiting, pale gums, a racing heart rate, and constant panting. Cats often get an aggressive type of cancer called adenocarcinoma or lymphoma.
- Depending on what type and where the cancer is growing, dogs and cats may manifest different signs, such as inappetence, weight loss, jaundice, enlarged lymph nodes or bumps on the body or skin, halitosis, abnormal behavior, difficulty breathing, seizures, lameness, pain, or pale gums. Sadly, by the time cancer is diagnosed in the veterinary ER, it's already relatively advanced and there's not much that can be done.



Trauma

- When it comes to trauma, you can help avoid it in your pet by
 - keeping your cat indoors,
 - leashing your dog when outside,
 - making sure that your dog is well trained through obedience classes,
 - making sure that your pet is microchipped,
 - keeping a collar on your pet at all times, and
 - supervising your pet at all times when they are outdoors.
- The prognosis for trauma is excellent—with more than a 90% survival rate! But the damage to your pet, and your wallet, can be significant.
- It's rare for a dog or cat to survive being hit by a car. They often have lung contusions, broken ribs, orthopedic fractures, internal bleeding, and lung tears that result in a several-thousand-dollar bill, depending on how many surgeries are required.
- As for trauma from bite wounds, you may only see a tiny punch wound, but there often is severe tissue injury underneath. With any type of laceration or injury, you want to get to the ER right away, as there is a narrow window to repair it.
- Ultimately, you want to avoid any trauma in your pet. Not only is it painful, but it can result in chronic osteoarthritis or illness to your pet, even with surgical repair.

Microchipping is a safe, effective way to identify and reconnect with lost dogs or cats. With one simple scan, the contact information for you and your emergency vet is available.

Urinary Problems

- Urinary problems include UTIs, inflammation, and blockages. UTIs are more commonly seen in older cats or any-aged dog (even puppies, who can get vaginitis). If you notice that your pet has an increased urgency to go outside, is having urinary accidents, has excessive blood in the urine, isn't urinating a normal stream, is going to the litter box constantly, is squatting in front of you to urinate, is excessively grooming the rear end, is straining to urinate (or defecate), or does not urinate for more than 24 hours, you need to get to a veterinary ER immediately.
- That's because, just like humans, dogs and cats can get kidney and bladder stones, which can get stuck in the ureter* or urethra.** If this happens—or if there's a complete obstruction, where no urine is coming out—temporary kidney failure can develop, along with a bladder rupture. This requires immediate stabilization, anesthesia, unblocking, and possibly surgery.
- Urinary problems in cats were covered extensively in [lesson 9](#). Young, male, overweight, indoor cats are more at risk for urinary problems.
- Reproductive problems can affect the prostate or uterus. Intact, un-neutered dogs (and, less commonly, cats) may present to the ER for urinary-type signs: excessive licking, odor, straining to urinate, or bloody urine.

Allergic Reactions and Skin Issues

- Dogs—and, less commonly, cats—can develop acute allergic reactions. In dogs, they are rarely life-threatening. The majority of the time, an allergic reaction just results in hives, urticaria, or wheals—all of which look like red, raised bumps—or an acute swelling of the face, muzzle, and eyes. An injection of diphenhydramine (Benadryl) and a dose of steroids usually remedies this quickly.

* This is the tube that goes from the kidney to the bladder.

** This is the tube that goes from the bladder to the exterior.

- However, in a small subset of dogs and a majority of cats, an anaphylactic, life-threatening reaction can be seen. In this situation, epinephrine, IV fluids, oxygen, and lifesaving care need to be initiated immediately. Most of the time, the cause of the allergic reaction won't be able to be identified. Regardless, any allergic reaction should be assessed by your veterinarian or an ER vet.
- A hot spot, or a moist dermatitis, can become a huge, oozing sore on the skin within just a few hours. In these situations, gentle and careful shaving, cleaning, antibiotics, anti-itch medication, a funnel hat, topical sprays, and anti-inflammatories are necessary.

Seizures

- Seizures are very scary and traumatic to observe as a pet owner. As a general rule, if your pet's seizure lasts more than 5 minutes or if your pet has more than two or three seizures in a 24-hour period, you need to get to a veterinarian immediately.
- There are several different classifications of seizures: grand mal, partial, petit mal, and cluster seizures.
 - 🐾 Grand mal seizures, also called tonic-clonic seizures, are when your pet loses consciousness, paddles uncontrollably, and loses control of their bowel or urine.
 - 🐾 Partial or petit mal seizures show more mild signs, such as facial twitching, foaming at the mouth, drooling, stiffening, or tongue chewing while typically maintaining consciousness.
 - 🐾 In severe cases, cluster seizures can be seen, which means that your pet is having several seizures within a 24-hour period.
- Some seizures can last 30 minutes or more and be life-threatening, as your dog can stop breathing or develop low blood sugar or elevated body temperature from seizing so much. Regardless of the type, seizures should be worked up and often need to be treated with antiseizure medication.

- There are numerous causes for seizures, from causes outside the brain to inside the brain.
 - 🐾 Outside causes for seizures include low blood sugar, called hypoglycemia; certain poisons, such as antifreeze, mouse and rat poisons, strychnine, and xylitol gum; and organ problems affecting the liver and kidneys.
 - 🐾 Causes within the brain that result in seizures include traumatic brain injury, congenital malformations, brain tumors, epilepsy, meningitis, immune problems, and even infections.
- It's impossible to tell what underlying problem is causing the seizure without an extensive work-up. Even epilepsy, where there is no known cause for the seizure, is a diagnosis of exclusion. In other words, all the other possible underlying problems have to be ruled out first.
- When it comes to a seizing patient, a thorough physical examination, blood work, and neurologic examination are typically recommended. This work-up may include anesthesia for a spinal tap and MRI, which is the most definitive way of ruling out other medical problems. Unfortunately, this can be cost-prohibitive, so many owners decline this.
- Epilepsy is more or less likely depending on the breed and age of the pet. Dogs between one and three years of age are more likely to be epileptic. Certain breeds may have an inherited form of epilepsy, including Labrador retrievers, golden retrievers, beagles, dachshunds, German shepherds, poodles, and Siberian huskies. In other breeds, there might be other problems causing the seizures. Ultimately, you want to work with your veterinarian and neurologist to identify the best plan.

Difficulty Breathing

- Signs of difficulty breathing include panting constantly, coughing, not being able to rest comfortably, having a blue tinge to the gums, or having fluid come out of the mouth. For cats, it includes open-mouth breathing. Any of these signs indicates severe respiratory effort and warrants an emergency trip to the ER.

- Difficulty breathing can be caused by an array of medical problems, including congestive heart failure, pneumonia, cancer, asthma, or problems with the airway or trachea. Treatment typically includes oxygen therapy, diuretics, antianxiety medication, and stabilization, depending on the underlying cause.

Limping or Immobility

- Perhaps about half of the dogs that are seen in the ER for limping generally have a soft tissue injury like a sprain and are treated as outpatients with pain medication, such as a veterinary-specific nonsteroidal anti-inflammatory. In some cases, an x-ray may be done, although this is often done only if the pet doesn't respond to medication and cage rest.
- In some cases, limping can be due to a more serious problem, such as a torn ACL, a fracture, bone cancer, Lyme disease, or even primary neurologic problems.
- When it comes to limping, if it's limited to one leg and your pet can bear weight on it, you can often wait to see your veterinarian the next day. However, if your pet can't put any weight on that one leg, it could be a fracture and you'll need to go to the ER.
- If your pet can't walk at all, that's a very serious problem, and you need to go to the ER right away. In cats, this is often from a life-threatening clot or stroke called an aortic thromboembolism; in dogs, it can often be from a herniated disc in their back, called intervertebral disc disease, resulting in acute paralysis. This is particularly common in dachshunds, French bulldogs, or any breed that has been bred to have long backs. Other causes include cancer in the back or other underlying neurologic problems.

Tips to Keep Pets Healthy and Out of the ER

- Follow these tips to keep your pet healthy—and hopefully out of the ER!
 - 🐾 Make sure that your pet is fully vaccinated and on preventative medicine before they are exposed to other dogs.

- 🐾 Don't change your pet's diet acutely, but instead gradually.
- 🐾 Don't feed your pet table scraps, and pet-proof your house to prevent accidental ingestion of foreign material or common poisons.
- 🐾 As your pet ages, talk to your veterinarian about doing twice-a-year physical examinations and blood work to detect medical problems sooner rather than later.
- 🐾 Avoid trauma in your pet by keeping your cat indoors, your dog on a leash, and the environment safe for a pet.
- 🐾 Try to notice any abnormal signs in your pet as soon as possible and schedule an appointment with your veterinarian.*
- Veterinary ERs and specialty clinics are typically available 24 hours a day and 365 days a year to take care of your pet in case of emergency.

* If your pet is normal the day before the appointment, you can always cancel it, but at least you have a spot if necessary.

Lesson 18

Treating Poisoned Pets

A simple houseplant. A prescription bottle left on the counter. A nightly pill placed on your nightstand. That sugarless pack of gum in your backpack or purse. All of these pose poisoning dangers to dogs and cats. As a dog or cat owner, you might think that your house is pet-proof, but the ASPCA Animal Poison Control Center gets around 250,000 calls a year involving animal poisonings—so poisonings are more common than you might think.



Pet Poisonings

- According to the ASPCA Animal Poison Control Center, the top poisons in both dogs and cats include human medications, kitchen foods, veterinary products, household items, mouse and rat poisons, insecticides, garden supplies, and plants. For the sake of your pets, keep poison dangers out of reach—because pets are more mischievous than you think, and they will find them!
- It can be scary to see your beloved four-legged family member ingest something accidentally, and it only takes a second for it to happen. But with prompt veterinary care, the prognosis for the poisoned pet is fair to good.
- The biggest mistake pet owners make is waiting too long to seek veterinary attention. Don't wait until your dog or cat is showing signs of being poisoned. It may be too late by then, and a lot of the toxin has already been absorbed by the body!
- With any poisoning situation, it will always be less dangerous to your pet to seek veterinary attention immediately versus waiting hours or days, once the poison has already taken effect. That's because your emergency vet will be able to induce vomiting and decontaminate your pet, getting the poison out as soon as possible. That will also mean less of a strain on your wallet!

What to Do if Your Pet Is Poisoned

- If your dog or cat is poisoned, take these key steps right away.

- 1 Remove the product to prevent your dog or cat from ingesting or being exposed to more poison.**
- 2 Contact your veterinarian, emergency veterinarian, or the ASPCA Animal Poison Control Center right away.** The ASPCA will be able to assist you to determine if the dose or product was poisonous. While there is a small fee to call, they may be able to advise you on what you can do at home, whether the product is dangerous, and whether you need to seek additional veterinary care. In some circumstances, they may help you induce vomiting in your dog, and if

the poison comes out, you may be able to monitor the situation at home. But you should never induce vomiting in cats at home.

Never induce vomiting in your pet without veterinary advice first.

3 Get to the veterinarian right away if the poison or product didn't come up when you induced vomiting at home.* Bring the pill vial, bait station, or container to your vet.

4 If your pet ingested a human prescription medication, call the human pharmacy once you get to your veterinarian. You'll want to find out the active ingredient, if it's an extended-release product, and how many total pills were prescribed (so that you can attempt to back-count how many were ingested). This will help your vet determine if a toxic dose was ingested, based on your pet's weight.

- Once you get to your veterinarian's office, your vet should ask you some important questions immediately upon triage, such as these:

- 🐾 What was the product ingested? Do you know the active ingredient?
- 🐾 How many estimated tablets could have been ingested?
- 🐾 Was this an extended- or sustained-release product? Was there an extra letter behind the brand name (e.g., Claritin-D)?
- 🐾 What time did your pet get into this?
- 🐾 Has your pet shown any clinical signs, such as vomiting or agitation, yet?
- 🐾 Did you give your pet anything at home when you found out they were poisoned?

* Again, for cat owners, an immediate veterinary trip is a must, as there is no safe way of inducing vomiting at home in cats.

You should never give to your pet any home remedies found on the internet—such as milk, peanut butter, oil, grease, or salt—without consulting your veterinarian, an ER vet, or the ASPCA Animal Poison Control Center first.

- Based on your answers to these questions, your veterinarian will make the decision of whether the dose or product was poisonous, whether your pet should be decontaminated or hospitalized, and what next steps need to be taken.

