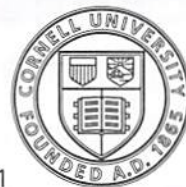




# DOGWatch

January 2019 - Vol. 23, No. 1



Expert information on medicine, behavior, and health in collaboration with a world leader in veterinary medicine

© THIS JUST IN

## Name The Dog Health Center at Cornell

*Cornell University's College of Veterinary Medicine is looking for your help*

**W**ith nearly 90 million dogs living as pets in the U.S., it's clear that dog lovers, veterinarians, veterinarian technicians, breeders, and others could benefit from having a reliable resource dedicated to improving the health and well-being of dogs and providing the college with a reliable source of information about the actual needs of the dogs and those who love them.

Cornell's College of Veterinary Medicine is creating a dog health center consisting of experts who conduct canine health studies and will receive and provide information to owners, breeders, veterinarians, veterinarian technicians, and others interested in dogs.

We would appreciate your input in selecting an appropriate name for this new center by answering this short survey at this link: [www.vet.cornell.edu/caninecenter](http://www.vet.cornell.edu/caninecenter)



Dana, Priscilla Dwyer Photos

## What You Need to Know:

# Oral Flea and Tick Tablets

*Neurological events are possible but not probable*

**L**ast month, we reported that the U.S. Food and Drug Administration (FDA) announced new label requirements for the isoxazoline class drugs (Bravecto, Nexgard, Simparica, and Credelio), used for flea and tick control.

The label change was made due to the potential for adverse neurologic events (muscle tremors, ataxia, and seizures), which was taken from Adverse Drug Event (ADE) reports.

Understandably, this alert worried some of us who use the drugs. However, while there appears to be potential for neurological problems, not every dog will be affected. It's wise to discuss your dog's risk with your veterinarian, who knows your dog's history. And, after giving the drug, report any odd behavior to your veterinarian immediately.

### What Are Adverse Drug Events?

Manufacturers are required to file ADE reports, but so can anyone else. These reports request information on dosage, concomitant drug use, medical and physical condition of the animals at the time of treatment, environmental and management information, product defects, and off-label uses.

In our chart, we've included ADE numbers from an Oct. 1, 2018, FDA report. We also included the year each drug was FDA-approved because these

numbers are cumulative from September 2013 to July 2018. It's impossible to use these numbers to gauge the safety of the products because ADE reports are not thorough enough to fairly compare. You would need to know how many doses were sold and how they were used, including the dog's medical history.

### Problems Truly Are Rare

The FDA's decision to request the label warning will alert veterinarians so they can avoid the product in dogs at risk for neurological events. The fact is that millions of doses have been used without reported problems.

Bravecto, manufactured by Merck Animal Health, has more than 170 studies behind it. More than 80 million doses have been distributed in 85 countries, and, says Merck, "The overall worldwide reporting rate for neurological signs, including seizures, remains classified as very rare."

Merial, maker of NexGard, is part of Boehringer Ingelheim. NexGard is used in over 100 countries, with 200 million doses sold worldwide. "Our global pharmacovigilance reporting system indicates that NexGard has a very low and stable adverse event profile and clinical signs reported with NexGard are very rare (less than 1 per 10,000)," says Boehringer Ingelheim. ■

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## Adverse Drug Events Reported to the FDA

Drug	Afoxolaner	Fluralaner*	Lotilaner	Sarolaner
Brand	Nexgard	Bravecto	Credelio	Simparica
Year of FDA approval	2013	2014	2018	2016
Reports in dogs	24,111	22,626	229	3,819
Reports in cats	27	2,222	0	59
Reports in other species	7	12	0	0
Reports in humans, accidental exposure	44	282	0	5
Total ADEs	24,189	25,142	229	3,883

\* Available as an oral and a topical product

## Plasma for Treating Chronic Corneal Injuries

*The double-blind study used 40 dogs with similar injuries*

One of the most frustrating eye problems for both veterinary ophthalmologists and owners to deal with is a chronic corneal injury. These are painful, can progress to open ulcers, and are resistant to many treatments (see December 2018, "Corneal Ulcers").

