



Your complete guide to natural dog care and training

Whole Dog Journal™



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Raised Right

Fostering “pays it forward” in ways I did not anticipate, but sure appreciate.

About half of the litter of nine puppies that I have been fostering for my local shelter got altered and adopted this week; the other half are scheduled for surgery next week. I'm sure they are going to get adopted within a day or two; they are adorable, friendly, confident little things – right up there in the top three of the most charming litters of puppies I've fostered.

Well, that begs the question: How many litters has that been? I've lost track. I'll have to go through my cloud storage and look at the past few years' worth of photos. I lose countless hours trying to get good photos and video of all the pups.

Some of the most entertaining video footage I get every time I foster results from taping my one and only “foster failure,” Woody, as he plays with the foster puppies. Most of you must know the expression; it means I was supposed to only foster him and his eight siblings, but I “failed” by keeping one (him). When I count how many puppies I have fostered, I will have to run a separate tally for how many he has helped me with.

I posted a video of Woody playing with this batch of puppies on WDJ's Facebook and Instagram, and bragged what a good puppy-raiser he is – the best! One of my best friends commented, “But what about Maebe?”

Ah, yes. Woody is the puppy-raising expert *he* is thanks to Maebe, the young adult Black and Tan Coonhound who helped raise *him*. About two and a half years ago, I was fostering Maebe for my local shelter when they called to ask if I could also take in a litter of nine three-week-old, pit-mix puppies. Maebe had been living with me for a month or two at the time; she was an extremely active, curious dog with a little bit of separation anxiety that was making it difficult to find her a home. She enjoyed helping entertain the puppies as they grew, offering them toys and then snatching them away, trying to bait the pack of puppies into chasing her.

I ended up falling hard for one of those pups – Woody – so Maebe got to raise him for a couple more months. She was *brilliant* with him: endlessly playful, kind, and generous. They ate from the same bowls, chewed on the same bones, and slept draped all over each other. The whole time, I was training and promoting her. At last she found a home after the American Black and Tan Coonhound Rescue group posted a courtesy listing for me. Maebe was flown to southern California by a volunteer pilot from Pilots N Paws and picked up there by her new owner, who lives in Arizona.

Maebe's owner and I have become fast friends through social media. I love seeing photos of them in Arizona – and was happy that Maebe's owner got to see Maebe getting credit for Woody's puppy-raising prowess! Best, she got a great dog, I got a great dog, and Woody gets to keep raising good dogs, too.



NK



Urinary Tract Infections

There are many causes of UTIs in dogs – and some are prone to recurrent infections. Learn how to recognize the signs of a developing UTI for quick treatment and resolution.

Urinary tract infections (UTIs) are one of the more common problems seen in small-animal veterinary practice. The definition of a UTI is a colonization of pathological bacteria in the normally sterile environment within the urinary tract. There are many medical conditions that make a dog prone to urinary tract infections, some of which can be prevented. Knowing how to recognize the problem is the first step to getting the proper diagnosis and treatment plan for your dog.

STRUCTURE AND FUNCTION

The urinary tract is comprised of the kidneys, ureters, bladder, and urethra. Dogs have two bean-shaped kidneys located in the mid abdomen. The kidneys are responsible for filtering blood and excreting waste in the form of urine. As the urine is continually created, it exits each kidney via a small tube called the ureter. The ureters dive into the bladder, which is a muscular collection tank. When the dog is ready to urinate, the muscles of the bladder contract and the urine is emptied through a tube called the urethra, which transports the urine out of the dog.

Problems can develop anywhere along this path, but the most common area of concern is within the bladder itself. When referring to UTIs, veterinarians are almost always referring to infections within the lower urinary tract, or the bladder itself. Infections of the upper urinary tract, or kidneys, are more commonly referred to as pyelonephritis and are more serious in nature.

SIGNS OF A UTI

Signs that your dog has a urinary tract infection can be quite variable. Typically, dogs with a lower urinary tract infection do not develop a fever and behave in a normal fashion, other than changing the pattern

of their urination habits. Some dogs can be completely asymptomatic, while others show dramatic urgency or frequency while voiding very small volumes of urine. Some dogs will drink excessive amounts of water, and some will lick at their genital region, especially after urinating. Occasionally, an owner will notice hematuria (blood or blood clots in their dog's urine).

It is important to note, however, that not all dogs with increased frequency, urgency, and hematuria have a urinary tract infection. There are other medical problems that can appear clinically similar, including sterile cystitis (inflammation of the bladder without bacteria), uroliths (bladder stones), and cancer. Therefore, it is very important to make a trip to your veterinarian if you notice any change in your dog's usual urination pattern.

DIAGNOSIS

Diagnosing a UTI is relatively straightforward. Your veterinarian will collect a urine sample

A UTI should be suspected any time a previously housetrained dog suddenly begins urinating in the house or in his crate, urinating much more frequently and in smaller amounts than usual, or shows signs of pain or distress while urinating.



and put it through a number of tests.

Typically, the urine is first evaluated macroscopically by analyzing its color and turbidity (cloudiness or clarity). Then the urine is tested for its specific gravity (concentration). Urine that is either too dilute or too concentrated can be an important factor to consider in the analysis of the other urine values and may be an important clue in an underlying medical disorder.

Then the urine is placed on a urine test strip, which checks the biochemical nature of the urine. The pH, protein level, presence of red blood cells, white blood cells, bilirubin, glucose, and ketones are documented.

The last step is to look at the urine under the microscope. Cytology (microscopic analysis) will confirm urine-strip findings and allow for the estimation of the number of red blood

cells and white blood cells. Cytologic analysis will also look for the presence of crystals, casts, and bacteria, all of which are important in the diagnosis of a UTI and other urinary-tract disorders.

A normal urine sample is sterile (does not contain bacteria). Typically, urine is a clear, light yellow color and microscopically there is very little sediment – no red or white blood cells and no bacteria present. Many parameters can change when a patient has a UTI, so all of the information from the urine test strip along with the cytology of the urine needs to be considered in the diagnosis.


By compiling all of this information your veterinarian will be able to conclude whether or not your dog has an infection of the bladder. However, she will not be able to identify the type

of bacteria that caused the infection without further testing.

In order to identify the exact bacteria present, a culture will need to be performed. The urine will be collected in a sterile fashion via cystocentesis (insertion of a needle into the bladder to withdraw a small volume of urine). The urine is then placed into a sterile tube and sent to a laboratory for analysis.

At the laboratory the urine sample will be placed on a petri dish and allowed to incubate for several days. If nothing grows, then it is likely your dog does not have a bacterial urinary tract infection. If bacteria grows, the laboratory technician will identify the bacteria and give your veterinarian a susceptibility pattern, which will tell her which antibiotics will be effective for the present infection.

PROS AND CONS OF DIFFERENT TECHNIQUES FOR URINE COLLECTION

URINE COLLECTION TECHNIQUE	PROS	CONS
<p>FREE CATCH SAMPLE A clean dish is used to catch urine that your pet is voiding naturally.</p> 	<p>This is a non-stressful way to collect urine from a healthy pet for a screening analysis.</p>	<p>Normal bacterial flora can contaminate urine as it passes through the penis/prepuce or across the vulva.</p> <p>Free-caught samples should not be used for culture.</p> <p>If there is a problem with the urinary tract further down the line from the bladder (prostate or urethra, for example), there may be abnormal cells picked up as the urine leaves the body.</p>
<p>CATHETERIZATION Urine is collected by insertion of a narrow, flexible tube into the urethral orifice; the tube is then fed directly into the urinary bladder and urine is drained through the tube into a collection syringe.</p>	<p>This is a relatively simple procedure to collect urine if the patient is uncomfortable on his back or the bladder is too small to reach via cystocentesis.</p>	<p>The procedure may be slightly uncomfortable for the patient as the catheter is fed through the urethra.</p> <p>Females dog are very difficult to catheterize.</p> <p>Sometimes bacteria can be introduced into the bladder from the insertion of the urinary catheter.</p>
<p>CYSTOCENTESIS Urine is collected via ultrasound-guided needle insertion into the bladder; this is the gold standard for sterile urine collection.</p>	<p>There is no chance for contamination from other parts of the urinary tract.</p> <p>It allows for visualization of the bladder with the ultrasound, which can help identify bladder masses and uroliths (bladder stones) that may be missed with a free-catch sample.</p>	<p>This can be stressful for some animals because then need to be rolled onto their backs for proper restraint to perform the procedure.</p> <p>There is a small risk for blood contamination of the urine sample if there is bleeding from the needle insertion site.</p>

Supplements that help prevent UTIs

- Cranberry and D-Mannose have been shown to inhibit certain bacteria from binding to the bladder wall
- Probiotics help repopulate the gut and vagina with normal microbial flora
- A good-quality diet will strengthen the immune system

CAUSES

A number of medical and physical conditions can make a patient prone to developing an infection in the urinary tract. Females are more susceptible than males for developing a UTI. Bacteria (often fecal contaminants) can more easily travel up the urethra in female dogs due to the relatively short urethral length compared to the male. Also, some female dogs have an anatomical abnormality called a “recessed” or “juvenile” vulva, where the vulva is tucked under an excessive fold of skin, creating a perfect environment for organisms to grow. If this is the case, a straightforward surgical procedure called a vulvoplasty can correct the anatomy to remove the excessive tissue and evert the vulva (make it turn outward).