Decontamination

- The most important aspect of successful treatment of a poisoned dog or cat is decontamination. When a poisoned pet is decontaminated, the goal is to minimize how much poison is absorbed by the body or promote elimination of the toxicant from the body. In veterinary medicine, decontamination is done by inducing vomiting (called emesis induction), sometimes performing gastric lavage (commonly called pumping the stomach), and giving activated charcoal to bind up the poison from the gastrointestinal tract.
- There's a narrow window of time to be able to decontaminate. Again, sometimes you can induce vomiting at home, but sometimes it needs to be done at the veterinary clinic.
- Whether it's beneficial to decontaminate depends on when your pet ingested the poison. With recent ingestion—within one to two hours—if your dog is not showing any signs of the poison, then it may be OK for emesis induction.
- Depending on the type of poison, signs of poisoning may include a racing heart rate, anxiety, vomiting, sedation or agitation, collapse, difficulty breathing, inability to swallow well, tremors, and seizures. If your dog is showing any of these signs, you should not induce vomiting at home, as it's too late and the poison has already been absorbed into the bloodstream; inducing vomiting could be ineffective, or even dangerous.

- To be safe, don't induce vomiting at home without first consulting a veterinarian or the ASPCA Animal Poison Control Center, who can determine whether it's safe or beneficial to decontaminate.
- That said, to induce vomiting in dogs, you want to use a fresh, unexpired* bottle of hydrogen peroxide that is 3% concentration, or first aid grade. The dose is approximately 1 teaspoon, or about 5 milliliters, for every 10 pounds your dog weighs. Don't give more than 10 to 15 teaspoons (50 to 75 milliliters) of hydrogen peroxide to even a big dog at home.
- If your dog doesn't vomit after the first dose, wait five minutes and give the same dose again. If it doesn't work after that, stop and get to a veterinarian immediately, as they'll need to use prescription-strength medications called apomorphine or ropinirole to induce vomiting. Don't give salt or syrup of ipecac or try to physically gag your pet, as these may not be safe or won't work.
- Again, there's nothing safe that you can give your cat at home to get them to vomit. Things like hydrogen peroxide or salt can cause severe side effects; cats can even die from ingesting hydrogen peroxide. If your cat eats anything poisonous, you need to get to your veterinarian immediately so that they can use prescription medications like alpha-adrenergic drugs to induce vomiting.
- The faster vomiting is induced, the more effective it is—in other words, you get a greater yield of recovery of poison back from the stomach. Studies have shown that gastric recovery of a toxin within one hour after ingestion ranges from 17% to 62%. That's why vomiting must be induced as soon as possible. Unfortunately, if several hours have passed since your dog or cat got into the poison, the poison has likely moved out of the stomach, and inducing vomiting will have little to no benefit.
- Certain poisons can stay in the stomach for a longer period of time, up to four to six hours. Huge wads of anything, even nonpoisonous substances, stay in the stomach a long time. Big wads can be a problem, as they can become a concretion, or a bezoar, and get stuck in the stomach.

* If the hydrogen peroxide is expired, it won't work. Pour a small amount down the kitchen or bathroom sink; if it doesn't bubble like a seltzer, it won't work.

- Poisonous things that stay in the stomach a long time include large wads of xylitol gum, chocolate, grapes/raisins, and organic fertilizers like bone meal. With these ingestions, vomiting can be induced up to four to six hours after ingestion, as long as your dog or cat isn't showing any symptoms of poisoning already, at which point it would be too late to vomit the poison back up.
- It's also not recommended to induce vomiting in certain situations. For instance, if your pet has a medical problem that makes them more likely to aspirate their vomit into their lungs, such as laryngeal paralysis, megaesophagus, aspiration pneumonia, or upper airway disease, then you wouldn't want them to vomit. Likewise, in certain breeds—such as the pug, English bulldog, Pekingese, and Shih Tzu—which have brachycephalic syndrome, where they can't breathe well, vomiting can be dangerous.
- You also should not induce vomiting with certain substances, including corrosive poisons; oily products found in the garage, such as gasoline, kerosene, and transmission fluid; and sharp objects.
- Gastric lavage, or pumping the stomach, is only done in certain circumstances—typically when the poison is still in the stomach, when it's a deadly toxin that could kill the pet, and when the patient is too symptomatic to induce vomiting safely. This is warranted for certain poisons, such as human heart medications, deadly concentrated insecticides, and drugs that approach the LD₅₀ mark, which is the lethal dose that can kill 50% of patients. Gastric lavage is technically harder to do; most veterinarians don't feel comfortable doing this and often will refer you to the emergency veterinarian for this procedure.
- Regardless of how the stomach is emptied, this is often followed up by giving a dose (or more) of activated charcoal, which is a kind of carbon whose molecules have a large surface area that can bind to the poison.

There are certain species that physically cannot vomit, such as rabbits, sheep, cattle, llamas, goats, horses, and rodents.

However, there are limitations of charcoal. First, it has to be given quickly to be effective. Charcoal also has to be medical grade, so you can't give your own charcoal tablets at home, as these don't work. Charcoal has to physically touch the poison in order to bind, so if the poison is in the intestines and the charcoal is in the stomach, it won't bind, except in rare cases. Charcoal also doesn't bind to all poisons and should only be given when appropriate. It can also be hard to administer in dogs and cats. And very rarely, it can be accidentally inhaled into the lungs, resulting in severe pneumonia. Even so, it can be potentially lifesaving in veterinary medicine.

Treating a Poisoned Pet after Decontamination

- After decontamination, your vet will likely focus on the following five main areas of treatment of the poisoned pet.*
 - 🐾 **Fluid therapy** involves giving fluid either intravenously (in the vein) or subcutaneously (under the skin). This will help maintain your pet's hydration and blood pressure and may help certain drugs be urinated out more quickly.
 - 🐾 **Gastrointestinal support** includes using anti-nausea and anti-vomiting medication after inducing vomiting. It also involves giving intravenous and oral antacids, since certain poisons—and even the administration of hydrogen peroxide to induce vomiting—can cause stomach ulcers.
 - 🐾 **Cardiovascular support** includes medications to help control the heart rate—either drugs like atropine to increase the heart rate or beta blockers (or other heart medications) to slow down the heart rate.
 - 🐾 **Central nervous system support** includes sedatives to help with anxiety, a racing heart rate, and high blood pressure; muscle relaxants for tremors; or even antiseizure medication, called anticonvulsants, to stop seizing.

* The majority of poisons (more than 90%) don't have an antidote. But if there's an antidote, your vet will use that. Otherwise, they will focus on supportive care.

- ❗ **Miscellaneous therapy** includes reversal agents to reverse the effects of the poison, if available; liver-protectant drugs called hepatoprotectants; and more advanced medications, such as intravenous lipid emulsion, for life-threatening poisoning cases.

Preventing Accidental Poisonings

- You can prevent accidental pet poisonings by taking a few simple steps to pet-proof your house.
- ❗ **Learn how to appropriately crate train your dog.** People think that crates are cruel, but when properly done, your dog will view it as a den and a safe place to sleep and rest. Crating your dog when you're gone for hours at a time will prevent counter surfing and accidental ingestion of common poisons found around the house.
- ❗ **Hang up your backpack or purse as soon as you get home.** Backpacks and purses often contain sugar-free gum or other snacks, hand sanitizers, prescription medications, and coins and other small objects—all of which can be dangerous when accidentally chewed into.
- ❗ **If you have visiting houseguests, make sure they never leave their medications or vitamins in a plastic storage bag that's casually thrown in their suitcase.** A curious nose may accidentally find these, as the odor is often very unusual and potent.
- ❗ **Keep your human medication vials in a separate area from your pet's medications.** Far too many people accidentally give their human medication to their pet and unknowingly take their dog's medication. Keep your pet's medication in the kitchen cabinet and your own medication in an elevated bathroom cabinet.
- ❗ **Have a pet first aid kit ready.** Stock a pet first aid kit with a new and unopened bottle of hydrogen peroxide, a dosing syringe, a can of tuna in water, a box of Pepcid AC or Prilosec (which are antacids that are used in veterinary medicine, too), a travel-size container of Dawn dish detergent, and a pair of non-latex gloves.

- Pet-proof the environment**—especially if you’re getting a curious kitten or rambunctious puppy. Get on your hands and knees and look at your house from your pet’s eye level. You’ll see a whole bunch of new threats to your pet! Take the time to pet-proof by putting trash bins in drawers and using childproof drawer locks, if needed. If you have a counter surfer, keep all medications and food products off the counters. Make sure all cleaning supplies, chemicals, automotive fluids, and fertilizers are locked in a cabinet or secured in an elevated location in the garage. Never put down mouse and rat poison if you have a pet; snap traps are more humane, contaminate the environment less, and pose less danger to your pet.
- Preprogram your cell phone (and your GPS) with the phone numbers and directions to your veterinarian, the local emergency veterinary clinic, and the ASPCA Animal Poison Control Center** (at 888-426-4435). When you’re stressed due to an accidental poisoning, you don’t have time to look up this information.



Lesson 19

Most Common Pet Toxins

According to the ASPCA Animal Poison Control Center, the top poisons ingested by dogs and cats are human medications, kitchen foods, veterinary products, household items, mouse and rat poisons, insecticides, garden supplies, and plants.



With any pet poisoning, call your veterinarian, your emergency vet, or the ASPCA Animal Poison Control Center immediately. The prognosis for poisoning cases in veterinary medicine is good to excellent, as long as treatment starts right away.

Human Medications

- Both over-the-counter and prescription drugs can be very dangerous to your pet. Some of the most common human medications that dogs and cats get into are cardiac medications, antidepressants, amphetamines, nonsteroidal anti-inflammatory drugs, and acetaminophen.
-  **Cardiac medications** range from cholesterol-lowering medications to baby aspirin to blood pressure medications or even diuretics. Some of these are more dangerous than others, as they can slow down the heart rate or lower the blood pressure to dangerous, life-threatening levels. In severe cases, they can affect the salt balance or even kidney functioning. Treatment typically includes decontamination, blood work monitoring, IV fluids, blood pressure and heart rate monitoring, and drugs to increase the heart rate. Sometimes, anti-arrhythmia medications and lifesaving antidotes, which can be very costly, may be necessary. The prognosis varies, depending on how severe the blood pressure or other clinical symptoms may be, and typically pets need to be hospitalized for 24 to 48 hours.
-  **Antidepressants**, commonly called SSRIs, affect the serotonin levels in the cells, while ADD or ADHD medications often contain **amphetamines**, which stimulate the body systems. There is a weird odor in some brands of these medications that cats love to get into. In dogs and cats, accidental ingestion of these two behavioral medications can cause agitation, dilated pupils, hyperactivity, a racing heart rate, hypertension, and even tremors or seizures with

high doses. Treatment typically includes decontamination, IV fluids, sedation, blood pressure and heart rate monitoring, muscle relaxants, and antiseizure medication. The prognosis is excellent with treatment, but it will typically require 12 to 24 hours of hospitalization.



Nonsteroidal anti-inflammatory drugs

(NSAIDs) are used in both human and veterinary medicine, but human NSAIDs are very dangerous to dogs and cats. They can cause severe stomach and intestinal ulcers, kidney injury, and even coma or seizures.

Veterinary NSAIDs are safe when used at their therapeutic dose but will be poisonous at high doses. Signs of NSAID poisoning include drooling, lethargy, vomiting, bloody diarrhea, evidence of stomach ulcers,* and belly pain. Treatment typically includes decontamination, IV fluids, stomach protectants and anti-vomiting medication, and blood work monitoring. Most dogs and cats are hospitalized for approximately 48 hours with NSAID poisoning, and the prognosis is excellent as long as your pet doesn't develop kidney injury.



Acetaminophen is commonly known as paracetamol around the world and as Tylenol in North America. Acetaminophen causes the red blood cells to not be able to carry oxygen. Dogs can go into liver failure and develop dry eye from it, even at low doses. Signs of acetaminophen poisoning in dogs and cats include atypical swelling of the face and paws, difficulty breathing, a chocolate to blueish color to the gums, lethargy, yellow discoloration of the whites of the eyes, vomiting, and even jaundice or bruising of the skin. This

As little as one acetaminophen pill can kill a cat.

You should never give your pet any human medication without consulting with your veterinarian or the ASPCA Animal Poison Control Center.

* Evidence of ulcers includes coffee ground—like specks in the vomitus and black, tarry stool.