A Cornell University School of Veterinary Medicine study looking at a potential new treatment was reported in the October *Journal of the American Veterinary Medical Association*. Edelman et al decided to see if platelet rich plasma (PRP) would help corneal ulcers heal faster.

In the study, 40 dogs had the same first therapy done—removal of dead or non-healing tissue around the corneal ulcer. The dogs were divided into two groups. Half had follow-up with standard artificial tears. The other half received their own platelet rich plasma dispensed as drops.

To create PRP, each dog donated a blood sample that was then centrifuged down to the ideal cell make up. Since the dog's own plasma was used, there were no concerns about rejection. This was a double-blind study, which means neither the owner nor the veterinarian evaluating the treatment knew what therapy the dog received. For this study, the two sets of drops were put in identical containers and an independent agent kept track of which dog got which treatment.

PRP was being evaluated since the cells in this fluid have been helpful in speeding up healing in other areas of the body, particularly connective tissue injuries to joints, tendons, and ligaments. The researchers hoped that PRP would show faster and more complete healing. Unfortunately, there was no statistical difference between the control group that received artificial tears and the experimental group that got the PRP. ■



Illustration: DogWatch

## Lyme Disease Cases Predicted to Rise

*Warmer global temperatures are the cause*

A new study by researchers at Carnegie Mellon University and the Mayo Clinic College of Medicine and Science looked at the relationship between climatic variables and the incidence of Lyme disease in 15 states. The study found that rising temperatures are expected to boost the number of cases of Lyme disease by more than 20 percent by mid-century.

What can you do? Discuss the Lyme disease vaccine with your veterinarian and use appropriate tick-control products. ■

Dumic I et al. Ticking Bomb: The Impact of Climate Change on the Incidence of Lyme Disease. *Canadian Journal of Infectious Diseases and Medical Microbiology*, 2018; 2018: 1 DOI: 10.1155/2018/5719081



Illustration: DogWatch

## Malaria-Sniffing Dogs Are Highly Accurate

*We already knew they could smell hypoglycemia and cancer*

Trained "sniffer" dogs can diagnose malaria infections by sniffing socks worn briefly by children in a malaria endemic area of West Africa, says a study presented at the American Society of Tropical Medicine and Hygiene Annual Meeting.

"People with malaria parasites generate distinct odors on their skin and our study found dogs, which have an incredibly sensitive sense of smell, can be trained to detect these odors even when it's just on an article of clothing worn by an infected person," says Steven Lindsay, a public health entomologist at Durham University (U.K.).

The dogs had to distinguish between socks from children with malaria parasites and socks from uninfected children. They were trained to sniff each sample and freeze if they thought they detected malaria or move on if they did not. The dogs correctly identified 70 percent of the infections and 90 percent of the uninfected children. ■

American Society of Tropical Medicine and Hygiene. "Dogs detect malaria by sniffing socks worn by African children." *ScienceDaily*.



Illustration: DogWatch



# DOGWatch

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# Testing for Breed Determination

*More importantly, a DNA test may give a heads up about your dog's likelihood for certain health conditions*

**D**og owners are bombarded with ads for DNA testing their dogs. It might be a promise to unlock the breeds behind your adorable mixed breed, determining the parentage of a litter, or a chance to understand your dog's risk for inherited health defects.

Whether these tests make sense for you and your dog is a personal decision, but it's paramount to find experienced, reputable companies that have a great deal of data to draw upon.

## What is DNA?

We all use the acronym "DNA," but many of us don't completely understand what it is. DNA is deoxyribonucleic acid, which is the main component of chromosomes. Chromosomes, of course, are blueprints for living things. (In case you wondered, genes are short segments of DNA.)

DNA has four basic chemical bases, or nucleotides: adenine, guanine, cytosine, and thymine. The exact pattern of these pairs determines what a cell (and eventually an organism) will become and all of the traits expressed by that organism. A simple change in one nucleotide can make a huge difference. A dog has about 2.5 billion nucleotides.

When you submit a swab with cheek cells or a blood sample from your dog, the laboratory will look at the DNA pairs to determine the information you want. Blood samples are considered the most useful samples, but most laboratories work with simple cheek swabs.