In the male dog – especially the intact male – benign prostatic hypertrophy and prostatitis (infection or inflammation of the prostate gland) can make him susceptible to infection. Castration is often recommended for intact male dogs with recurrent urinary tract infections. However, sex and anatomy are not the only conditions that make dogs prone to infection.

Systemic disease and some medications can also predispose your dog to urinary tract infections. Diseases like diabetes, renal disease, Cushing’s disease, and neurologic disorders

can cause UTIs. If your dog develops recurrent urinary tract infections, it may be worth investigating further to see there is an underlying predisposing medical condition. Certain medications, such as prednisone or other immunosuppressive medications, can also make a dog prone to urinary tract disease.

TREATMENT

Treatment for first-time urinary tract infections often involves treatment with broad spectrum antibiotics. However, as bacterial resistance becomes more commonplace in veterinary medicine, cultures are being recommended sooner than previously suggested. Checking a urine sample at the end of the course of antibiotics is wise to confirm the infection has resolved.

Following your veterinarian’s recommendations for treatment and finishing the whole course of anti-

biotics will help prevent against the development of resistant bacteria.

Occasionally, we see a patient with recurrent urinary tract infections. This can be very frustrating for both the dog owner and the veterinarian. Trying to identify and correct the underlying predisposition is the best course of action to prevent future recurrence. However, this is not always possible.

In these cases, supplementation is sometimes recommended. Other things you can do at home include encouraging water consumption by adding water to your dog’s food and allowing more frequent potty breaks to flush out the bladder.

Urinary tract infections, although common, are typically not very serious in nature. That said, they should never be ignored, as sometimes they are a clue to another, more serious underlying problem. Quick recognition on your part will help with a speedy diagnosis and treatment for your dog. 🐾

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Ultrasound can be used to not only guide the veterinarian to the dog’s bladder (so she can accurately locate the bladder with a needle in order to obtain a sterile urine sample), but also to determine whether bladder stones are contributing to the dog’s urinary-tract problems.



Good Petiquette

Guidelines for a mutually pleasurable visit when going to your friends' homes with your dog, or having friends with dogs come to your home.

Photo by Sarah Richardson



A guest dog should arrive clean and flea-free, whether or not dogs are allowed on the furniture – a privilege that shouldn't be taken for granted. Ask your host if dogs are allowed on the furniture, and respect her wishes, managing your dog in the appropriate way.

Those of us who love dogs tend to assume that everyone else in our circle of friends and family does, too. Sadly, that's not always the case. In fact, even those who do share our passion for canine companions don't always appreciate the over-enthusiastic attentions of a happy hound, especially when they are trying to enjoy the company of human friends in the comfort of a private home. Whether you are a visitor bringing your own beloved dog with you to someone else's house, or a host greeting friends at your own front door with your canine family members milling about your feet, here are some tips to help you make sure your dog/human visits go well.

WHEN YOU ARE THE VISITOR

If you're headed for a visit to friends or family and you plan to take your dog along, it's important that you make sure ahead of time that she will be welcome – both now and in the future. Here's how:

■ **Ask first!** It might be hard to imagine that any close friends or family members of mine would object to a with-dog visit, but it's far

better not to assume. There could be many valid reasons why your dog(s) might not be welcome, including (but not limited to):

- Lease provisions that prohibit the presence of pets
- Allergies by one or more residents in the home
- A dog in the home who is not dog-friendly
- Dog fears or phobias by one or more residents (human or otherwise) in the home
- Past bad experiences with visiting dogs (yours or others)

If your host-to-be expresses a strong preference to not have your dog visit with you, *respect that wish.*

■ **Bring a friendly dog.** If you want to take your dog visiting with you, she should be friendly and well socialized. There is no excuse for bringing along an aggressive dog, thereby risking the safety of others as well as that of your own dog. You would feel awful – and would be legally and morally responsible – if your dog bit or mauled someone during your visit. Plus, many dogs who are forced into situations they cannot handle bite defensively and often end up with a “dangerous dog” label and are ultimately euthanized.

■ **Have a clean canine.** A dirty, smelly dog who sheds all over the house is not a great canine ambassador. Make sure your dog is well groomed prior to your visit and be prepared to wipe paws clean before entering the home. If it's the time of the year when shedding normally happens, or if your dog is a year-round heavy shedder, warn your host in advance, and offer to do fur clean-up duty at the conclusion of

your visit before you leave.

■ **Have a pest-free canine.** Fleas and ticks are even worse than a little doggy dirt and hair. Fleas can hop off your dog and infest a house (and other warm-blooded residents) even long after you are gone. Ticks, carriers of several significant zoonotic (transmissible to humans) diseases including Lyme, ehrlichiosis, and Rocky Mountain spotted fever, can also drop off your dog and climb onto others – and bite or attach to them.

With today's very effective flea-control products, there are no excuses for having fleas on your dog. Ticks can hitch a ride on your dog despite tick-preventive products (the products are supposed to kill them within 24 hours before they can transmit disease, but don't prevent them from climbing aboard), so either avoid tick territory for at least 24 hours prior to visiting others, or do a very thorough check for ticks before you arrive.

■ **Train your dog.** At the very least, your dog should be the graduate of a basic force-free good manners class or equivalent training program, be appropriately friendly and social with other humans and friendly with dogs and any other species that might inhabit your host's home. Polite greeting behavior is a must. More advanced training is even better!

No house soiling or counter surfing allowed, or chewing on non-chew objects. Even if your dog is allowed on furniture in your own home, when your dog is in someone else's home, getting on the sofas and other furniture should be by invitation only.

■ **Manage your dog.** If your dog is generally social but isn't yet solid on all her good-manners behaviors, then management is a must. The umbilical cord method is called for here, with you keeping your dog leashed and at your side to prevent any possible social lapses. Crates and portable exercise pens are options for those moments when you want to take a break from your own dog. The leash

also allows you to restrain your dog while you inquire whether others *want* to interact with her, and gives you real-life opportunities to practice her polite greeting behavior. (See "When to Manage, When to Train," WDJ February 2018.)

If there are children present in your host's home, you *must* supervise interactions between your dog and the young humans *100 percent of the time*. Even if you are totally confident your dog is good with children, you never know; a child may not know how to

be appropriate with your dog and do something that would cause any dog to snap. You must not only supervise, but also be keenly aware of your dog's body language and intervene if you see any signs that your dog is less than delighted about the attentions of a child. (See "Don't Whisper, Listen to Your Dog's Body Language," June 2017.)

WHEN YOU ARE THE HOST

When you are a dog-owning host, you have a different but similar set of responsibilities to ensure that your

Potty Before Entering

When humans drive to the home of another human for a visit, they usually want to get out of their cars and go to their friends' front door as quickly as possible, in a rush to greet their friends – although, sometimes the rush is to ask to use the restroom, especially after a long drive. People often forget that their dogs might *also* have to use the restroom after a drive, and shortly after they enter their friends' homes, they are upset and dismayed when their ordinarily housetrained dog pees on their friends' carpet. Whoops!

If you are going to visit a friend's house with your dog, before approaching your friends' front door, walk your dog up and down the sidewalk or in the front yard until she goes potty. Or, if she doesn't do what you suspect she might have to do, keep her on a leash in your friend's home and take her outside several times; don't allow her to be loose or unattended in your friend's home until you are certain she won't have an accident. You never know; if your friend has a dog whose own housetraining is not perfect, your dog may detect the scent (perhaps undetectable to your nose) of a past "accident" and conclude that pottying indoors is okay. She's much less likely to do so if she's already empty.

Be doubly alert if your dog tends to urine-mark (lift his leg). Under the minor stress of visiting a home where other dogs live, he just might feel compelled to mark indoors, or in an outdoor location (such as on the corner of a nice wicker outdoor sofa or on the back porch rail) where your friend won't appreciate this.

If you are the resident and your dog is prone to submissive urination or urinating in excitement when people arrive, try to take her outside to go potty as close as possible to the arrival time of your visiting friend. It might also be a good idea to bring her outdoors to greet your friend and his dog, so you don't have to interrupt your greeting to clean up urine in the house.



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guests are comfortable with their canine encounters in your home:

■ **Consider your dog’s needs.** You may have a lovely dog who just doesn’t do well with visitors. It will be challenging to fulfill your role as a host if you are constantly worried about your own dog’s behavior. If she will happily and quietly hang out in a bedroom while your guests are present, put her away so you can enjoy the occasion without stress.

Note: Do not crate or otherwise confine your dog where she will be forced to accept attentions of your visitors. A fearful or unsocialized dog who is crated or tethered might feel trapped and is likely to become even more defensively aggressive if confined where visitors will pass closely by, look at or speak to her, or even worse, poke fingers into a crate or attempt to touch her.