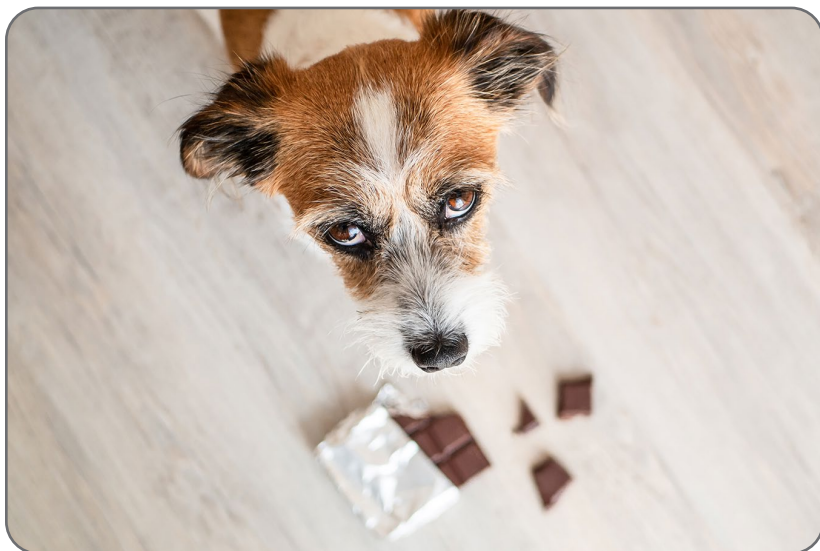
poisoning has an antidote that is also used in human medicine. Other treatment includes IV fluids, oxygen, anti-vomiting medication, blood work monitoring, and supportive care.

Kitchen Foods

- Common pet poisons are foods like chocolate, grapes and raisins, xylitol gum, onions and garlic, and unbaked bread dough. This mostly applies to dogs.

🐾 **Chocolate** contains theobromine and small amounts of caffeine. White chocolate barely has any of these chemicals, while baker's chocolate or semisweet chocolate chips have a ton. When it comes to chocolate, you have to calculate the amount of theobromine to see if it's going to be an issue or not.

It takes several pounds of white chocolate but as little as 2 to 3 ounces of dark chocolate to be poisonous for a Labrador-sized dog.



Treatment includes decontamination, antianxiety medication, heart rate and blood pressure monitoring, and, in severe cases, blood pressure medications or muscle relaxants. The prognosis is excellent with chocolate poisoning.

🐾 Anything from the *Vitis* genus—such as **grapes** and **raisins**—can cause kidney injury to dogs. Treatment includes decontamination, IV fluids for 24 to 36 hours, and blood work monitoring. Less than 10% of dogs end up having kidney injury from this, so the prognosis is excellent. But grape and raisin poisoning should still be treated aggressively, as rare fatalities have been reported.

🐾 **Xylitol** is a sugar-free, natural sweetener that is safe for humans but very dangerous to dogs. Xylitol is commonly found in high concentrations in gums, mints, candies, multivitamins, melatonin supplements, toothpastes, and even mouthwashes. When ingested in toxic amounts—greater than 0.1 grams per kilogram—it can cause life-threateningly low blood sugar. At higher doses, liver injury can be seen. Treatment includes inducing vomiting, blood work monitoring, IV fluids that contain dextrose (sugar), liver protectants, and supportive care. The prognosis is good because most people know it's dangerous nowadays.

Other types of natural sweeteners, such as maltitol, sorbitol, Truvia, and stevia, are safe when dogs get into them—but not xylitol.

🐾 Less common kitchen food dangers include **onions** and **garlic**, as well as unbaked bread dough. These are poisonous, but they aren't commonly eaten by dogs. Anything from the *Allium* genus, such as garlic, onions, and chives, can cause rupturing of the red blood cells in cats and dogs. Cats are more sensitive to this.

-  When dogs ingest **unbaked bread dough** with yeast in it, the warm stomach acts like an oven, causing the dough to rise. Add to that the yeast and sugar metabolizing, and you get carbon dioxide and ethanol, which can result in alcohol poisoning. Signs of walking drunk, collapsing, having a distended stomach, retching or vomiting, and weakness can develop quickly. Treatment includes getting x-rays, pumping the stomach, blood sugar monitoring, anti-vomiting medication, and supportive care. The prognosis is good, but occasionally it can result in a major abdominal emergency surgery.

Veterinary Products

- While the medications your vet dispenses are safe, they aren't when ingested in large amounts. Veterinarians send home medications in childproof containers, but that doesn't mean they're pet-proof. When it comes to prescription medications, always ask your veterinary professional how to administer them and read the instructions carefully.
- Some veterinary products are flavored with meat-based flavoring, and while this may make it easier for your dog or cat to take it, it can also tempt your pet to eat the whole container. This is especially of concern when the veterinary medication is listed as chewable, so keep these containers out of reach to be safe.

Household Items

- Household cleaners top the list of items commonly found under your kitchen or bathroom sink, as they are commonly used to clean surfaces, toilets, and tubs.
- When it comes to household cleaners, look at the label. If the back of the label says "caution," it means it's an irritant. When used appropriately, these are safe to use in a pet-friendly household, but don't let your cat or dog ingest the product or walk through the wet product until the area has dried.

- Irritants are different from some less commonly used household cleaners that say “danger” on the label. That typically means it’s a corrosive, which can cause severe burns or injury to your pet’s—and your—mouth, esophagus, and stomach. These are things like drain cleaners, rust-removal products, and oven cleaners, which aren’t typically used daily.
- If you think your pet was exposed to a corrosive product, don’t try to make them vomit. Instead, give them something tasty like milk, tuna water, or canned chicken soup or broth to flush the chemical out of the mouth and esophagus, and get to a veterinarian immediately.

Mouse and Rat Poisons

- **Mouse and rat poisons**, often called rodenticides, can kill dogs (and the rare cat) in different ways, depending on the ingredient. They can cause brain swelling, elevated vitamin D levels, secondary kidney failure, and internal bleeding.
- Signs of poisoning include walking drunk, acting lethargic, seizures, breathing harder, pale gums, halitosis, belly pain, and not eating. Treatment includes decontamination, IV fluids, anti-vomiting medication, blood work monitoring, medication to treat brain swelling, and antiseizure medication.
- Instead of using any type of poison in your household, consider using more-humane snap traps. Wherever you hide these cubes of poison, your dog or cat will find them!

Insecticides

- Generally, insecticides—which kill things like fleas, roaches, and ants—aren’t too big of a deal, unless you’re a cat. Dogs tolerate insecticides and generally don’t have an issue with the commonly used ones in a household. Cats, however, have an altered liver metabolism that makes them much more sensitive to drugs in general.

- Most insecticides contain pyrethrins or pyrethroids. These types of ingredients typically end with *-thrin* and can be found as active ingredients in ant and roach sprays, flea and tick shampoos, and mosquito sprays. They will generally be in low concentrations, less than 1% to 5%, and are very safe to use. However, concentrated flea and tick topical medications that you put on a dog's back are often found in a 40% to 60% concentration and can be very poisonous, or even deadly, to cats when exposed.
- Some less commonly used insecticides, often sold in bulk at feed stores, can contain organophosphates or carbamates—think chemicals like VX gas or sarin gas. These can be deadly even in small amounts but are rarely used.

Garden Products

- Keep any garden products stored in their original containers and out of reach of your pets. If you're working in the garden, make sure your dog or cat isn't outside, as different types of herbicides and fertilizers could potentially result in poisoning. Pets often find these soil-enhancing products irresistible, as they smell bad.
- The biggest culprit is organic fertilizers, which are labeled as "meal," such as bone meal, blood meal, feather meal, or poultry meal. These are typically natural sources of nitrogen, meaning that they are composed of crushed-up dead things. These fertilizers smell bad, so of course dogs want to eat them!
- Signs of fertilizer poisoning include drooling, vomiting, lethargy, a bloated stomach, or, rarely, tremors or seizures.

Plants

- According to the ASPCA Animal Poison Control Center, the most common poisonous plants pets encounter range from the more benign, such as insoluble calcium oxalate plants and spring bulbs; to the more toxic, such

as marijuana and cardiac glycoside-containing plants; to the most dangerous, such as mushrooms, lilies, sago palms, and blue-green algae.

-  A family of plants called **insoluble calcium oxalates** are common houseplants because they require little water or light. This includes philodendron, sweetheart vine, peace lily, elephant's ear, calla lily, and dumb cane. These plants contain microscopic calcium oxalate crystals, and when dogs and cats chew on them, signs of intense oral pain, drooling, pawing at the mouth, vomiting, or, rarely, swelling of the upper airway can be seen. Signs go away quickly, but it's best to give a small amount of milk or yogurt to wash the crystals out of the mouth. For these types, you likely don't need to go to the veterinarian unless signs don't resolve within a few hours.

-  It's not the flowers or greens of daffodils or tulips that cause problems—it's the actual bulb itself! When ingested, **spring bulbs** mostly just cause drooling, vomiting, and diarrhea. However, when ingested in large amounts, the bulbs can get stuck in the stomach and cause more severe clinical signs, such as heart arrhythmias or even tremors and seizures, albeit rarely. Treatment typically includes anti-vomiting medication, fluids under the skin, and, with massive ingestions, x-rays to be safe.

-  Signs of **marijuana** poisoning in dogs include either acting very sedated or very hyperactive and jittery. Signs of a low heart rate, slowed breathing, drooling, urinary incontinence, vomiting, hypothermia, and coma can also be seen, depending on how much was ingested. The prognosis is usually excellent with supportive care. While the lethal dose of marijuana that kills pets is high, dogs develop clinical signs at 1/1000 of the lethal dose.

If you're a cat owner, keep fresh-cut bouquets out of the house due to the dangers posed by lily poisoning.

-  **Cardiac glycosides** include both indoor and outdoor plants, such as foxglove, lily of the valley, oleander, dogbane, and kalanchoe. It's rare for dogs and cats to chew on these plants, but they can be deadly. Signs of poisoning from cardiac glycoside plants include vomiting, drooling, an abnormal heart rhythm, and, rarely, tremors or seizures. Treatment includes decontamination, fluid therapy, electrolyte monitoring, and heart rate and blood pressure monitoring. The prognosis is generally good, and most patients respond well to IV fluids, anti-vomiting medication, anti-arrhythmia heart medications, and supportive care. This poison has an expensive antidote called digoxin immune fab that can be used in severe cases.
-  There are thousands of species of **mushrooms** throughout the world, but fewer than a 100 are poisonous. Unfortunately, poisonous mushrooms are difficult to identify, so each mushroom ingestion should be treated as worst-case scenario to be safe. Depending on type, mushrooms can cause severe liver and organ failure; neurologic signs, such as tremors and seizures; gastrointestinal signs, such as drooling, vomiting, and diarrhea; or hallucinations. Treatment typically includes decontamination, fluid therapy, blood work monitoring, liver protectants, and supportive care. The prognosis is fair to good if you seek veterinary attention immediately. Handpick mushrooms out of your lawn so that your dog doesn't accidentally ingest them.
-  **Lilies** are often used in florist bouquets and include the common Easter, tiger, Japanese show, stargazer, Oriental, and some species of day lilies. As few as two to three leaves or petals—even just the pollen and water in a vase—can be toxic to cats and result in severe kidney injury. Signs of vomiting, lethargy, not eating, abnormal urination, and kidney failure can result within a few hours. Treatment includes decontamination, IV fluids for 48 hours, anti-vomiting medication, and supportive care and monitoring. The prognosis is fair to good if treatment is started right away but poor once your cat has developed kidney injury.
-  **Sago palms**, which are larger landscaping bushes naturally found in warmer environments, cause liver failure in dogs and cats when ingested. These plants are commonly called cycads and include

Japanese cycad, coontie plant, and cardboard palm. Signs of acute vomiting, diarrhea, and drooling are seen quickly, followed by signs of liver failure: jaundiced skin; elevated liver enzymes on blood work; black, tarry stool; and bruising or clotting problems. These signs are sometimes followed by seizures or even death. Treatment should be initiated promptly and includes decontamination, blood work monitoring, IV fluids, liver protectants, anti-vomiting medication, antiseizure medication, vitamin K, and even plasma transfusions. In veterinary data, the fatality rate ranges from 10% to 50% with dogs that ingest this plant.

- With **blue-green algae**, often known as cyanobacteria, death can occur within hours of ingestion. Unfortunately, this plant is microscopic and grows in hot, humid weather during the summer or early fall. The majority of algae growing on lakes are nontoxic, but it's hard to tell which are deadly simply by looking at a sample. Signs of poisoning include sudden seizures, coma, not breathing, jaundice, and acute death. With this plant, treatment is often too late, as the signs develop too quickly to be able to treat these poisonings.

Lesson 20

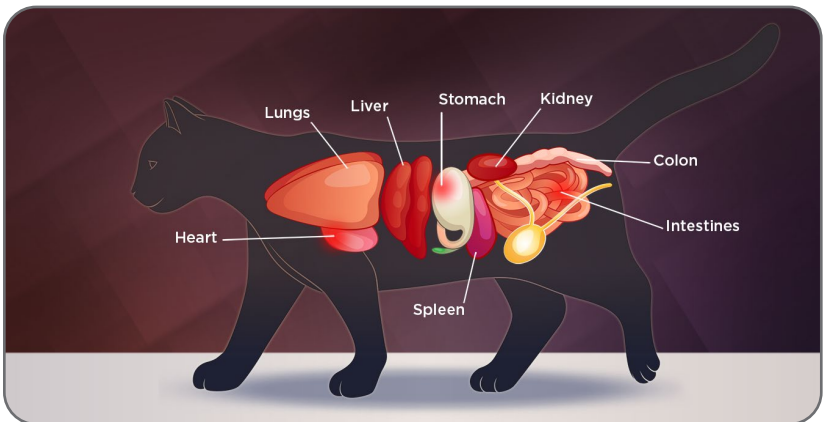
Cancer in Cats and Dogs

Unfortunately, cancer is one of the top causes of death in geriatric dogs and cats. In fact, it's estimated that one in four dogs will develop tumors at some point in their lives. And almost half of dogs that are considered geriatric (over 10 years of age) will develop cancer at some point. Less is known about how prevalent cancer is in cats, but it's likely within the top three causes of demise in cats.



Cancer in Cats

- For cats, the most common cancers are lymphoma, squamous cell carcinoma, mammary gland cancer, and adenocarcinoma.
- As it is for dogs, the top cancer in cats is **lymphoma**, but in cats, it seems to hide more in the body. Feline leukemia has been shown to cause lymphoma in cats, and cats with feline immunodeficiency virus are also at higher risk for lymphoma. This is one of the reasons it's important to test for and protect your cat from these deadly diseases. In cats, lymphoma rarely affects the peripheral lymph nodes but, rather, the abdominal lymph nodes, the gastrointestinal tract, and the tissue in front of the heart (called the mediastinum), making it harder to detect by pet owners. This means you'll see more subtle signs, such as vomiting, diarrhea, weight loss, a change in appetite, or abnormal breathing. Also, there is an association between cats with inflammatory bowel disease and the development of gastrointestinal lymphoma. While a cure is rarely achieved in cats, about 70% of cats treated with chemotherapy can go into remission. And some types of lymphoma, such as small cell lymphoma, can grow slowly in cats.



- **Squamous cell carcinoma** can grow anywhere and looks like an ulcerated, reddened, or even cauliflower-like growth. It typically affects the hairless areas of skin, such as the ear tips, eyelids, nasal planum,

tonsils, throat, and mouth. It's often confused with dental disease, and a biopsy is often recommended to differentiate it. Squamous cell carcinoma affects lightly pigmented cats more. Damage to cells in the body—via physical trauma, excessive exposure to sunlight or smoke, or even chronic dental disease—is thought to play a role with this type of cancer. If caught early, it is treatable; however, if the cancer progresses, it spreads to other parts of the body and dramatically affects quality of life.

- Cats and dogs have four to five pairs of mammary glands that run parallel along the midline of their belly. If you feel a lump in one of these, you want to get to a vet stat. That's because in cats, almost 90% of **mammary gland tumors** are malignant, while in dogs, approximately 50% are. Unfortunately, cats have a poorer prognosis, whereas breast cancer can be 75% curative in dogs. Spaying before 12 months of age significantly reduces the risk of breast cancer. In fact, in cats, you might consider spaying before five months of age to prevent their first heat cycle.
- **Adenocarcinoma** is an aggressive type of cancer that can grow anywhere in the body. It's often diagnosed in cats with chronic weight loss, inappetence, and increased vomiting or diarrhea. Depending on the location of the cancer, surgery may be necessary. Unfortunately, the survival range is based on how invasive the adenocarcinoma is, where it's located, and if there's secondary complications occurring. Survival is often just a few months, even with surgery and chemotherapy.

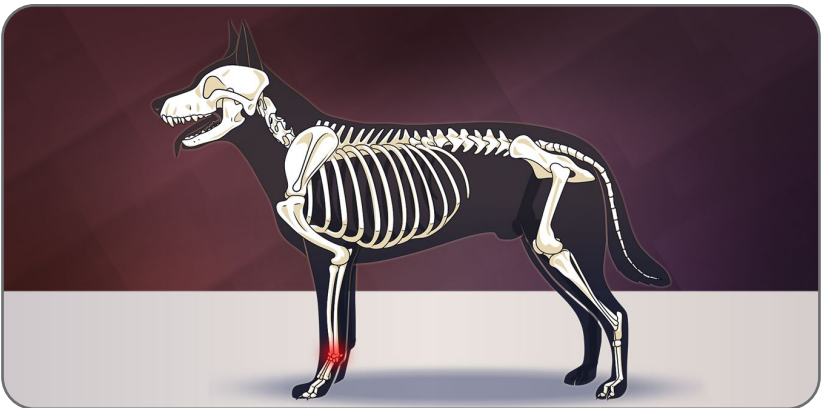
Cancer in Dogs

- The top cancers that dogs get are lymphoma, osteosarcoma, hemangiosarcoma, and mast cell tumors. Each type has different prognoses and potential treatment options.
- The top cancer in both dogs and cats is **lymphoma**, which is similar to non-Hodgkin's lymphoma in humans. Lymphoma is an aggressive cancer of the lymphatic system* that can also spread to multiple organs and bone marrow. Lymphoma is seen more in golden retrievers, Boxers, Rottweilers, Bernese mountain dogs, and Dobermans, although any dog can get it. And

* This includes the lymph nodes, the thymus gland, and the lymphocytes (a type of white blood cell).

it is often seen in very young pets. When dogs get lymphoma, they often have very enlarged lymph nodes on their body. Swellings under the neck area, in front of the shoulder, or along the back lower thighs are the lymph nodes that are most commonly affected. The prognosis for lymphoma varies, but of all the types of cancer, this is the one that responds best to chemotherapy. While it can't be cured, pets can go into remission. Average remission can be anywhere from six to 18 months.

- **Osteosarcoma** is a primary bone tumor that makes up about 85% of the bone cancer seen in dogs. It is often seen more commonly in large and giant breeds, such as Scottish deerhounds, Rottweilers, Great Danes, and greyhounds. This type of cancer can affect any bone but typically grows closest to the wrist. Unfortunately, the most common sign is lameness or even acute fracture of the leg. Osteosarcoma is very aggressive, and for the vast majority of dogs, by the time it is identified, the cancer is thought to have metastasized, or spread, throughout the body. Treatment is typically surgical amputation of the leg and pain management, followed by chemotherapy or even radiation therapy. The prognosis for osteosarcoma varies. In dogs that are treated with amputation or radiation therapy, the prognosis for survival is about six months. In dogs that receive amputation and chemotherapy, the survival is approximately one year, with 20% to 25% of dogs living longer than two years.



- **Hemangiosarcoma** is a very malignant, aggressive, deadly cancer that attacks the cells that line blood vessels. It especially affects Labrador retrievers, golden retrievers, and German shepherds. Hemangiosarcoma metastasizes aggressively throughout the body, particularly to blood-loving organs like the spleen, liver, heart, and skin. This type of cancer doesn't show any clinical signs until the tumor acutely ruptures and causes internal bleeding. This results in signs of severe shock and acute blood loss into the abdomen, resulting in a visit to the veterinary ER. The options are typically to go into emergency surgery to fix the internal bleeding or to humanely euthanize. Unfortunately, by the time signs of internal bleeding have occurred, the cancer has already spread microscopic cancer cells throughout the body. Even with aggressive therapy, such as blood transfusions, surgery, and chemotherapy, the prognosis for hemangiosarcoma is poor, with the mean survival time ranging from just two weeks to several months.*

- **Mast cell tumors** are one of the most common skin cancers in dogs; they account for about 20% of all skin tumors in dogs. These tumors contain histamine, what is often seen with an allergic response, and can change in size quickly. Mast cell tumors are seen more commonly in Boxers, Boston terriers, bulldogs, pugs, and pit bulls. These tumors can feel like anything—from a soft, fatty mass to a more firmly attached mass. While mast cell tumors start in the skin, they can metastasize to other organs, such as the spleen, liver, and bone marrow. Mast cell tumors are removed with surgery. Depending on what grade the tumor is, more aggressive therapy may be warranted, including different types of medication (such as

Dogs get a lot of benign fatty skin masses, called lipomas, as they age.

Because mast cell tumors can feel the same, any lump or bump on the skin should be evaluated by your vet.

* With surgery alone, the survival time is typically considered to be about one to three months, while with surgery and chemotherapy together, the mean survival time is approximately four to six months. Unfortunately, less than 50% of dogs treated with surgery and chemotherapy survive more than six months, and less than 10% of dogs diagnosed with hemangiosarcoma survive to one year.

prednisone, stomach protectants, and antihistamines), an oral anticancer medication called Palladia, or even radiation therapy and chemotherapy. There's also an intratumor injection called Stelfonta. Mast cell tumor has a better prognosis than other types of cancer.

Diagnosing Cancer

- Spotting cancer in your pet can be very challenging at the early stages. Depending on the type of cancer and its location, signs can be incredibly varied and sometimes can masquerade as other conditions.
- Because there are so many clinical signs of cancer, any unusual bumps, lumps, or masses and any unexplained weight loss and extreme lethargy or weakness should be particularly concerning and warrant a veterinary work-up. The key with cancer—as it is with any aspect of your pet's health—is to be vigilant with any abnormal or sudden changes in behavior or physiology and to get them checked out as soon as possible.
- When it comes to diagnosing your pet with cancer, it typically costs at least a thousand to several thousand dollars to diagnose, and that's not including the cost of treatment.

Treating Cancer

- Depending on the type of cancer, there are several treatment options, including chemotherapy, surgery, radiation therapy, cryosurgery, immunotherapy, and holistic options.
- The most cost-effective option, but unfortunately the one with the shortest survival length, is oral medication. These types of drugs often include more benign treatments, such as pain medicine, steroids, anti-inflammatories, antiseizure medication, appetite stimulants, and anti-nausea or anti-vomiting medication. In total, these oral medications typically might cost you \$200 to \$300 for several months' worth. Some holistic medications, such as I'm-Yunity mushrooms, can be quite expensive, at several hundred

dollars a week.* Steroids, such as prednisone or prednisolone, should not be started without consultation with a veterinary oncologist or specialist, as they can mask the diagnosis of cancer or even affect the response to chemotherapy, shortening the overall survival with certain types of cancers.

- Other treatments can add up quickly. Emergency surgery for internal bleeding from hemangiosarcoma can range from \$3,000 to \$6,000, depending on how many blood transfusions and complications there are. Aggressive surgery to remove a tumor on the skin, leg, or intestines could cost \$1,500 to \$6,000, while follow-up chemotherapy can often add up to \$10,000 in one year. Radiation therapy, which requires brief anesthesia each time, can also add up to \$10,000 or more.
- Consider making an appointment with a board-certified veterinary oncologist. It often takes several weeks to get an appointment, as there are only a few hundred of these specialists in the world. Meeting with the oncologist doesn't commit you to having to spend thousands of dollars on chemotherapy or more advanced procedures, but it does put you in front of the veterinary expert who can provide you with the best guidance and counseling.
- Making the decision to treat your pet's cancer is a very difficult and personal decision that involves weighing the financial, mental, and emotional factors. In veterinary medicine, the aim is not for a cure, like it is in human medicine. Human medicine is much more aggressive with the treatment of cancer, whereas the goal of veterinarians is to preserve quality of life and aim for remission if possible.

Dogs and cats respond to chemotherapy very differently than humans. They don't lose their fur, and only about 10% to 15% of the time do they develop side effects from chemotherapy.

* Preliminary studies at the University of Pennsylvania have found that survival with some of these holistic options may be worth the high price tag.

- If your pet is diagnosed with cancer, don't feel guilty for not having caught it earlier. Pets don't show signs of cancer until it's severe or in the end stages.