Frozen stuffed Kongs or other long-lasting food toys, with your dog crated if necessary to prevent guarding, can help keep her happy and quiet. If your

dog won’t deal well with being isolated in another room, consider asking a friend or family member to take her for the duration of your guests’ visit, or board your dog at a well-researched force-free boarding facility. **Note:** If you put your dog in another room due to possible aggressive behavior, I strongly recommend padlocking the door to prevent accidental entry into the dog room with potential tragic consequences.

■ **Consider your visitors’ needs.** As lovely as your dog may be, you might, on occasion, have visitors who just don’t appreciate canine attention, hair, or saliva. Perhaps your guest has significant allergies, or is very fearful of dogs.

If you don’t already know how they feel, ask your guests ahead of time if they are comfortable with dogs, and *respect their wishes*. If they have strong negative feelings, even if your dog is quite friendly, make arrangements as above for your dog to be elsewhere during the visit – either enclosed in

another room, at a friend’s house, or boarded.

If you’re not willing to accommodate your guests’ needs by restricting your dog’s access, then don’t invite those guests to your home. Perhaps you can meet them at a restaurant for dinner instead.

■ **Exercise your dog well prior to the arrival of guests.** I like to say, “A tired dog is a happy human.” Be sure to leave time during your visitor preparations for a good exercise session with your dog an hour or so before your company arrives. She may still be excited when guests first walk in, but with much of her energy recently expended, she will settle down and relax much more quickly – and so can you.

■ **Orchestrate controlled greetings.** Even those of us who love dogs don’t necessarily enjoy being bowled over by an enthusiastic canine greeter. If you have one of those, you have several options for orchestrating polite greetings at the front door:

- Confine your dog away from the door until your guest is greeted and settled. You can close your dog in another room, crate her, use baby gates to block her access to the front door, or tether her near the door so she can watch the action but not participate until released. If you use baby gates or tethers, you can invite your guest to help with training by giving him treats and asking him to approach your restrained dog and give her a treat when she sits.
- If your dog has learned a default sit for a treat, you can ask your guests to do a “treat and greet.” Keep a waterproof container of non-perishable treats outside your front door, and ask your guest to help himself to several before he enters the house. When he does, coach him to hold the treat near his chest (or whatever body language

Fair Warning

Don’t take your friend’s dog’s training for granted. Perhaps *your dog* has been trained to never run out of your front door without explicit permission, but a door left open just for a few moments (say, to fetch more groceries from the car) might be the beginning of a tragic lost-dog saga if your friend’s dog lacks this training skill. Your cat or parrot might be safe from your dog, but can lose their lives in a matter of moments if your friend’s dog is more predatory and your unsuspecting pets were in harm’s way.

Though it’s hard to anticipate every potential tragedy that can occur with dogs in new places, alert your friend to the most likely dangers to her dog or to your family members. Let her know if your yard is not securely fenced, for example, or where your chicken or rabbit pen is located.

Keep in mind that a portable exercise pen is a terrific management tool that can be deployed to prevent lots of disasters. If your friend’s dog is a door-darter, you can set up a pen in an “air-lock” arrangement, so she can’t escape if the door is left open by accident, or so someone who is not savvy about the door-darter’s techniques can’t accidentally let her escape. You can also use an exercise pen



It should be a priority to work on teaching your dog to greet people and dogs calmly and politely, especially if he is prone to getting overexcited in that situation. At a minimum, take steps to manage his behavior and prevent him from jumping on anyone.

signals a sit to your dog) and then give your dog a treat when her bottom is securely resting on the floor. Alternatively, you can have him play “Find it!” with your dog by tossing small handfuls of tiny treats on the ground, thereby redirecting your dog’s attention – and her energy – away from himself and toward the floor.

- Here is an alternative for dogs who will default-sit for a toy: Keep a basket of toys outside your front door. Ask your guest to grab a couple of toys on the way in and wait for your dog to sit; as soon as she does, have your guest toss a toy a good distance away. Your dog may run after it and play with it or bring it back to your guest. If she brings it back, he can prompt a sit with the second toy, and then toss that one. The dog will likely drop the first as she runs after the second.
- You can also use high-tech options like the Treat & Train or Pet Tutor. These remote-controlled devices can be used creatively to invite your dog away from the door as your visitors enter.

■ **Train your dog.** Of course, good socialization and training are always your best options. At the very least, your dog should be the graduate of a basic force-free good manners class or equivalent training program, be appropriately friendly and social with other humans (and any other



species your guests may be bringing with them). Polite greeting behavior is a must. More advanced training is, of course, even better! A well-trained “go to your place” behavior can be invaluable for helping your guests feel comfortable with your dog’s presence.

■ **Manage your dog.** As described in the “Visitor” section, if your dog isn’t reliably trained and generally well-behaved, or if you just want a break from dog-supervision duties, then management is a must. Leashes, tethers, baby gates, crates, and closed rooms are all viable management options to help keep things under control when guests are in your home. And, even if your dog is allowed on furniture, be courteous and give your guests the option of *not* sharing the sofa with your dog if they’d prefer not to do so.

If your visitors are bringing children with them, you *must* supervise interactions between your dog and the young humans 100 percent of the time, even if you are totally confident your dog is good with children. You must not

only supervise, but also be keenly aware of your dog’s body language and intervene if you see any signs that your dog is less than delighted about the attentions of a child. Err on the side of caution.

And finally, do not rely on your guests to do the supervising. They don’t know your dog and may not be skilled at reading and understanding her body language signals of stress or discomfort.

WE, THE DOG LOVERS

It really is incumbent on those of us who love dogs to make sure that others have good experiences with our canine companions,

whether they are guests in our homes, or we are guests in theirs. Regardless of the circumstances, and regardless of your dog’s training and socialization, wherever you are you must always be on the alert for signs that your dog is stressed and needs a break, or that others are uncomfortable with her presence and you need to give *them* a break. Without that, our dogs will continue to find themselves less welcome and less appreciated by the rest of the world.

In contrast, though, every good canine ambassador will help open doors for dogs in the world, rather than closing them. 🐾

Author Pat Miller, CBCC-KA, CPDT-KA, is WDJ’s Training Editor. She and her husband Paul live in Fairplay, Maryland, site of her Peaceable Paws training center. Miller is also the author of many books on positive training. Her newest is Beware of the Dog: Positive Solutions for Aggressive Behavior in Dogs. See page 24 for contact information, information on her classes for dog owners and trainers, and book purchasing details.



The Meat of the Matter

Researchers studied street dogs in India to learn what free-ranging dogs prefer: food with a high meat inclusion or higher-protein foods that contained less meat.



Photo by Aditi Joshi, Mumbai, India

STREET DOG STUDIES

Free-ranging dogs exist in numerous countries around the world, including Mexico, Italy, Nepal, Japan, many African countries, and India. They survive almost entirely by scavenging and occasionally augment their diet by begging and hunting small animals.

In India, the history of free-ranging dogs is well-documented, extending back to the 9th century BC and representing more than 1,000 generations of dogs.

Indian free-ranging dogs consume a diet that is rich in carbohydrate (biscuits, bread, and rice) and relatively low in protein. The protein that is consumed is in the form of scraps of meat or fish adhering to bones, decomposing meat, and carcass remains.

Domestic dogs are better adapted to scavenging and a diet that is higher in carbohydrate foods than were their wolf-like ancestors because of changes in foraging behavior (increased scavenging/decreased pack hunting) and an enhanced ability to digest starch (increased copies of the gene

AMY2B, the gene that codes for pancreatic amylase; for more about this, see “Dogs and Carbohydrates,” WDJ July 2018).

However, just because dogs *can* consume and digest diets that contain a high proportion of carbohydrate (starches), it does not necessarily follow that they prefer such diets or that it is the healthiest or best way to feed them.

Although the study of these free-ranging dogs could shed light on many interesting questions, the two that the Indian researchers attempted to answer were: “Do dogs have a strong preference for meat in their diet?”¹ and, “If so, is such a preference innate (are puppies are born with this preference) or is it reliant upon or strongly influenced by learning?”²

In the first study, the researchers offered 30 free-ranging dogs a variety of food choices in four separate experiments:

- In the first, dogs chose between bread,

Fun fact: India is one of the few countries where stray animals have a legal right to life. Advocates for strays may trap, neuter, and vaccinate dogs, but, by law, they must be released afterward in the area where they were trapped. Many street dogs habitually rest in the same areas every day; this makes them good candidates for the studies described here.

Anyone who lives with dogs is aware that dogs are almost universally attracted to meaty foods and treats. Trainers use these preferences to select different levels of “treat value” for dogs and almost invariably, the treats that are of highest value to a dog are those that have a meaty texture, smell, and (we assume) taste.

It is also true that most dogs are highly attracted to and readily consume high-protein diets that include cooked, extruded, or raw meat of various types.

Are these preferences a vestige of the dog’s predatory past? If so, are such preferences something that dogs are born with, or is there a strong influence of learning and environment on our dogs’ apparent taste for meat?

A recent set of experiments conducted by researchers who study free-ranging dogs in India asked these questions and provide us with some new information.

bread soaked in water, and bread soaked in chicken broth.