Preventing Cancer

- There's not much that can be done to avoid or prevent cancer, aside from noticing clinical signs earlier and seeking veterinary attention as soon as possible. That said, here are a few tips:
 - 🐾 **Visit the vet routinely.** As your pet ages, a twice-a-year visit for a physical examination allows for earlier detection of medical problems. Talk to your veterinarian about skipping the vaccines as your pet ages and splurge on yearly blood work, or even x-rays of the abdomen, instead.

Each day after your pet is diagnosed with cancer is a gift. Spoil them with ice cream, filet mignon, canned food, tuna, hot dogs, bonito flakes, and whatever else they want—and cherish the days you have with them.

The Nu.Q Vet Cancer Screening Test is a blood test that can help identify hemangiosarcoma and lymphoma in dogs. If this test is abnormal, more thorough diagnostics and tests should be pursued.

- 🐾 **Eliminate environmental exposure.** Some veterinary studies have shown that exposure to cigarette smoke and flea collars may be associated with a higher risk of cancer.



Monitor your pet for any lumps or bumps or other signs of cancer.

Pet them frequently everywhere. If you notice any lumps or bumps, especially if they are bigger than the size of a pea, get them assessed. The sooner you notice a problem, the sooner you can identify it and treat it, making the prognosis potentially better.

Lesson 21

How to Care for an Aging Pet

There is a growing population of geriatric pets, which means that they are in the last 10% of their estimated life. With improvements in quality of veterinary medicine, preventive care, nutrition, and environmental enrichment, pets are living longer and longer—which is fantastic! But as your pet ages, you need to be aware of some of the common medical problems that are seen in geriatric dogs and cats, as these can result in their demise.



Osteoarthritis

- The top problem that ails older pets is osteoarthritis. Unfortunately, it's extremely common in both dogs and cats. About 60% of pets are overweight or obese, and this extra weight contributes to significant strain on the musculoskeletal system, worsening arthritis. So the best way to keep your pet living longer is to keep them skinny!
- Ask your veterinarian what your pet's Purina body condition score is, and make sure to feed your pet for their ideal body weight, not their current body weight. And use a measuring cup to make sure you're giving the exact amount. If your dog gets more exercise in the spring and summer and less in the fall and winter, feed them a little more in the summer and a little less in the winter.
- Know what the standard weight is for your dog's breed; simply compare your dog's weight to the weight listed for the breed on the American Kennel Club website. While there will be some wiggle room, chalked up to genetics and variation, your pet should be around the standard weight. Most importantly, don't show your dog love by giving more treats. Instead, take them on more walks and play with them more often.
- In a study that looked at routine x-rays of cats, approximately 60% of the x-rays showed evidence of osteoarthritis. As cats are so stoic, they rarely show signs of osteoarthritis—at least, not as obviously as dogs do. They don't typically limp or cry out. Instead, be on the lookout for fecal accidents or even a slight delay in jumping!
- Treatment for osteoarthritis in dogs and cats is weight loss. Even a reduction in body weight by 5% or 6% can help reduce signs of lameness.

Identify signs of osteoarthritis in cats earlier so that you can treat pain sooner before it becomes a problem. Keep dogs skinnier and start them on NSAIDs as needed when they age.

- If your older pet is still in pain at an ideal body weight, your pet would benefit from pain medication. Different medications are used in dogs versus cats.
- For dogs, you'll typically start with veterinary-specific NSAIDs and use them long term as needed, as long as your dog is doing well on them. NSAIDs work by decreasing inflammation in the joints and can make a huge difference in your dog's comfort. As NSAIDs are metabolized by the liver and kidneys, you'll have to check in with your veterinarian twice a year for blood work to make sure your dog is tolerating the medication without any problems. Rarely, NSAIDs can cause gastrointestinal signs, such as vomiting; diarrhea; black, tarry stool; and stomach ulcers, so ideally you should give it with food. You should also use the lowest effective dose and give it only as needed.
- For cats, long-term use of NSAIDs is not recommended, as their kidneys don't seem to tolerate these medications as well as dogs' kidneys do. If you do use NSAIDs, make sure to check with your veterinarian, use the lowest effective dose, and monitor blood work and urine tests more frequently to be safe, especially if they have any history of chronic kidney disease.
- If the pain isn't controlled, or if your pet doesn't tolerate NSAIDs, you might try other prescription pain medications for your geriatric pet.



-  Gabapentin is an antiseizure medication that is used commonly as a pain medication. There's a huge dose range, and it can be safely used in both dogs and cats. Generally, any cat over the age of 13 should be on this! It typically comes as a capsule, so it often needs to be mixed with a small amount of food or specially compounded by a pharmacy for accurate dosing.
-  Tramadol is an opioid-like medication that used to be a very popular pain medication in dogs until a 2018 study found that it isn't metabolized well in dogs and doesn't work. It is metabolized in cats well, but it tastes terrible and causes profuse drooling when given.
-  Codeine is generally reserved for postoperative acute pain, typically for three to five days only. With the growing opioid epidemic in humans, it is likely not safe to dispense this for long-term pain in veterinary medicine.
- Over-the-counter medications or supplements such as glucosamine and cannabinoids (CBD) are generally benign, safe supplements, but a veterinary-prescribed or veterinary-recommended version is best, as there is a huge range in quality of supplements on the market.
-  Glucosamine does not have any pain relief or strong anti-inflammatory properties with it. It's a supplement that is designed to protect cartilage.* This means that your pet has to have healthy cartilage for the glucosamine to work! By the time your pet shows evidence of osteoarthritis, all the normal, healthy cartilage is often eroded away. One of the biggest mistakes people make is starting their older pet on glucosamine. While glucosamine is very safe, you want to start this one early in your pet's life, not once they are middle-aged or geriatric. There are also some diets that support joint maintenance and have glucosamine along with other supplements within them. These are very benign and very safe. You can use glucosamine in cats, although it's harder to medicate cats; you can try sprinkling glucosamine in their canned food. Another mistake

* This is the soft, flexible connective tissue that coats and cushions the ends of bones.

people make with glucosamine is going with the cheapest brand. Generally, look for products made in North America by veterinary-recommended companies that are backed by research and data.

🐾 The popular supplement CBD is different from the mind-altering THC found in marijuana. It's the other cannabinoids from the *Cannabis* plant that are provided in CBD products. In some states, veterinarians can't legally recommend or even discuss CBD, so you'll have to do your own research. You want a science-based CBD veterinary company that tests their products regularly to ensure purity, and you want to request a certificate of analysis to ensure that the manufacturer's products are up to specifications and don't contain contaminants.* Rarely, CBD can cause increases in liver enzymes, so routine blood work monitoring in your dog is important, too.

- If your pet has osteoarthritis, you'll also want to make environmental changes. You can help your geriatric pet by just changing a few things around the house to keep them safe and comfortable. Consider adding throw rugs on the floor, ramps, and orthopedic beds for comfort. If your dog slips while trying to get up on a hardwood floor, add secure throw rugs with anti-slip mats or even yoga mats. If your dog has a hard time getting up, you can purchase a harness with a handle to help assist them. Keep your pet's nails trimmed short, which will help them feel more secure while walking. Consider adding a carpeted ramp so they can walk onto a sofa or into the car instead of jumping.
- As for cats, one of the biggest signs of osteoarthritis and pain is urinary or fecal accidents outside of the litter box. As your cat ages, consider getting larger litter boxes that have a very low step to get into the box. This is important because arthritic cats have a harder time stepping over a wall or through a door. Remove any barriers to entry into the litter box, such as making your cat go down two floors to the basement. Consider adding an extra litter box in a room that your cat naps in the most. Experiment with

* There have been FDA warnings on certain brands of CBD due to contamination with heavy metals and pesticides or inappropriate labeling of the product, such as not actually having any CBD in the product or having THC in the product. Some companies have evaluated the use of CBD in dogs and found that CBD at the dose of 2 milligrams per kilogram of body weight can help with osteoarthritis.

how much kitty litter you put in the litter box, as arthritic cats sometimes prefer either deep or shallow litter.* When in doubt, provide a few different options to see what helps.

Cognitive Disorder

- Another condition that's seen in geriatric pets is decreased sensory and cognitive function.
- As pets age, their eyesight and hearing start to go. You may start to notice a cloudy blue appearance to your pet's eyes. In humans, this is what causes people to need reading glasses. In pets, it typically doesn't cause too much of an issue, as it's different from a more blinding cataract. That said, as their senses are worsening, you want to make sure to keep your pet safe.
- If you start to notice that your pet is hesitant to walk in the dark, is bumping into things, or is slowing down significantly, get them to your veterinarian for an exam to make sure nothing else is going on. If you have small children in your house, make sure to always supervise them when they're with your pets, as your kids may accidentally startle your pet, resulting in injury.
- Also, don't change the furniture around too much, as consistency and stability are important. Consider adding a few extra night-lights around the house, especially near the food bowl and litter box.
- To prevent accidental falls down the stairs or into a pool or pond, your dog should be always supervised. A baby gate or even a curtain rod can be used as a barrier to prevent an accidental fall.
- Just as humans age and get dementia, pets may also start to develop cognitive disorders as they age. At some point, you might decide to consult with a veterinary behaviorist and treat your pet's cognitive disorder with supplements or medication.

* For some cats, deep litter is unstable, and your cat may have trouble balancing in it. Likewise, if your cat has a medical problem like hyperthyroidism, kidney disease, or diabetes that is causing larger clumps of urine, shallow litter can't absorb as much of the urine, so deep litter should be used.

- Senilife, a supplement blend of different types of antioxidants, works by helping to reduce brain-aging behavior. While there isn't a cat-specific size, you might try using the small-dog dose for your cat. You can cut off the end of the capsule, squeeze out the gel, and mix it with some tasty cat food.
- Of course, you have to make sure that behavioral problems or geriatric issues aren't related to underlying medical problems. High blood pressure, failing organs, bone cancer, and even brain tumors can cause signs similar to those of cognitive dysfunction. This is just one reason of many to take your aging pet to the veterinarian twice a year for an exam.

Talk to your veterinarian about signs of cognitive dysfunction and if there are safe, easy medications or supplements you can use.

Lumps and Bumps

- Another problem that's seen as your pet ages is more lumps and bumps on their body. This is much more common in dogs than in cats. Any skin mass on a cat needs to be aggressively worked up to make sure it's not malignant cancer. As for dogs, certain breeds seem to grow lumps and bumps more readily than others; these masses are often benign fatty tumors called lipomas. These are soft, easily movable skin masses that can grow anywhere on the body.*
- Certain types of skin masses can be malignant, such as liposarcomas or mast cell tumors, and they look and feel similar. Any skin mass should be assessed by your veterinarian and monitored carefully. If it's bigger than the size of a pea, your vet should aspirate it by sticking a small needle in it and pulling out a few cells for analysis. A benign lipoma isn't typically surgically removed unless it is bothering you or your pet, is in a location

* Golden retrievers, weimaraners, springer spaniels, Dobermans, German shorthaired pointers, Labrador retrievers, Schnauzers, and pretty much any geriatric dog seem to develop these.

that will make it difficult to surgically remove as it gets bigger, or grows quickly—or unless your pet is a breed that is more likely to have something cancerous like a mast cell tumor.*

- The biggest mistake people make when they surgically remove a skin mass is not paying to have the biopsy submitted. Generally, you should always submit any tissue that is removed from your pet's body to make sure it's not cancer. Any type of tumor, even a benign skin tumor, should be submitted for histopathology to rule out cancer.
- The last few common geriatric medical problems that are seen in pets include wear and tear, such as failing organs that can't work as well as they used to, crippling osteoarthritis, and hypertension. Cat owners should revisit [lesson 13](#), which covered chronic kidney disease, one of the top three causes of demise in cats. Dog owners should revisit [lesson 15](#), which covered heart disease and how common it is, especially in small dogs, as they age.
- Most dogs and cats don't get routine dental exams the way humans do, so geriatric pets are at high risk for severe gingivitis, tooth decay, and rotten teeth. Having severe tartar buildup in the mouth poses a health threat to your pet, as bacteria can leave the gums, enter the bloodstream, and get caught on the heart valves, resulting in a life-threatening infection.

Lumps and bumps are more common as your dog ages, but they should still be carefully monitored by you and your vet.

* Such breeds include Boxers, pit bulls, Boston terriers, pugs, and golden retrievers.

Lesson 22

Common Zoonotic Diseases

A zoonotic disease is any type of infection that an animal can spread to humans, or vice versa. Zoonotic diseases are relatively rare, but they are one of the reasons why veterinarians are so adamant about preventive care. This is also one of the reasons why pets need to be kept up to date on the rabies vaccine. Many zoonotic diseases can be treated and may just be an inconvenience or added cost. And although it's rare to catch a disease from your pet, a few of the zoonotic diseases are deadly and don't have a cure, like rabies.



Ringworm

- Ringworm, also called dermatophytosis, is a fungus commonly found in the natural world. Cats and dogs can both carry ringworm on their fur, but it's much more common in cats. Pets are often carriers, which means they may or may not be affected by it, but they can spread it to you, your family, and the environment. Once it's in the environment, it's very difficult to get rid of, which is why it's more prevalent in catteries and animal shelters.
- Signs of ringworm include red, raised, dry circular patches on you or your family members; hairless regions on your pet's face or body; itchiness; crustiness or scaliness, such as white flakes on the fur; and open or ulcerated bumps.
- If you think your pet has ringworm, get to a vet, as they'll need to run a few tests. One can be done by plucking a few hairs and looking at them under a specialized light called a Wood's lamp or doing a trichogram, fungal culture, or specific tests submitted to a laboratory.
- Ringworm is treatable, but it has to be tackled aggressively with shaving, oral antifungal medication, environmental cleanup, blood work monitoring, quarantine from other pets, frequent lime sulfur baths or topical treatment typically twice a week for one to two months, and frequent veterinary follow-ups.
- Unfortunately, ringworm is zoonotic, and you'll likely need treatment as well, which typically includes Tinactin or some type of topical medication for jock itch or athlete's foot. The good thing about your ringworm is that it is usually self-limiting, meaning that it'll eventually go away on its own—because you're not the right host species for the dog-and-cat species of ringworm. Your ringworm is typically easy to treat, with an over-the-counter antifungal cream, but it takes a long time to resolve.

Despite its name, ringworm has nothing to do with worms.

You might be more at risk for infections and rarer diseases if you have very young or elderly family members, are immunosuppressed, are on medications like chemotherapy or steroids, have received an organ or bone marrow transplant, have AIDS, or are pregnant.

- Talk to both your veterinarian and your medical doctor if you think your pet may have ringworm, as treatment should be initiated as soon as possible. And be aware that using topical steroid cream can make it worse, so don't just put random ointments on you or your pets.
- The good news about ringworm is that there is an FDA-approved veterinary antifungal medication for cats that is much less expensive than the human-grade one. Ultimately, the prognosis for ringworm is excellent; it's just an inconvenience.

Rabies

- The deadliest zoonotic disease you have to worry about is rabies. It's an RNA lyssavirus that affects the central nervous system. While rabies is well controlled and extremely rare in the United States, it is rampant in developing countries, particularly in Africa and Asia. Dogs are one of the major animal reservoirs of the disease in developing countries, while in developed countries, wildlife, such as bats, raccoons, and foxes, are the main reservoirs.
- Signs of rabies—in both animals and humans—include abnormal pupil size, behavioral changes, walking drunk, agitation, aggression, hallucination, exaggerated responses to stimulation, hydrophobia (fear of water), coma, and death.
- Sadly, with this virus, there is no cure. It's almost 100% fatal. But it's 100% preventable by vaccination. The unique thing about rabies is that postexposure prophylaxis within two weeks of suspected exposure can

prevent the disease. Even hygiene like washing the bite wound with soap and water can dramatically reduce the risk of rabies infection.

- Rabies is transmitted by saliva, blood, or tissue exposure, and there's no good test for it, except by having brain tissue examined. While there are blood titers for rabies, these tests measure vaccination immunity protection and not active virus. If your pet is showing neurologic signs and bites someone, it may be euthanized for rabies testing due to lack of vaccination, as brain tissue is necessary to accurately test for rabies.
- Most states require a rabies vaccine for dogs and cats. The rabies vaccine for animals is unique because they need only one dose for protection—versus most vaccines, which require a minimum of a two-set booster.
- This is the vaccine that you should always keep your pet up to date on. If you choose only one vaccine for your pet, this is the one to choose. In fact, you want to be pretty neurotic about not being overdue on this vaccine. To avoid a lapse, put a reminder on your calendar at least one to two weeks in advance of when your pet's rabies certificate expires. Depending on state guidelines and recommendations, some veterinary hospitals require euthanasia and autopsy if a neurologic cat bites someone and that cat is unvaccinated or overdue for the vaccine.

It's estimated that one person dies of rabies every nine minutes in the world today. There are between 30,000 and 70,000 deaths a year worldwide.

To avoid contracting rabies, you should not pet stray dogs or cats in developing countries. In developed countries, don't touch or approach foxes, raccoons, or bats.

Leptospirosis

- The bacterium *Leptospira* is one of the top zoonotic diseases in the world, particularly in developing countries and warmer locations.* This spiral-shaped bacterium is found in the urine of all types of animals—from wildlife like mice, rats, squirrels, possums, and deer; to farm animals like cattle and pigs; to reptiles and amphibians; to pets and pocket pets like hedgehogs and pet rodents.



- Dogs are exposed to leptospirosis when they drink out of puddles, streams, lakes, or ponds where wildlife may have urinated. Even licking something off the city sidewalk or chewing on backyard grass can expose your dog. Humans can also get this—where it's called Weil's disease—from exposure to urine, blood, or tissue from animals infected with the bacterium. In both dogs and humans, leptospirosis causes organ injury, especially to the liver, along with generalized malaise.
- Leptospirosis can be treated—if caught early enough. Treatment includes rapid diagnosis, 24/7 care, aggressive IV fluids, IV antibiotics (such as doxycycline and penicillin), blood work monitoring, ultrasound, and supportive care. The risk of spread to your family is generally low by the

* This includes places like Hawaii, the Caribbean, and India.

time your dog is sent home from the hospital. The use of antibiotics typically will limit how much of the bacterium is shed in the urine within a few days. Regardless, it's important to keep your dog vaccinated for this infectious disease.

Parasitic Infections

- Dogs and cats have lots of gastrointestinal parasites, which are easily transmitted if your dog visits a dog park or if your pet likes to catch wild animals like rodents, chipmunks, squirrels, and rabbits. Your pet is at risk even if you just have wildlife pooping in your backyard. Wildlife carry lots of gastrointestinal parasites and ectoparasites like fleas, ticks, and mites.
- Signs of gastrointestinal parasites in dogs and cats include vomiting, diarrhea, bloody diarrhea, a pot-bellied appearance, chronic weight loss, and the presence of white to yellow worms near the perineal region or in the feces.
- Gastrointestinal parasites and ectoparasites can be easily treated with an anthelmintic, a type of antiparasitic drug. But sometimes they can be transmitted to humans, potentially resulting in severe complications. While rare, gastrointestinal parasites can result in the parasite migrating throughout the human body, resulting in cutaneous larva migrans or, more seriously, visceral larva migrans.
- Cutaneous larva migrans occurs when the gastrointestinal worm larvae from roundworms or hookworms penetrate your skin and burrow and migrate under the skin. This causes red lines under the skin—tracks where



Tapeworm



Roundworm



Hookworm



Whipworm

the worms are migrating. This is one of the reasons why you shouldn't go barefoot in dog parks or on the beach in developing countries that have stray dogs and cats defecating in the sand. The gastrointestinal parasites can burrow through the skin of your foot.

- Visceral larva migrans occurs when these roundworms are accidentally ingested through the mouth, called transmission via the fecal-oral route—in other words, when your toddler touches grass outside that had parasite worms from infected feces and then sticks their hands in their mouth. The gastrointestinal worms then migrate through the body organs, eyes, or even to the central nervous system (like the brain!). This can result in chronic illness, blindness, and pain. It's also one of the reasons why children shouldn't visit dog parks, pets should be dewormed at least yearly, and pets should be on preventative medications like dewormers, heartworm, flea, and tick preventatives.

Protozoal Infections

- Protozoa are single-celled organisms like toxoplasma, cryptosporidium, and giardia. These organisms are in the environment and can be easily transmitted to you and your pets. In fact, dogs and cats can often carry these protozoa in their body without being symptomatic from it.
- Toxoplasmosis, often called toxo, is caused by the protozoa *Toxoplasma gondii*. Immunosuppressed people or mothers that are pregnant can become very ill from toxoplasma, unlike most people, who never show signs of illness. The majority of cats never get sick from toxo, but a small subset can. Regardless, cats can become carriers of the infection and shed it in their feces, putting you at risk.
- In affected cats, toxoplasmosis can cause fever, inflammation of the eye, inflammation of the pancreas, pneumonia-like changes, or even neurologic signs. In humans, toxoplasmosis can cause fever, flu-like symptoms, headache, and miscarriage; rarely, more severe signs can be seen, such as seizures. Also, exposure to the human fetus can result in mental impairment and birth defects.

- Cats are typically exposed to toxoplasmosis when they go outside and hunt; that's because wildlife can carry toxoplasma, and if your cat eats dead things like mice and voles, your cat can be exposed. Likewise, outdoor exposure to fecal material from an infected cat can result in contamination of the environment, potentially exposing you and your cat. This is one of the reasons why veterinarians often advocate that cats stay indoors and that you cover your child's sand box, which looks like a gigantic litter box to outdoor cats! When your cat defecates, even in the litter box indoors, it can potentially spread toxoplasma to you.
- Apart from litter boxes, humans can also get toxoplasmosis by gardening outside (where other cats may be defecating in the soil), ingesting unwashed or undercooked vegetables from contaminated soil, and practicing inappropriate hygiene while handling raw meat or ingesting rare or raw meat.
- The protozoa *Cryptosporidium* can cause cryptosporidiosis, which is typically spread via feces. In humans and cats, signs of vomiting, diarrhea, abdominal pain, dehydration, and fever can be seen. This is especially of concern for immunosuppressed cat owners.

Women who are pregnant need to avoid exposure to toxoplasma by avoiding contact with cat feces. The best way to avoid this zoonotic infection is by keeping your cat indoors, avoiding raw food diets, using gloves when gardening, covering outdoor sand boxes, fencing off your garden to prevent stray cats from defecating in it, using good hygiene when handling meat or garden vegetables, avoiding cleaning the litter box while pregnant, and avoiding outdoor, stray, or foster cats while pregnant.

- Beaver fever, known medically as giardiasis, is caused by *Giardia* protozoa. You, your pets, and wildlife may be exposed when drinking from contaminated water sources, such as directly out of a stream or creek. This one causes food poisoning–like symptoms, such as vomiting, diarrhea, abdominal pain, nausea, and secondary dehydration.

Bacterial Infections

- Microbes are bacterial organisms that are in the environment. There is a whole host of different types of bacteria that dogs and cats can potentially spread to you or can get from you. Some can be very serious or, rarely, even life-threatening, particularly in people who are immunosuppressed.
- Cat scratch disease (CSD), commonly called cat scratch fever, is caused by the bacterium *Bartonella henselae*, which is carried in the saliva of cats or in fleas. It's estimated that 40% of cats carry this bacterium at some point in their life—more when they are young kittens. Cats are typically carriers of this bacterium, meaning that they have it on their body but rarely get sick from it. If you get scratched by a cat, it can rarely result in fever, swollen lymph nodes, back pain, and generalized malaise. While this bacterial infection is easily treatable with the correct antibiotics, CSD can result in severe symptoms in immunosuppressed humans or when prompt treatment isn't initiated. Therefore, you want to take precautions to avoid or treat scratches, such as minimizing rough play with kittens, keeping your cat's nails short, using a flea preventative, using soap and running water to clean scratches immediately, and consulting with a medical doctor.
- Another common bacterium carried by pets, especially in their mouths, is the gram-negative bacterium *Pasteurella*. This is seen more commonly in cats. This is one of the most common organisms isolated from cat and dog bites, and even licks or cat scratches can spread this bacterium. Bites with this bacterium can result in redness at the wound, pain, inflammation, and rarely even bacterial spread into the bloodstream. This is another reason to wash scratches or bites well.

- Brucellosis, caused by the bacterium *Brucella*, is most commonly transmitted to humans by consuming unpasteurized dairy products or to those who have close contact with

The bacterium *Pasteurella* is found in an estimated 70% to 90% of cats.

animals or animal bodily fluids. This includes laboratory technicians, veterinarians, slaughterhouse or meatpacking workers, and breeders. In dogs, *Brucella* can cause fever, enlarged lymph nodes, infertility, and miscarriage. When humans are exposed, it can result in fever, musculoskeletal pain, and other severe complications. Treatment includes antibiotic therapy for long periods of time.