- The dogs selected between bread, bread soaked in gravy, and cooked chicken in the second experiment.
- The third offered the dogs choices between dry dog kibble or bread soaked in varying concentrations of chicken broth.
- The final experiment offered the dogs varying combinations of bread and dog food kibble, soaked with different concentrations of chicken broth.

The purpose of this final set of choices was to separate the factors of meat smell from nutrient (protein) content, because dogs have been previously shown to be capable of self-selecting a diet according to its macronutrient (protein/fat/carbohydrate) content.^{3,4}

RESULTS

The following preferences were found in the adult, free-ranging dogs:

■ **Meat (smell) beats carbs.** The dogs consistently chose bread soaked in chicken broth over dry bread or bread soaked in water, even though chicken broth contains only a small amount of actual protein. When allowed to choose only visually, they selected chicken meat over chicken-soaked bread or dry bread.

■ **Smell beats all.** When the dogs were offered kibble (high protein food) or bread (low protein food) soaked with varying concentrations of chicken broth, they consumed all of the foods equally, showing no absolute preference in terms of the quantity that was consumed.

However, the order

of selection depended completely upon how much chicken broth was soaking the food, regardless of its nutrient content. In other words, the dogs chose according to smell, not in accordance with the actual amount of meat protein present in the food.

■ **Rule of thumb: Choose the food that smells the most intensely of meat first.** The cumulative results of the four experiments support the existence of the above rule of thumb for food choice. This means that the dogs preferred foods that *smelled* of meat (but that were not necessarily good sources of protein) over those that smelled less meaty, even when the less meaty-smelling foods actually contained more meat ingredients and a higher protein content.

This of course, makes sense, since in nature, a stronger meat smell is highly correlated with high meat and protein content and invariably predicts higher meat quantity. This relationship only becomes skewed when clever experimenters enter the picture and mess with it.

The authors concluded that while domestic dogs have adapted a scavenging lifestyle, they appear to have done so without giving up a strong preference for meat. They suggest that while the domestic dog has indeed evolved to more efficiently digest carbohydrate and exist on a carbohydrate-rich scavenged diet, they

continue to be strongly attracted to the smell of meat and preferentially select meaty-smelling foods. (Not surprising at all to most dog owners; but again, good to have science backing up experiences and beliefs).

But wait, they're not finished. The same researchers then asked, "Are domestic dogs born with a preference for meat, or is it a learned trait?"

The researchers conducted the same series of the experiments described above with the puppies of free-ranging dogs. The puppies were 8 to 10 weeks of age at the time of testing. Using a clever design, they found that:

■ **Puppies do not discriminate.** Unlike the adult dogs, puppies near weaning age showed no clear preference for foods that smelled strongly of meat and chose each food selection equally, regardless of how intensely the food smelled of meat.

■ **Dogs use a sniff and snatch strategy.** While the adult dogs tended to first smell and inspect all available food choices before choosing and consuming one, puppies did not show this behavior. Rather, they would smell a food, eat it, and then move to the next food, showing little to no preference. The vast majority (89 percent) of choices made by puppies followed this behavior pattern.

The authors speculate that because puppies consume a protein-rich diet in the form of their mother's milk, there is little selective pressure for an innate selection bias toward the smell of meat.

It is only after weaning, when pups begin to scavenge, that



By law, stray animals in India cannot be detained as a means for their removal (only for sterilization and medical care). As long as they are healthy and currently vaccinated they have the right to remain in the areas they habituate.

preferentially selecting foods that smell like meat (and are correlated with a high protein content) becomes important. They suggest that, as has been shown in a number of other species, puppies learn their food selection preferences from the mother (i.e., cultural transmission of knowledge) and then as they mature and begin to scavenge, operantly.

TAKE AWAY FOR DOG FOLKS

The first study's results with adult, free-ranging dogs tell us that the dogs in this set of experiments were selecting foods based primarily on smell rather than an ability to discern actual meat content. The adult dogs were operating under the (pretty efficient) rule of "If it smells like meat, eat it." (We all know and love dogs who do this!)

This strategy is probably strongly selected for in environments where resources are limited, there are few energy- and protein-dense foods available, and competition between dogs is high. This is not really a surprising result – except for the fact that the authors found that the *scent* of meat was more important than the food's actual meat (or protein) content.

Newly weaned puppies, in contrast, lack this choice bias and appear to learn to choose "meaty" foods after weaning, either from the food choices of their mother, operantly, or most likely, a combination of the two.

So, what does this tell us about feeding our own dogs? These results suggest that while dogs are predisposed

An Advocate for "Streeties" in Mumbai

The photos we used to accompany this article were taken by Aditi Joshi, a street-dog advocate who lives in Mumbai, India, a city that is home to an estimated 250,000 street dogs. Several government agencies and NGOs are involved in vaccination and sterilization programs, as well as treating severely injured and ill street dogs, but they do not address everyday caregiving. There are adoption programs aimed at finding homes for these dogs, but the vast majority of dogs in the city continue to live as street dogs.

By last count, Aditi's neighborhood is home to 76 "streeties," as the dogs are affectionately called. Over the years, Aditi has worked to build a culture of stewardship that views the streeties as companions for which the community shares responsibility, thus helping to bridge the gap in the care they receive. She has built a loose network of people in her neighborhood – residents, shop owners, street vendors, domestic workers, garbage collectors, delivery personnel, dog walkers, and doctors – who assist in caring for these resident dogs in varying capacities. Through this network, she coordinates preventative health care (vaccinations and sterilization), provision of shelter and food, grooming, and emergency care in the case of injury or illness, both on site and in her home.

"When cared for, these healthy, settled dogs are the best buffer for minimizing human-animal conflicts and maintaining public health," Aditi says. "This is also integral to keeping *pet* dogs in the community healthy, disease-free, and safe."

Aditi's biggest challenge is building positive human-animal relationships in a context where many people still fear and misunderstand street animals. Her current goal is to create a sustainable and scalable program to teach people about safely interacting with dogs, and to teach street dogs skills that would smooth their integration into human environments.

To help achieve that goal, Aditi is currently enrolled in the prestigious Academy for Dog Trainers (founded and led by Jean Donaldson) and is working on the development of curriculum for her street-dog education program. If you'd like to see a video about how Aditi trains street dogs, or to help support Aditi's work for street dogs in Mumbai, see gofundme.com/aditis-streeties.



Aditi Joshi and some streeties.

to enjoy the taste of meat ingredients and clearly prefer these foods, puppies do not appear to be born with an

attraction to the smell of meat per se; these preferences are influenced by learning early in life.

On a practical level, these data, along with those of earlier studies of taste preferences in dogs, tell us that the foods that are offered to a puppy at a young age should be expected to strongly influence the pup's food and taste preferences as an adult dog. 🐾

CITED STUDIES

- 1 Bhadra A, Bhattacharjee D, Paul M and Ghadra A. "The meat of the matter: A thumb rule for scavenging dogs." *Ethology, Ecology and Evolution* 2016; 28:427-440.
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- 3 Hewson-Hughes AK, Hewson-Hughes VL, Colyer A, Miller AT, McGrane SJ, et al. "Geometric analysis of macronutrient selection in breeds of the domestic dog, *Canis lupus familiaris*." *Behavioral Ecology* 2012; 24:293-304.
- 4 Roberts MT, Bermingham EN, Cave NJ, Young W, McKenzie CM and Thomas DG. "Macronutrient intake of dogs, self-selecting diets varying in composition offered *ad libitum*." *Journal of Animal Physiology and Nutrition*; 102:568-575.

Linda P. Case is the owner of AutumnGold Consulting & Dog Training Center in Mahomet, Illinois. Linda is the author of Dog Food Logic, has a new book, Dog Smart, and writes The Science Dog blog at thesciencedog.wordpress.com. See page 24 for contact and book information.

1

PRODUCT
REVIEW

Trail Runner System

Ruffwear's new hip belt and leash combination frees up your hands and makes walking, hiking, or yes, running with your dog more enjoyable.

First, a confession: I do not walk my dogs on leash very often. I'm fortunate to live in a rural area with lots of open space and trails and not very many people. I rarely see another person when I'm out with my dogs.

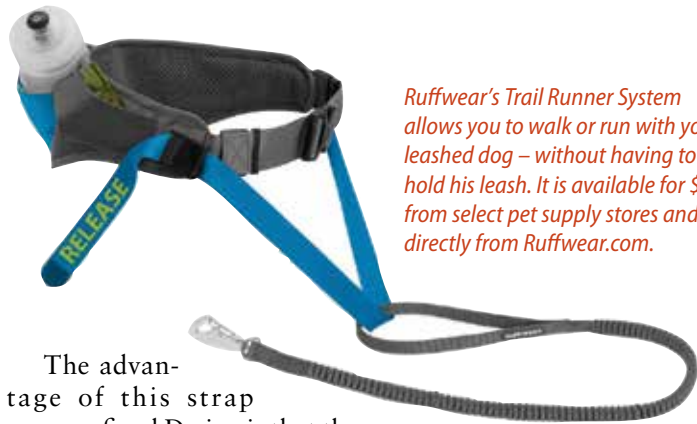
But when I foster dogs who do not yet have reliable recalls, or I travel down to the San Francisco Bay to visit friends and we take our dogs for hikes in that area's popular parks and on crowded trails, having a hands-free leash is a gift. Such a product allows you to walk or run with a natural arm and shoulder motion – something that is perhaps most appreciated by older athletes who exercise through the aches of age and former injuries – while maintaining control of your dog. You can even drink from the water bottle, take photos with your cell phone, or pick up dog poop without losing control of your dog or getting tangled in the leash.