- *Salmonella*, a gram-negative bacillus, normally grows in the large intestine but is more commonly found in pets that are fed raw-meat diets, pets that hunt wild birds or wild animals, and exotic pets like snakes and backyard chickens. People also get salmonella from undercooked or contaminated food. Many animals infected with salmonella are carriers, meaning that they carry and spread the bacterium but never get sick from it. When humans get salmonella, it can result in severe diarrhea, vomiting, secondary dehydration, and, rarely, septicemia. You can dramatically decrease the risk from this bad bug by feeding a cooked or processed food to your pets, using gloves or good hygiene when handling a litter box or undercooked or raw food, and minimizing hunting (including keeping your cat indoors).
- Methicillin-resistant *Staphylococcus aureus*, often abbreviated MRSA, can be found in dogs and cats, but it's typically due to direct contact with their pet owners. This type of bacterium, unfortunately, is resistant to the majority of antibiotics.

Plague

- You may have thought that bubonic plague died out in the 1300s, but it's back, and you and your cat are at risk—especially if you live near the Four Corners states or the Rocky Mountain area or anywhere prairie dogs live.

Plague is caused by the bacterium *Yersinia pestis*. When rodents carry certain fleas with the bacterium, it can act as a vector for plague. And if your outdoor cat is roaming outside hunting rodents—and potentially bringing them home to you—your cat becomes susceptible to plague. This is just another reason you should keep cats inside and keep pets on flea and tick medication year-round.

- Clinical signs include high fever, enlarged lymph nodes, not eating, draining wounds, weight loss, and generalized malaise. There's a treatment for plague—antibiotics like tetracyclines—but it can make your cat and you very sick. This one is so dangerous that it needs to be legally reported to the Centers for Disease Control and Prevention, which then reports it to the World Health Organization. This is partially because plague is also a possible chemical warfare agent.

Lesson 23

Pet Euthanasia and End-of-Life Care

Nothing is harder than making the decision to end your pet's life. But sometimes it's the most humane and gentle thing you can do, with guidance from your veterinarian.



Living Wills

- Consider having living wills or advanced health-care directives for your furry family members so that your pet sitter, doggy daycare, family, and friends know what to do in the extreme case that they can't get in touch with you during an emergency. Ask to have this information saved in the medical record at the veterinary hospital you use. You can provide detailed contracts with emergency contact information, credit card information, and an approved budget for emergency veterinary care.
- Make sure that your pet's caretaker knows what you want done when it comes to lifesaving care for your pet and how invasive you want to be based on the severity of disease and prognosis. This allows your veterinarian to initiate lifesaving care without the delay of having to wait for permission in a bind.

Hospice Care

- Hospice care is readily available in veterinary medicine. The goal of hospice care is to keep your pet comfortable, help maintain quality of life, and prevent suffering until your pet passes away. This usually refers to the hours, days, or weeks before your pet passes. Hospice care may include managing pain, incontinence, and wound care as well as supplementing nutrition or hydration. Consider working with your veterinary clinic or utilizing house call veterinarians or even organizations like Lap of Love Veterinary Hospice or BluePearl Pet Hospice.
- But when hospice isn't available or your pet's quality of life deteriorates, you may need to weigh whether it's time to euthanize. Deciding when to euthanize is a very personal decision that is often affected by religious, personal, or moral beliefs; finances; previous experience; mental investment; and a whole host of emotional baggage that comes with this end-of-life decision.
- In general, veterinarians can't make the decision for you. But what they should do is counsel you on all the medical aspects of this difficult decision. Your veterinarian should be able to assess and discuss with you what your

pet's quality of life is, whether they are suffering or in pain, and what the outcome or prognosis is. They should be able to counsel you on whether surgery, chemotherapy, or a referral to a veterinary specialist is available. They should be able to give you a ballpark estimate of the cost of these procedures along with the average lifespan of your pet's breed. They should be able to help you weigh the pros and cons, help you figure out if the prognosis is guarded or poor, and educate you on the long-term commitment to treatment.

Quality of Life

- The most important criterion that needs to be assessed before making the decision to humanely euthanize your pet is their quality of life. Here are three general guidelines to assess quality of life:
 - 🐾 **Is your pet in pain?** Signs of pain are often subtle in dogs and cats but may include crying out, whimpering, trembling, shaking, acting clingy, hiding, taking a long time to get up, panting a lot, having a grimace appearance to their face, urinating or defecating in inappropriate places, or showing any signs of abnormal behavior.
 - 🐾 **Does your pet want to eat?** While some pets can be pickier with food than others, if they aren't eating anything for three or four days, their quality of life is poor.
 - 🐾 **Does your pet act like they used to a few years ago? Or as a puppy or kitten?** While you expect pets to slow down and have some cognitive decline as they age, if they don't want to do things that they used to love to do, this is a big red flag.
- When it comes to these quality-of-life questions, know that you can work with your veterinarian to improve some aspects. You can use several types of pain medications to reduce any discomfort. If your pet is nauseated, vomiting, or not eating, you can use anti-vomiting medications or even appetite stimulants.

- Spoil your pet as much as possible as they approach their last few days. Give them pieces of hot dog, meat-based human baby food, roast beef, ground beef, and even the occasional filet mignon and ice cream. But if you try giving your pet these things and they aren't interested, it's time to have that crucial conversation with your veterinarian, as your pet's quality of life may be affected. You know your pet best, but you can also seek help from a social worker, a therapist, or a host of pet support hotlines that are available throughout the world.

Euthanasia

- When veterinarians euthanize dogs and cats, it's an overdose of an anesthetic. The most common drug used is a barbiturate like pentobarbital, which causes the patient's heart to slow down and stops respirations within just a few seconds to minutes. It stops blood flow to the brain, resulting in brain death simultaneously. It's often administered with another injection of an anesthetic, such as propofol, first—to make sure that your pet is completely asleep before they are given the second injection.
- Whether you want to be present when your pet is euthanized is a very personal decision. You want your last memory of your pet to be a good one, so if you don't want to be present, that's OK. This is a heartbreaking and emotionally difficult experience, no matter how peaceful vets try to make it. Know that if you choose not to stay with your pet, your veterinarian and veterinary technician will be with your pet the entire time, holding them and whispering their love to them on your behalf.
- If you do want to be present, be aware that your pet will show signs of sedation and relaxation from the euthanasia drugs. During euthanasia, your pet may urinate, defecate, take one last deep breath, or keep their eyes open. Very rarely, some unpleasant signs, such as muscle twitching

Euthanasia is not painful, but rather very peaceful. It occurs very quickly to prevent any type of suffering or pain.

or fluid coming out of the nose, may occur after your pet has passed. Otherwise, euthanasia is very peaceful, and your pet will pass away within a minute or two.

- There is a cost associated with euthanasia, so if this is a concern, call around to different veterinarians. In general, your family veterinarian will be less expensive than going to a veterinary school or specialty emergency clinic. Regardless, don't try anything to euthanize your pet at home. Contact animal control if you need help.
- The cost of euthanasia typically includes a veterinary exam, IV catheter, euthanasia drugs, the cost for licensing DEA-controlled drugs, body disposal, and crematory services. In general, this can be several hundred dollars—more if you want your pet's ashes back with an urn.

The decision to end suffering is a serious one, but it's one your veterinarian will compassionately guide you through to the end.

Passing Away at Home

- Generally, it's not recommended to let pets die at home. Sometimes pets can pass away peacefully at home, typically with three situations: a heart attack, a seizure, or severe internal bleeding. But the majority of the time, this is not how your pet will die. Instead, your pet will have end-stage kidney failure, chronic anemia, organ failure, cancer, or other ailments that unfortunately don't cause acute death and may be slow and hard on your pet.
- As a pet dies, their body's natural response is to try to keep itself alive, so they have something called sympathetic stimulation from epinephrine: Their pupils are dilated, and their heart is racing. With certain situations prior to an animal dying, there may be feelings of light-headedness, feeling weak or like they have the flu, or drowning from fluid in their lungs. Some ways of passing away are not peaceful.

- Having your pet pass away at home is not encouraged by most veterinary professionals, as it can prolong discomfort for your pet. If you're worried about having your last memories of your pet's life be in a veterinary clinic, know that there are house call veterinarians and at-home euthanasia services that offer more privacy and peace.

Most pet owners regret euthanizing too late, not too early.

After Euthanasia

- Know that after a vet humanely euthanizes your pet, they still treat your pet with tender loving care. Depending on what you want to do with your pet's body, they typically remove any collars, jackets, blankets, or memorabilia and move your pet to a specialized body freezer to be picked up by the morgue or cremation service. Some people don't want the ashes, at which point the body is disposed of directly via medical cremation.
- If you want to get your pet's ashes back, your pet will be privately cremated, which ensures that the ashes you're getting back are your pet's. Talk to your veterinarian about this, as some crematories will even allow you to bring your pet's body there so that you can witness the cremation if you want that type of closure.
- If you elect to get your pet's ashes back, there are a variety of urns that you can select at your veterinary clinic at the time of euthanasia. They typically run a few hundred dollars. But most of the time, pet owners choose to have their pet's ashes returned in a cardboard box.

Most veterinary clinics will provide a paw print upon request as part of their euthanasia service.



- Fewer people take the body home. This is logistically more difficult, because you have to bury the body quickly before rigor mortis or decomposition sets in. You also have to follow whatever city or state ordinances exist.

Autopsies

- Autopsy in pets is not commonly done, but it is an option. Doing an autopsy is the most definitive way of finding out what was going on in your pet. It looks at the organs and cells at a microscopic level, or what is called histopathology. Having your pet autopsied is a very personal decision, as it may affect what you do with your pet's body.
- So why would you want to do an autopsy? First, it might help further science in that it offers more data and information about certain diseases and potential treatment responses. Autopsies can be helpful if you're worried about something infectious or contagious to you, your family, or

your other pets. Autopsies can help give closure on what was going on inside the body, especially with the sudden or unexpected death of a pet. Autopsies can also be helpful for legal cases, such as suspected poisoning or animal abuse.

- There are board-certified pathologists who do autopsies; your vet likely can do them, too, and then send the tissue samples to the pathologist. Autopsies typically cost several hundred dollars, although some veterinary schools may not charge for this service for their own patients. While this might seem costly, know that extensive testing in the form of histopathology/cell analysis, toxicology screening, and specific diagnostic tests or cultures are performed during an autopsy.
- While less common, cosmetic autopsies can be performed if you decide that you want to take your pet's body home to bury. With a cosmetic autopsy, your pet will have sutures from the autopsy incision on the abdomen and chest cavity. Also, be aware that cosmetic autopsies are more limited, as the brain, spinal cord, and other organs are not touched or assessed. If you want to do a full autopsy, be aware that you can't take the body home, unless it is in the form of ashes via a private cremation.

Pet Loss and Grief

- When people lose their pets, they all grieve differently. Know that there are many great resources that you can find or that your veterinarian can recommend, such as pet loss support groups.
- Also know that family pets may mourn the loss of a companion. If you have a bonded pair of pets, when one dies, the remaining pet may show signs of anxiety, such as panting, whimpering, or searching for the missing pet. This is typically short in duration. Dogs and cats show signs of not noticing, not caring, or forgetting a few short days or weeks later. Do not introduce a new pet for a while; that will only contribute to your pet's stress. If signs of anxiety are severe, talk to your veterinarian about safe antianxiety medications.

Lesson 24

So You Want to Be a Vet

Becoming a veterinarian is quite a journey, but being a veterinarian is such a rewarding career. You get to care for—and potentially save the lives of—a whole host of animals that bring joy to tons of human pet owners.



Veterinary School

- There are 33 veterinary schools in the United States, compared to more than 150 human medical schools. Veterinary school used to be more competitive and harder to get into than medical school decades ago, but that's likely due to the fewer number of schools.

Prior to the 1970s, veterinary medicine was a 90% male-dominant career. A few decades ago, it was extremely difficult to get into veterinary school as a female, and the few women who got into veterinary school had to pave the way. Since then, veterinary medicine has become more female-friendly, and the stats have completely changed: Now it's an almost 80% female-dominant field!

- The first three years of veterinary school are didactic training, where you're learning things like anatomy, physiology, pharmacology, immunology, and microbiology. This is the hard-core science of medicine and is likely similar to human medical school training. During the first three years, you're either in the lab dissecting or in lectures learning and rarely work with any animals—except those in formaldehyde!
- That's different from the last year of veterinary school, the fourth year, which is considered the clinical year. This is the most important year of training, where you spend time on the hospital floor in various rotations. This is where you actually lay your hands on animals and perfect your physical examination; learn to do a medical work-up; figure out how to vaccinate, draw blood, put in IV catheters, and do spays and neuters; and help in surgical procedures. Then, after passing a difficult national accreditation examination and successfully graduating, you're a full-fledged veterinarian!

- When you graduate veterinary school in North America, you graduate with a doctor of veterinary medicine (DVM). The only school that is different is the University of Pennsylvania, where you graduate with a *veterinariae medicinae doctoris* (VMD). Regardless of whether you're a DVM or a VMD, you're a full-fledged vet and can practice veterinary medicine as a general practitioner; become a farm vet, horse vet, or lab animal vet; or even work in government, industry, or education.
- A small proportion of each graduating veterinary school class, approximately 10% to 20%, may continue on to advanced specialty training through an additional one-year internship by applying through a competitive match program. After an internship, an even smaller percentage will go on to seek a residency, which is an additional two to four years of training to become specialized, or board certified. This comprises about 5% of that original graduating veterinary class.
- To become board certified, vets have to complete a residency, publish a minimum of one peer-reviewed, scientific research paper, and pass a very difficult board exam (the equivalent of a lawyer's bar exam). This exam is taken at the end of the residency and occurs over the course of two to three days. If they don't pass the exam or publish their research, the resident is often listed as "board eligible." If they do pass, the resident becomes officially board certified. Board-certified veterinary specialists are typically represented by extra letters behind their name, such as DACVECC (Diplomate of the American College of Veterinary Emergency and Critical Care) and DABT (Diplomate of the American Board of Toxicology).
- In the United States, there are approximately 110,000 veterinarians, and around 16,000 of them are specialists. There are numerous types of board certifications or specialties, the most common being in areas such as

Many veterinary schools are state-funded, so applicants may be state-restricted as to what schools they can enroll in. Some schools have contracts with other states, as there isn't a veterinary school in each US state.

internal medicine, emergency and critical care, and surgery. Some of the other veterinary specialties include surgery, neurology, nutrition, dentistry, radiology, and dermatology.

- The average veterinary student debt is approximately \$150,000. Some veterinary schools cost about \$250,000 for four years of training. To top it off, the debt-to-income ratio for veterinarians is very poor as compared to human medicine counterparts, resulting in significant debt burden for new graduates. The average salary for a new veterinary graduate, depending on the region of North America, ranges from \$60,000 to \$90,000 a year, whereas the average salary for a postgraduate intern and resident is about \$30,000.

Veterinary Technicians

- Veterinary technicians dedicate their careers and lives to animals. A vet tech does for a veterinarian what a nurse does for a physician. Certified or licensed veterinary technicians undergo a two- to four-year program



and obtain an associate's or bachelor's degree in veterinary technology. Like veterinary students, vet tech students also have to pass a difficult credentialing examination to become licensed.

- Veterinary technicians educate pet owners, train and supervise staff, perform dental hygienist cleanings, get and record patient histories, prepare patients for surgery, assist in diagnostic procedures, take x-rays, draw blood, and assist in surgery.
- Veterinary technicians can't prescribe medications, diagnose, perform surgery, or "engage in any activity" that is illegal based on a state's veterinary practice. Veterinary technicians are trained specifically in handling and caring for animals, along with basic general medicine and procedures that are performed in everyday practice. Veterinary technicians work under the supervision of a licensed veterinarian and are essential to veterinary medicine.
- Vet techs truly do it for the love of animals, as even with a two-year degree, vet tech salaries range from \$24,000 to \$45,000 a year, while vet tech schooling typically costs up to \$40,000 for a two-year degree. Unfortunately, to many, this is barely a livable wage, so veterinarians often lose technicians to human nursing school after several years.

How to Be a Good Pet Advocate

- As a pet owner, you want to be a good pet advocate. And that means finding a good veterinarian and veterinary team that take good care of your pet—and you.
- For routine veterinary care, you should go to your veterinary general practitioner (GP). You should have a good relationship with them after going through your puppy and kitten series vaccinations and routine annual veterinary care. Your fur family GP is the equivalent of your human GP. You want to go to your vet GP for pretty much everything: preventative care, spays and neuters, dental cleanings, endocrine problems, mass removals, and orthopedic problems. GPs do it all—from interpreting x-rays and blood work, to working up complex cases, to treating infectious disease. It's very important to have a good working relationship with your

GP, as they are your front line. You want a veterinary team that you can establish a long-term relationship with. The vast majority of the time, you should be going to your GP for veterinary care for your dog and cat.

- You should go to a veterinary specialist less commonly, but there are situations where you need to. Typically, this is for more complex or more critically ill cases and for consultation with rarer or chronic diseases. You can seek a veterinary specialist as a direct referral from your veterinarian or electively on your own, with or without your veterinarian's approval or notification.
- To be a good pet advocate and a smart consumer, you want to find a veterinarian that you feel comfortable with, that you can communicate with well, and that treats you and your pet with respect. Just like with your own health care, you want to find a medical professional that you trust and that looks out for you and your pet. You'll want to use similar criteria for selecting your veterinarian as you would for your human physician or dentist.
- Also, do your research. But heed caution. Refer to reputable, credible, referenced sources written by veterinarians, not social media posts or what some acquaintance posted on some dog forum. Sources from veterinary schools or veterinary specialty colleges, such as the American College of Veterinary Internal Medicine or the American College of Veterinary Surgeons, will have the most accurate information. A simple tip is to look for .edu and .org websites over .com websites. Some great websites include the ones for the Merck Veterinary Manual, the Cornell Feline Health Center, the ASPCA, the American College of Veterinary Internal Medicine, and the American College of Veterinary Surgeons. In addition, PetPlace.com has content that is written by board-certified veterinary specialists or experts.

How to Find a Good Veterinarian

- Consider asking around. Get recommendations from your colleagues, breeder, neighbors, family members, or groomer; managers of local shelters; dog trainers; or even acquaintances in the dog park.

- Take the time to shop around, because you ideally want this veterinary clinic to be the one you go to for your pet's entire life. Do they take the time to answer your questions? Are they friendly and easy to talk to, or are they constantly using medical jargon that you don't understand? How is their bedside manner? Do they demonstrate that they love your pet?
- Consider physically visiting the veterinary clinic. Does it appear to be clean? Are the clinic's location and office hours convenient to you? What are the payment methods available, and is financial assistance available? Do they offer wellness plans or payment plans or accept pet insurance? Can you request a specific veterinarian? Is the clinic busy? (That's a good sign!) If it is, how do they handle wait times? Is there a separate, quieter waiting room for cats?
- Find out what type of medical services they provide. Do they have the ability to do x-rays? Do they have anesthetic machines, IV fluid pumps, or an oxygen cage? Do they have organized health medical records or electronic medical records? Do they offer ancillary services, such as grooming, nail trimming, or technician appointments? How are emergencies handled? Do they give you copies of your pet's medical record and blood work? Are the veterinarians members of a professional association, such as the American Veterinary Medical Association or a state veterinary association? Are they accredited by a higher level of regulation called the American Animal Hospital Association? Do they provide you educational resources? Do they refer to veterinary specialists if necessary? Does the clinic provide continuing education for their veterinary staff?
- When in doubt, trust your gut.

If your pet has a serious medical problem—such as cancer, kidney failure, an immune problem, or seizures—consider making an appointment with an internal medicine or neurology veterinary specialist to establish a long-term relationship to help manage your pet's more complex care.

Quiz

- 1** In general, for how long should dogs be, at a minimum, exercised every day?
 - a.** 15 minutes
 - b.** 30 minutes
 - c.** 45 minutes
 - d.** 60 minutes

- 2** Which of the following is true of cats?
 - a.** They like to travel and new environments.
 - b.** Vomiting can be normal behavior.
 - c.** Some breeds are hypoallergenic.
 - d.** They are low maintenance compared to dogs.

- 3** TRUE OR FALSE: Mixed-breed dogs and cats often have more hybrid vigor, which minimizes the risk of inherited diseases.

- 4** TRUE OR FALSE: Medical and behavioral problems in cats appear more frequently when there are more than five to six living together.

- 5** Subtle stress-releasing, or calming, signals of dog language include which of the following?
 - a.** licking lips when not hungry
 - b.** shaking when not wet
 - c.** yawning when not tired
 - d.** both A and C
 - e.** all of the above

Quiz

- 6** TRUE OR FALSE: When introducing dogs, parallel walks can be a good way to allow the dogs to spend time with each other without the requirement for direct social interaction.
- 7** Signs of heat stroke in dogs include which of the following?
- a.** dark red or dark pink gums
 - b.** a racing heart rate
 - c.** panting constantly
 - d.** lagging behind you
 - e.** all of the above
- 8** TRUE OR FALSE: Litter boxes should ideally be 1.25 times the length of your cat from the nose to the tip of the tail.
- 9** Which of the following is a core vaccine for dogs?
- a.** leptospirosis
 - b.** *Bordetella*
 - c.** rabies
 - d.** Lyme disease
- 10** Which disease cannot be transmitted by ticks?
- a.** Lyme disease
 - b.** anaplasmosis
 - c.** Rocky Mountain spotted fever
 - d.** rabies
- 11** TRUE OR FALSE: When cats have ingested a poisonous substance, you can use two teaspoons of hydrogen peroxide to induce vomiting.
- 12** Signs of osteoarthritis in cats include which of the following?
- a.** crying out in pain
 - b.** defecating outside litter boxes

Quiz

- c. delay in jumping
 - d. both B and C
 - e. all of the above
- 13 TRUE OR FALSE: If you notice signs of osteoarthritis in your dog, you can administer a human over-the-counter NSAID.
- 14 Cancer in dogs and cats may include which of the following signs?
 - a. lameness
 - b. enlarged lymph nodes
 - c. weight loss
 - d. acute collapse
 - e. all of the above
- 15 Which cancer in dogs directly attacks the cells of the blood vessels?
 - a. hemangiosarcoma
 - b. lymphoma
 - c. squamous cell carcinoma
 - d. mast cell tumors
- 16 TRUE OR FALSE: Cats can go into heat as early as six months of age.
- 17 Which of the following are signs of diabetes mellitus in dogs and cats?
 - a. excessive drinking and urination
 - b. enlarged lymph nodes
 - c. watery and puffy eyes
 - d. both A and C
 - e. all of the above
- 18 TRUE OR FALSE: Diabetes mellitus in cats is often associated with obesity, and cats can go into diabetic remission with appropriate weight loss and sugar control through insulin therapy.

Quiz

- 19** According to the Purina body condition system, which of the following are signs that your dog has a healthy weight?
- a.** The ribs are easily visible from a distance.
 - b.** A waist is evident when viewed from above.
 - c.** The pelvic bones are prominently in view.
 - d.** An abdominal tuck is absent.
- 20** TRUE OR FALSE: The treatment for hyperthyroidism in cats is levothyroxine.
- 21** Which of the following is commonly associated with the development of pancreatitis in dogs?
- a.** eating a fatty meal
 - b.** drinking from a natural body of water
 - c.** seizures
 - d.** urinary tract infection
- 22** TRUE OR FALSE: In cats, mammary tumors are generally benign.
- 23** When creating a homemade diet for a dog or cat, which of the following statements is true?
- a.** It should be balanced by a board-certified veterinary nutritionist.
 - b.** It should be uncooked and raw.
 - c.** It has to be human-grade food.
 - d.** It should undergo UV processing.
- 24** Potential complications of feeding a BARF (bones and raw food) diet include which of the following?
- a.** fractured teeth
 - b.** esophageal foreign bodies
 - c.** pancreatitis

Quiz

- d. transmission of *Salmonella* or *E. coli* to the pet owner
- e. all of the above

25 TRUE OR FALSE: If a dog ingests a toxic substance, immediate emesis induction should be done prior to calling your veterinarian.

Quiz Answers

1 b; **2** d; **3** TRUE; **4** TRUE; **5** e; **6** TRUE; **7** e; **8** FALSE; **9** c; **10** d; **11** FALSE;
12 d; **13** FALSE; **14** e; **15** a; **16** TRUE; **17** a; **18** TRUE; **19** b; **20** FALSE; **21** a;
22 FALSE; **23** a; **24** e; **25** FALSE

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