Until recently, however, I hadn't seen a hands-free leash-attachment product that was well-made, comfortable, convenient, and secure. But now there's one I can recommend!

WORKING WITHIN THE SYSTEM

The Trail Runner System is comprised of a wide, lightly padded, adjustable belt that is fastened (with a wide plastic side-release buckle) in the front. (The belt fits waist sizes from 25 to 45 inches.) To secure the leash to the belt, you thread a separate strap through the hand loop in the end of a leash, and fasten it with a plastic cam buckle. The cam buckle is a safety feature; this type of fastener is secure, but in case of emergency, it releases instantaneously if the end of the strap is pulled backward across the buckle.

All the competing products I've seen employ a D-ring sewn onto the belt to connect your leash to the belt; you either use a snap or loop the leash through the D-ring. On some products, it's clear that it wouldn't take much pulling to rip the D-ring off the belt and release the dog. In contrast, both ends of the leash-attachment strap are well-sewn onto the belt of the Trail Runner.



Ruffwear's Trail Runner System allows you to walk or run with your leashed dog – without having to hold his leash. It is available for \$70 from select pet supply stores and directly from Ruffwear.com.

The advantage of this strap versus a fixed D-ring is that the leash can slide from side to side across the front of the wearer's body, helping prevent tangles and enabling the dog to be positioned on whichever side of the wearer that is preferred.

Though any leash can be used, Ruffwear's Ridgeline Leash is included. This leash uses Ruffwear's "Wavelength stretch webbing," which is not made of fabric-covered rubber bands as in some stretchy leashes, but made of a unique woven elastic webbing. When relaxed, the leash is conveniently short (2.5 feet), but can be stretched to 4.25 feet to provide shock-absorption if your dog suddenly pulls ahead or one of you trips. (The Ridgeline Leash is also sold separately in a 3.3- to 5.9-foot length.)

OTHER FEATURES

The Trail Runner has a few other features that add to its utility, but not so many as to make the product unwieldy. There is a zipped pocket that can hold even a long cellphone, with an opening for an ear-bud cord; inside the pocket is a sewn-in clip for a key-ring. A small stretch-mesh pocket holds a roll of poop bags.

Also included is a 21-ounce water bottle with a push/pull lid, which nestles securely in an angled holster on the back of the belt. The position and design keeps the bottle from bouncing on the wearer's body, which can bruise and cause fatigue. These features actually make the Trail Runner useful on walks even if you *don't* fasten your dog's leash to it! 🐾

GO TO ↓

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(888) 783-3932
ruffwear.com



I Can't Eat Another Bite!

Food bloat can kill your dog – or it may quickly resolve with a couple of medications. The only way to know for sure is with a trip to the veterinarian.

You made the mistake of leaving your always-ravenous canine at home, unsupervised, with the lid loose on the dog food container. You come home to find an empty dog food bin and a bloated, uncomfortable dog who is retching non-productively. Is this the dreaded GDV (gastric dilatation and volvulus, with volvulus meaning an obstruction caused by a twisting of the stomach or intestines) or just plain ol' food bloat (gastric dilatation)?

It can be hard to tell in this situation, so an *immediate* visit to the veterinarian is in order. While knowing that your pet likely ingested a large quantity of food makes gastric dilatation more likely, it is also possible your dog is suffering from GDV. Therefore, this is an *emergency*; taking a “wait and see” approach is not safe in this scenario.

FOOD BLOAT IS SADLY ALL TOO COMMON

As an ER veterinarian, I routinely treated food bloat. The perpetrators were frequently left alone with an easily accessible, large amount of dog (or cat or goat or horse) food. Many dogs

will eat until they can hold no more. Beagles and Labradors seem particularly prone to this type of scenario, as they are breeds known to rarely turn down a meal.

Kibble is the most commonly fed type of diet, and unfortunately for our dogs, once it enters the dog's stomach, it starts absorbing stomach acid and begins to swell. The wet kibble becomes dense and heavy. While your dog may feel the urge to vomit, he may not be able to successfully retch up the mass of food. Thus, the symptoms of a food bloat: abdominal distention, drooling, discomfort, restlessness, and non-productive retching.

You may be wondering, “Shouldn't I make my dog vomit if this happens?” Unless you *know* that the gorging happened within the last five to 10 minutes, forcing your dog to retch is unlikely to be successful. Once moisture gets into a huge amount of kibble, it becomes difficult or impossible for the dog to bring it back up; the sodden mass becomes too heavy for the muscles that, ordinarily, cause vomiting easily.

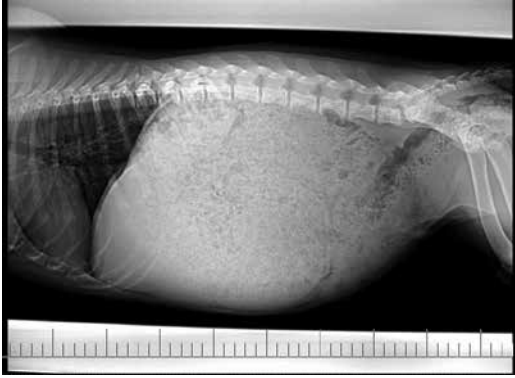
Hydrogen peroxide, once widely recommended for the induction of vomiting in dogs, has recently fallen out of favor. The use of peroxide can lead to ulcers in the mouth, esophagus, and into the upper and lower GI system. In cases of food bloat, induction of vomiting is best left to the discretion and experience of veterinary professionals, who can use an injectable medication (usually apomorphine) to quickly and more safely induce vomiting.

TREATMENT

Luckily for your canine friend, food bloat is relatively simple to treat and rarely results in long-term consequences. Your veterinarian will likely x-ray your dog's abdomen to ensure that this is just gastric dilatation and not a GDV, which calls for immediate surgery to untwist the twisted stomach and/or bowel and

Many dog owners have experienced this (reenacted) scenario at some point. One can only hope that the dog's symptoms are detected quickly and an emergency veterinary clinic is not far off.





The radiographs of a dog who has stuffed himself full of kibble are distinctive; you can see how distended this dog's abdomen is, and even see the kibble shapes pushing his stomach way out of shape. Other views are needed to make sure none of his intestines have been twisted by the weight of this mass of sodden food.

perhaps surgically remove damaged intestine.

The veterinarian will also likely start an IV catheter, which allows rapid administration of fluids to correct dehydration and replace electrolyte losses, and to administer medications. In the case of food bloat, if a dog has vomited repeatedly or retched up fluid, he is losing electrolytes and

water. This causes dehydration, which is worsened by the stomach pulling in large amounts of fluid to soften and digest the mass of kibble.

Along with rehydration, your veterinarian may use Cerenia (an anti-emetic) to treat ongoing nausea, and sometimes metronidazole, an antibiotic that can soothe the GI tract by decreasing inflammation. It

can also help prevent diarrhea. Other treatments might include probiotics and a bland diet for several days.

Most importantly, your dog will be walked frequently. The exercise stimulates the intestines to move and helps to pass the dog food through the system quickly. Generally 12 to 24 hours in the hospital is all that's required to help a dog feel better after over-indulging. Just remember to put the food out of reach next time! 🐾

Catherine Ashe graduated the University of Tennessee College of Veterinary Medicine in 2008. After a small-animal intensive emergency internship, she has practiced ER medicine for nine years. She is now working as a relief veterinarian in Asheville, North Carolina, and loves the GP side of medicine. In her spare time, she spends time with her family, reads voraciously, and enjoys the mountain lifestyle.

What if my dog gorged on something besides dog food?

It's not uncommon for dogs to gorge on ANY food items when given the opportunity. As an emergency veterinarian, I've seen it all. Dogs like to eat corn cobs, rib bones, discarded food, even empty crab and shrimp shells. If you enjoyed eating it, your dog will likely enjoy it, too.

So what will your veterinarian do if your dog has gorged on something unusual? The quick answer is that it depends. If your pet ingested something that could be sharp or cause damage to the esophagus, the veterinarian likely will not induce vomiting. Bones, shells, and corn cobs can be highly traumatic if a dog regurgitates them. They can also cause problems such as pancreatitis, obstruction of the intestines, and perforation. In those cases, your veterinarian may recommend endoscopy to remove the items carefully and in a controlled manner or even an exploratory surgery.

DANGER! RISING BREAD DOUGH

Of special note is the danger caused by rising bread dough. Most dogs will eat rising bread left within reach; it apparently smells *irresistible* to dogs. This can cause symptoms of food bloat, but it is a much more serious concern.



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Rising bread dough fills the house with a delicious aroma - unfortunately, one that is irresistible to dogs. Many owners whose dogs took rising bread dough off their counter swear the dogs had never jumped on the counter to take any other food before.

The yeast in bread dough will continue to ferment in a warm, moist environment (like the dog's stomach). The fermentation process yields ethanol alcohol and a rapidly growing ball of dough. Your dog will be very bloated and uncomfortable, and he may also be drunk!

Bread-dough ingestion can be very serious and requires more aggressive intervention than a standard food bloat. In some cases, the bread can double or triple in size, necessitating surgery to remove it.



Food in the Fridge

WDJ's first look at fresh, cooked commercial diets.

Today, more and more passionate, educated, dog-loving entrepreneurs are turning their attention to improving the health of their dogs and innovating new ways to feed quality dog foods. As they do, it's getting more and more difficult to slot the resulting products into categories for review.

This is just *one* of the reasons we've never

before reviewed dog foods in this category – for short, we'll call it “fresh cooked foods.” When you start drilling down into how all these products are made, there is so much variety that the category really should be considered as a group with several sub-categories. Some of the products are essentially pureed; others look more like a meatloaf before it's cooked, complete with chunks of vegetables mixed in; still others present more like those non-refrigerated preserved foods that are sold in plastic tubes, something that looks like a cross between a roll of salami and a tube of liverwurst.

Another big reason for our hesitation: For some years after the first product of this type came on the market, it was the *only* product in the category, and we weren't big fans of its ingredients.

Also, other products came into the group and didn't last; we're thinking here of several companies who sent us samples of foods they made and “canned” in the old-fashioned sense of the word – cooked in glass jars, like your grandmother “puts up” plum jam or stewed tomatoes. It just didn't seem scalable, and apparently wasn't (since they are no longer in business).

COOKED AND FED FRESH

But let's focus on the things that these products (mostly) *do* have in common:

- All of them have a high meat content – and *most* of them claim to use meats and perhaps other ingredients that are graded for human consumption. To fully understand these claims, see “What's Human Quality?” on the next page.

- All of them use “fresh” meats; this includes meat that has been frozen to preserve freshness. In other words, none of the meats used were previously cooked before mixing at the point of manufacture.

- All of the products are cooked – at varying temperatures and with various methods, but they have all been heated to the point that any pathogenic bacteria that may have been present on any ingredient should have been rendered harmless.

- *Most* of them don't contain preservatives. If it is formulated with fresh ingredients, cooked, immediately chilled or frozen, and shipped in an appropriate cold-shipping container, kept in a refrigerator, and fed promptly after opening, the food shouldn't need preservatives.

- All (save one, Freshpet) are available on a subscription basis for direct delivery to your door. (Freshpet is the only product sold in supermarkets; it's also sold in pet supply stores.)

OUR USUAL FOOD SELECTION CRITERIA APPLY

There are certain things we *always* look for in a wholesome and superior diet for our dogs, no matter what type. Virtually all of the manufacturers offering products in this category use ingredients that meet our usual selection criteria, such as whole, named sources of animal protein (i.e., chicken, beef, and lamb, rather than “meat” or “poultry”); whole food ingredi-



Freshpet was the first company to enter this market and did so in partnership with food-industry giant Tyson Foods. It has been enormously successful; its products are sold in more than 14,000 locations.

ents (such as rice rather than rice flour, and tomatoes rather than tomato pomace); and of course, no artificial colors or flavors.

All of the companies on the following pages offer products that meet all of our selection criteria – but some of the products are higher in quality than others. Some are *quite* expensive. We wouldn't necessarily say that cost is a *perfect* indicator of quality, but it's a pretty good one. If some of the products are beyond your budget, don't despair: We would consider every one of these products to be healthier and of a higher quality than *any* kibble or canned product.

PRODUCT CATEGORY “SWEET SPOT”

We are often asked to rank the products that we include in our reviews, and, as always, we have to decline. Only *you* can decide what you can afford to spend, and only *your dog* can determine if a particular food will work for him. The product's performance in your dog is *everything* – and what works for your dog might be a disaster for mine.

That said . . .

In addition to our normal selection criteria, when shopping for products we feed to *our* dogs, we also consider some “soft” criteria regarding the companies – factors that have more to do with the *feel* or *personality* of the company than the ingredients or protein levels of the foods.

You should be aware that there are pet food company owners who are full of passion and knowledge, but who lack the resources to really pull off top-quality ingredient sourcing or quality control. On the far other end of the spectrum, there are companies who are helmed by folks with amazing business acumen and connections who don't necessarily live and breathe for dogs. Large and/or well-funded companies have the resources to invest in the best manufacturing equipment and facilities for consistent, safe products – but do the principals care about ingredient quality as much as some of the smaller companies?

What Is “Human Quality”?

When discussing their ingredients, many pet food companies use the phrase “human grade.” You have to understand that this is not a legal term, and its misuse probably causes more confusion – some of it intentional – than any other phrase used in the pet food industry.

The legal term for what an ordinary person would think of as “human food” is “edible” – but usually, only food-industry people are familiar with this term. So, in an effort to communicate the quality of their ingredients to consumers, manufacturers of products who use truly edible ingredients will often use some variation of “human grade,” such as “human quality” or “fit for humans.”

Understand this, though: If the company makes its product in a manufacturing plant that is not USDA-inspected and -approved for the manufacture of edible products, or that manufacturing facility contains even one ingredient that is not edible, then legally, it cannot claim that its products contain either “human grade” or edible ingredients. By law, an edible ingredient is one that has never departed from the custody of USDA-inspected and -approved food growers and processors.

Only those companies whose products were made at a USDA-inspected and -approved kitchen (which are not permitted to contain even one “feed grade” ingredient) can claim that they use edible or human-grade ingredients.

There *are* pet food companies who really *do* buy edible ingredients but don't make their products in USDA kitchens – and believe me when I say they can be very creative when trying to find phrases that convey the quality of their ingredients without running afoul of state feed control officials (this is who is responsible for surveillance and enforcement of feed labeling laws). The problem for consumers is that there are *also* pet food companies who likewise use creative language to suggest that their products are made with edible ingredients, when in fact they don't. Like, not at all.

Moral of the story? If you want to be as certain as one can be that your dog's food is made with edible ingredients, look for a product made in a USDA-inspected and -approved kitchen. The only other option is to personally know the company's owners and/or operators, visit the manufacturing site frequently, and inspect the ingredients yourself. There may be a *few* of you who are able to do all that!

We like to buy from the companies that are of a sufficient size to sign manufacturing contracts with reputable manufacturers and invest in employee training and quality control testing and equipment – but not so big that they don't know exactly where on a map every single ingredient in their products is sourced from.

We appreciate that it can be challenging to identify companies that are occupying that sweet spot, somewhere between *enough* success and not *too* much. For what it's worth, in the following pages, we will try to give you enough information about

each company for you to judge where your own zone of comfort might lie: with the giant companies who should have their own plants and control every aspect of manufacturing, but whose formulas are a tad corporate? Or with the smaller outfits who oversee contract manufacturers on just a few production runs each month, but whose ingredients are locally sourced from sustainable farms where the humanely raised food animals live their entire lives on grass?

It's tough to have to choose, but it seems that when it comes to food, you can't have it both ways.

A SURVEY OF FRESH, COOKED COMMERCIAL DOG FOODS

PRODUCT NAME Company Information	# Varieties and Other Info About Product Lines	Range of Protein, Fat, and Moisture Content	Typical Recipe Ingredients	Notes
<p>EVERMORE PET FOOD Brooklyn, NY (718) 596-6788 evermorepetood.com</p>	<p>Four recipes, two grain-free (oats and barley, representing no more than 5% of the formulas with them). All foods formulated for adult maintenance only.</p>	<p>Min. 11.5% - 13.3% protein Min. 5.6% - 11% fat 69.9% - 74.6% moisture</p>	<p>Turkey recipe: Turkey breast and leg meat, turkey hearts, eggs, organic butternut squash, org. carrots, turkey livers, org. kale, org. apples, org. dandelion greens, org. cranberries, org. parsley, MSC-certified wild Alaskan red pollock oil, org. kelp, org. pumpkin seeds, org. alfalfa, GMO-free high-linoleic safflower oil, org. kelp, eggshell calcium, zinc amino acid chelate, copper amino acid chelate.</p>	<p>Founded in 2009. Foods are mixed, vacuum-sealed and cooked in BPA-free packaging, then frozen, and direct-shipped. Food is made in a USDA (human foods) facility in California. Lamb and beef used in recipes is grass-fed; chicken and turkey is certified as "Step 3" and beef is "Step 4" by Global Animal Partnership's 5-Step Animal Welfare Rating. Wild Alaskan red pollock oil is Marine Stewardship Council (MSC)-certified sustainable seafood. All produce is certified organic except for wild blueberries. Only a few minerals are added to make formulas complete and balanced. Woman-owned, no outside investment capital used for growth, so founders control all aspects of company.</p> <p>We'll just say it: We love this company's products.</p>
<p>FRESHPET Secaucus, NJ (866) 789-3737 freshpet.com</p>	<p>Company offers 22 pet food "rolls," 13 of them grain-free (GF), and 10 bagged products, 6 GF. Products sold in four lines: Freshpet Select, Deli Fresh, Nature's Fresh, and Vital. All products are formulated to be complete and balanced for dogs of all life stages.</p>	<p>Min. 9% - 19% protein Min. 6% - 10% fat Rolls contain 76% - 78% moisture Bags contain 63% - 66% moisture</p>	<p>Freshpet Vital Chicken Recipe: Chicken, sweet potato, carrots, pea protein, ground oats, natural flavors, green beans, cranberries, vinegar, carrageenan, cassia, salt, potassium chloride, minerals, vitamins, spinach.</p>	<p>The company had a powerful advantage when founded in 2006, with Tyson Foods as a minority investment partner. In 2014, the company raised more than \$150 million in an initial public offering. Sold in more than 14,000 retail stores (grocery and pet supply). Made in Bethlehem, PA. Chicken or beef is first ingredient in each product. Steamed "at low temperatures," then vacuum-sealed and refrigerated, never frozen. Chicken used in recipes is certified as "Step 2" and turkey as "Step 1" by Global Animal Partnership's 5-Step Animal Welfare Rating.</p> <p>"Best by" dates seem extraordinarily long for unpreserved product; we purchased foods with dates that were more than 8 weeks from our date of purchase.</p>
<p>JUST FOOD FOR DOGS Los Alamitos, CA (949) 722-3647 justfoodfordogs.com</p>	<p>JFFD offers six "daily" recipes, five of them gluten-free and three of them grain-free; additional recipes are offered seasonally. Eight other recipes are formulated to help dogs with specific health problems. Four of the daily recipes are formulated for adult maintenance, two for dogs of all life stages.</p>	<p>Min. 7.5% - 11.5% protein Min. 2% - 7.5% fat 69% - 80% moisture</p>	<p>JFFD Beef & Russet Potato: Ground beef, russet potatoes, sweet potatoes, green beans, carrots, safflower oil, beef liver, green peas, apples, Icelandic fish oil, JFFD vitamin/mineral mix.</p>	<p>Founded in 2010, backed by venture capital firm L Catterton. Formulas were developed by a team that included veterinarians and animal nutrition experts. Products are prepared in all 12 retail locations, where you can watch the food being made – and purchase that fresh product on the spot. Company also offers delivery from its southern California locations and nationwide shipping. All manufacturing facilities are USDA kitchens. Products are shipped frozen. Company says food stays fresh up to 12 months in the freezer and for 3-6 days in the refrigerator after thawing and opening. Products are "complete and balanced" by virtue of AAFCO feeding trials (and the AAFCO "family" rule, which states that products that are nutritionally similar to the product that went through an AAFCO feeding trial can also use the "feeding trial" claim). In May 2018, JFFD announced a new partnership with Petco, which plans to build JFFD-branded kitchens in some of its stores, enabling people to buy freshly prepared meals in those stores, too.</p>



Just Food For Dogs is made in front of consumers in USDA kitchens that also serve as retail outlets; these kitchens are starting to appear in select Petco stores, too.

PRODUCT NAME Company Information	# Varieties and Other Info About Product Lines	Range of Protein, Fat, and Moisture Content	Typical Recipe Ingredients	Notes
LUCKY DOG CUISINE Hardeeville, SC (800) 530-5305 luckydogcuisine.com	Seven recipes, five of them gluten-free and two of them grain-free. All are formulated for dogs of all life stages. Each contains a single animal protein source.	Min. 7.8% - 11.6% protein Min. 2.1% - 6.7% fat 70% - 77% moisture	Beef & Rice: Grass-fed beef, brown rice, ricotta cheese, beef heart, beef liver, carrots, peas, green beans, tomatoes, apples, blueberries, organic flaxseed meal, extra virgin olive oil, basil, organic kelp, vitamins/minerals.	Founded in 2008. Made in South Carolina. Family-owned, self-funded business recently opened a Canadian office (in Toronto). Company says food stays fresh after thawing and opening for a week in the refrigerator and up to 6 months in the freezer. Company says beef used in its recipes is humanely raised and grass fed; no certifications or info about source, however. Very helpful descriptions of each product and how it differs from the others; helps owners determine which might be best for their dogs.
NOMNOMNOW Oakland, CA (415) 991-0669 nomnomnow.com	Five recipes, all of them grain- and gluten-free. Four recipes are formulated for dogs of all life stages; one (egg & veggie) is for adult maintenance only.	Min. 6.5% - 11.5% protein Min. 3.5% - 8% fat 70% - 76% moisture	Tasty Turkey: Ground turkey, eggs, brown rice, carrots, spinach, dicalcium phosphate, calcium carbonate, salt, fish oil, vinegar, citric acid, taurine, and more vitamins and minerals.	Founded in 2015. All recipes formulated by veterinarian who is also a Diplomate of the American College of Veterinary Nutrition. Food made in Pittsburg, CA, and direct-shipped to your door. Each meal is custom-portioned for your dog in its own single-serving bag. Company says foods stay fresh for 8 days in the fridge and up to six months in the freezer. In 2018, the company received more than \$10 million in venture capital funding, adding to \$3 million it had received previously.
OLLIE New York, NY (844) 886-5543 myollie.com	Four formulas, all of them grain-free, and all formulated for dogs of all life stages. Each is formulated with a single animal protein source.	Min. 10% - 12% protein Min. 5% - 10% fat 68% - 75% moisture	Chicken Goodness: Chicken, chicken gizzard, carrot, green peas, chicken liver, chia seed, long grain rice, spinach, potato, egg, blueberries, sunflower oil, dicalcium phosphate, calcium carbonate, fish oil, iodized salt, cod liver oil, zinc gluconate, basil, rosemary, vitamin E, pyridoxine hydrochloride (Vitamin B6), riboflavin (Vitamin B2).	Founded in 2016. Food is made in New Jersey in a USDA kitchen. Only the vitamins and minerals needed to make the food "complete and balanced" are added; no blanket vitamin/mineral premix is used. After cooking, it is chilled and custom-portioned into trays for your dog, which are then sealed with modified-atmosphere packaging and direct-shipped to you; the product may arrive chilled or frozen. Company says the food will stay fresh in the sealed containers for 14 days or 5 days after opening (company provides a reusable lid to use on open trays). Owners use a measuring scoop (provided) to provide dog with appropriate amount. Company received more than \$4 million in venture capital in 2016 and more than \$12 million in 2017.
PETPLATE New York, NY (855) 981-6109 petplate.com	Four formulas, all of them grain-free, all formulated for dogs of all life stages. Each is formulated with a single animal protein source.	Min. 10.8% - 12.5% protein Min. 4.2% - 6.4% fat 68% - 74% moisture	Harvest Chicken: Chicken, sweet potatoes, chicken liver, broccoli, apples, butternut squash, dicalcium phosphate, salmon fish oil, calcium carbonate, salt, potassium chloride, parsley, zinc, iron, copper, iodine, manganese, vitamin D3, vitamin E.	Company founded in 2016. Food made in a human food (USDA) facility in New York. Formulas developed by a board-certified veterinary nutritionist (DACVN); only the vitamins and minerals needed to make the food complete and balanced are added; no blanket vitamin/mineral premix is used. Company says the food will stay fresh in the sealed containers for 10 days, or 3-4 days after opening. Containers can be frozen for up to 18 months. Company offers money-back guarantee if your dog does not like the food. PetPlate recently received \$4 million in investment capital.
THE FARMER'S DOG Brooklyn, NY thefarmersdog.com (646) 780-7957	Three grain-free formulas, formulated for dogs of all life stages.	Min. 9% - 11% protein Min. 5% - 8% fat 66% - 72% moisture	Turkey & Parsnip contains: Turkey, parsnips, chickpeas, carrot, broccoli, spinach, tricalcium phosphate, sea salt, fish oil, vitamin B12, zinc amino acid chelate, iron amino acid chelate, vitamin E, copper amino acid chelate, thiamine mononitrate, sodium selenite, riboflavin, potassium iodide, vitamin D3, folic acid.	Company founded in 2015. Food seems to be made in New York and is direct-shipped. Pet peeve: no phone number or even email address listed on website. Company claims "Human-grade USDA ingredients mean less processing, natural nutrients, and higher safety standards," but nowhere does the site say where the food is made, or whether it is made in a USDA-approved kitchen (which would confirm whether the ingredients can accurately be called "human-grade"). Product is made fresh and "delivered to you within days of cooking," chilled, never deep frozen. Each recipe is customized for your dog's needs and labeled with his or her name. Company received more than \$10 million in venture capital in 2017.





Cloudy, With a Chance of Blindness

When should you worry about cloudy eyes in a senior dog?

Cataracts caused this 17-year-old dog to suffer vision loss so severe that she walked into something and injured her left eye.

As your canine companion ages, you might begin to notice some cloudiness in his eyes. This is a common age-related change in many breeds of dogs, but it can also indicate illness within the eye or within the body. It is important to know when you should be concerned about cloudy eyes and a trip to the veterinarian is in order.

WHEN MY DOG'S EYE IS CLOUDY, WHAT AM I SEEING?

There are many possible ways in which a dog's eyes can look clouded. Often, you are seeing the cloudiness in the lens of the eye – an elastic, transparent structure that lies behind the iris (the pigmented part of the eye) and the pupil (the opening in the center of the eye). Tiny muscle fibers inside the eye contract and relax to make the lens change thickness and shape; these movements help the dog change focus. As dogs age, certain changes cause the lens to turn white and become visible. When this ordinarily transparent structure develops a cloudy spot or section, the dog's vision is compromised.

In some cases, however, the cloudiness is *not* related to the lens. It can be in front of the lens, in the anterior chamber of the eye. Deposits of calcium and fat can also occur in or on the cornea (the translucent dome of the eye).

WHAT ARE THE CAUSES OF CLOUDY EYES?

There are dozens of possible causes for cloudy eyes in older dogs. These are the most common:

■ **Corneal edema.** The cornea is the transparent dome that covers the eye's colored iris. Edema (swelling caused by fluid retention) in the cornea can make the eye look hazy; this can appear as a focal area of white or spread to include the whole eye.

Corneal edema can occur following any inflammation or irritation to the cornea. Causes can include corneal ulcers, trauma, corneal endothelial degeneration (see below), and spontaneous idiopathic (no known cause) development. In addition, any of the following conditions can cause corneal edema; the cause of this condition should always be investigated by a veterinarian.

■ **Cataracts.** A cataract is a clouding of the lens of the eye. Just as with humans, a dog with cataracts will have difficulty seeing at night and experience sensitivity to strong light and glare.



Do “cataract drops” work?

If you do an internet search for “treatment for cataracts in dogs,” you may come across several eye drop products that claim to fix cataracts.

These products usually contain n-acetyl carnosine as the active ingredient. In multiple studies, these drops have failed to improve cataracts.

Newer drugs called “aldose reductase inhibitors” have been shown in a laboratory to delay or prevent cataract formation in diabetic dogs.

Unfortunately, they must be given every eight to 12 hours, and if treatment is skipped or missed, complete/mature cataracts can form very rapidly. Due to this, marketing of this product has not been pursued.

At this time, no topical medication on the market will prevent or delay cataract formation. The only definitive treatment for cataracts is surgery.

Cataracts progress through four stages of maturity: incipient, immature, mature, and hypermature. In early stages, it can be difficult to differentiate cataracts from another common condition called nuclear sclerosis. If you look closely at the pupil of an eye without cataracts, it will appear to be completely black. But as the cataracts continue to develop, it becomes easy to see clouding of that black dot, especially when the dog’s eye is dilated in low light; the cloudiness becomes more noticeable, then obvious, and will lead to blindness.

It’s important to have suspected cataracts checked out immediately. Catching them early increases the chances of successful management. As cataracts go through the early and then later stages, they can cause significant inflammation in the eye (called uveitis), as well as secondary glaucoma (a common eye condition in which the fluid pressure inside the eye rises to an unhealthy level and damages the optic nerve). Once this happens, those problems must first be resolved before cataract surgery can be attempted.

Once a cataract becomes hypermature (also known as a resorbing cataract), it is at risk for rupturing. Once ruptured, the lens material leaks into the eye and causes even more inflammation. This makes successful cataract surgery difficult.

Cataracts often develop as the dog ages, but juvenile and congenital forms do exist, as well.

There are there are dozens of

possible causes of cataracts. The causes can be related to illness or be genetic. More than 150 dog breeds have been identified to have inherited forms of cataracts including the Cocker Spaniel, Bichon Frise, Smooth Fox Terrier, Havanese, Miniature Schnauzer, Boston Terrier, Golden Retriever, Labrador Retriever, and Poodle.

There are many systemic causes for cataracts with diabetes being the best-known. With diabetes, as blood sugar levels rise, water is drawn into the lens and causes clouding.

Other associated disorders include trauma, exposure to radiation, nutritional disorders, toxins, and inflammation within the eye.

Cataracts *can* be treated. In the case of inherited/genetic cataracts, the success rate for surgery is as high as 90 percent. During surgery for cataracts, the damaged lens is removed from the eye and replaced with an artificial lens. The surgery must be conducted with specialized equipment by a veterinary ophthalmologist (Diplomate of the American College of Veterinary Ophthalmologists or DACVO).

In cases of diabetic cataracts or other inflammatory cataracts, the prognosis decreases. It is highly dependent on the ability to manage the conditions that cause the inflammation. Controlling blood sugar levels in diabetic dogs will help to lessen the severity of cataracts early in development. In the later stages, the changes become permanent and require surgical correction.



This older dog has nuclear sclerosis, which looks serious but doesn't affect the dog's vision.

■ **Nuclear sclerosis.** This is a benign, extremely common age-related change to the lens. It occurs in all breeds of dogs, and it does not inhibit vision. The cause is increased density of the fibers within the lens itself. Nuclear sclerosis generally occurs in both eyes at the same rate, whereas cataracts are frequently asymmetrical. There is no need to treat nuclear sclerosis, as it does not interfere with vision. Further, there is no known treatment for this condition.

■ **Corneal endothelial degeneration.** In this condition, the layer of cells at the back of the cornea begin to degenerate. It can be inherited (as in the Chihuahua, Boston Terrier, and Dachshund), or it can be an age-related change.



This Dachshund has corneal endothelial degeneration; Dachshunds are one of the primary breeds affected by this condition. The dog also has severe corneal edema, a result of the endothelial degeneration.

Initially, the change is often noted as a grayish spot in the middle of the eye that begins to extend to the outer edges. Eventually, the whole eye will have a “white” appearance. It will cause blindness as it progresses. There is no specific treatment for endothelial degeneration, although several techniques have been tried to manage the resulting corneal edema.

■ **Corneal deposits.** These manifest as white spots or a white haze over the cornea. Corneal deposits can occur for a variety of reasons. Lipid keratopathy is a well-described condition in which cholesterol is deposited in the cornea. It can occur as part of an inherited disease (in the Airedale, Samoyed, Beagle, Cavalier King Charles Spaniel, and Siberian Husky), be related to high blood cholesterol levels, or caused by inflammatory conditions of the eye. Rarely does this type of deposit affect vision, but monitoring by a veterinarian is important.

Deposits may also be calcium. These are poorly understood but often occur concurrently with an underlying disorder such as Cushing’s disease, kidney failure, or inflammation of the eye. Calcium deposits can irritate the eye and cause corneal ulcers, so treatment is generally aimed at management of the ulcer.

In some cases, an eye drop called sodium EDTA can help to dissolve the calcium deposits. This condition does not have a breed predilection but can occur as dogs age due to underlying systemic illness.



This 14-year-old Westie has calcium and lipid deposits in the eye, secondary to chronic kidney failure.

WHEN SHOULD I SEEK TREATMENT?

It can be very difficult to distinguish the different conditions from one another. Alert your veterinarian if your dog develops cloudy eyes or is having visual difficulties; a consult with a veterinary ophthalmologist may be in order. A thorough ophthalmic exam should include tear production measurements, fluorescein staining to

■ **Uveitis.** This is a general term for inflammation within the eye. The causes are numerous and varied, including toxins, infections, cancers, and trauma. Uveitis may also be idiopathic.

Uveitis can cause a white haze to the eye called “aqueous flare.” It can also cause blood or pus to collect in the eye. Generally, there are other symptoms that occur with the uveitis; the eye will be red, swollen, and painful. Attention is directed at identifying the underlying cause and treating it. With treatment, uveitis will generally resolve.

detect corneal ulcers, measurement of ocular pressure, and a retinal exam. The veterinarian will also examine the eye closely with a bright light to determine where the cloudiness originates. Is it in the lens, the anterior chamber, or within the cornea itself?

With these tests, your veterinarian can generate a list of possible diagnoses and determine if this is a benign age-related change or something that will require medical or surgical therapy to prevent the loss of your dog’s eyesight.

The prognosis for cloudy eyes depends wholly on the underlying cause and whether it can be treated. Since eye conditions can develop and change rapidly, it is always best to consult your veterinarian when you notice anything unusual about your dog’s eyes. 🐾



Cocker Spaniels have a hereditary predisposition to both cataracts and glaucoma. This 13-year-old Cocker developed a cataract that went untreated. It then ruptured, leading to uveitis. The inflammation in the eye then led to obstruction of aqueous humor flow and secondary glaucoma. At this point, the eye is beyond repair, and enucleation (surgical removal of the eye) is in the patient’s best interest.

Catherine Ashe graduated the University of Tennessee College of Veterinary Medicine in 2008. After a small-animal intensive emergency internship, she has practiced ER medicine for nine years. She is now working as a relief veterinarian in Asheville, North Carolina, and loves the GP side of medicine. In her spare time, she spends time with her family, reads voraciously, and enjoys the mountain lifestyle.

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