When you order a DNA test, the laboratory will send you sterile swabs and special containers to ship your samples in. For some labs looking at inherited health problems, you may receive directions about having a blood sample drawn by your veterinarian, along with directions for processing the blood and shipping it to the researcher.

## What You Learn

One of the simplest uses of DNA testing is to determine parentage. This can happen if a breeder has more than one stud dog and both are found in with an in-heat bitch. Sometimes a breeder will intentionally use two stud dogs, hoping to maximize their bitch's potential and



*This beautiful guy was adopted through a rescue group. His new owner had a DNA test done through Embark. The results were 36.6% Eskimo, 25.6% Poodle (small), 18.8% Russell-type terrier, 13.8% Border Collie, and 4.1% "super mutt," which prompted his owner to dub him an "Eskipoojackborder." He is very smart, extremely high energy, and likely headed to the agility ring.*

get pups from two sires. If that occurs, DNA testing is required to register the puppies since you need to know the sire. In order to have semen frozen and stored for future use, dogs are now required to submit a DNA profile. That way, if there is a future parentage question when the frozen semen is used after the stud dog has died, the issue can still be resolved.

For those of us with mixed breed dogs or dogs with unknown parentage, DNA testing can provide clues into the dog's ancestry. It's fun, of course, but breed background can provide important information for your dog's health, too. For instance, knowing the breeds behind your puppy can give you a feel for how big he will get, which influences how and what you feed him as a puppy.

In addition, different behaviors and aptitudes are more common in certain breeds. A DNA profile may help determine if your dog is more likely to show herding behaviors or hunting behaviors, for example. (Note: Remember, DNA profiles have nothing to do with how you actually train your dog.)

## Health Benefits

DNA testing can give you a heads up for potential future health problems. You can look by breed for what DNA tests are available and order specific tests for your dog. This is important for individual dogs, so that you are aware of potential

## How Do You Choose?

*As the interest in canine DNA has risen, so has concern about a lack of oversight and standards for canine genetic laboratories*

The International Partnership for Dogs (IPFD) has launched the Harmonization of Genetic Testing for Dogs initiative to provide practical support to address challenges accompanying the increasing emergence of new canine DNA tests and laboratories.

"With no existing national or international standards of accreditation, or standardization oversight group," says the initiative, "there is a growing need for a reliable third-party neutral organization that can provide guidance surrounding test reliability, laboratory quality assurance processes and procedures, test applicability by breed, and provide counseling regarding interpretation and best use of genetic test results."

This initiative sets standards for quality assurance for testing procedures and results. It also is working toward providing resources for genetic counseling. The vast amount of results from a large genetic panel can overwhelm a dog owner and make it difficult to determine if an individual dog has a genetic defect (or will develop one) or if he simply has a genetic predisposition and may, especially with some adjustments in care and lifestyle, live a long and healthy life with no problem. For instance, Embark shares raw data on over 200,000 markers. The IPFD is working to help owners understand and sensibly use the information they obtain from DNA testing. See [dogwellnet.com/ctp/](http://dogwellnet.com/ctp/) for more information.



health risks and even more important if you are considering breeding your dog. A dog who is a carrier for a health problem does not necessarily need to be removed from a breeding program, but any potential mates need to be screened for that problem so you don't double up on a defect. Then puppies can be tested at an early age to know their potential risk.

Breeders can also test for some conformation considerations such as coat color, amount of masking on the face, and coat length. That information can help breeders produce puppies that remain true to their breed standard.

### Genetic Panels

A popular DNA testing request is for genetic panels. These testing options take one sample and run it looking for a wide range of genetic characteristics and potential inherited health risks. You may end up paying for a lot of tests in the panel that have no relevance to your dog or your breed. On the other hand, at some point in the future, those test results may become important.

Some of the genetic testing companies have partnered with academic researchers, such as the relationship between Embark ([embarkvet.com](http://embarkvet.com)) and Cornell University's School of Veterinary Medicine. The DNA test from Embark costs \$199 and covers 250 breeds and over 160 health issues.

The database at Embark brings information from many thousands of dogs. However, there are no privacy concerns. Dog owners own their dogs' data and participate in various surveys to help researchers narrow down "linkage areas" in their dogs' profiles or they can simply opt out.

A case in point is the recent knowledge about the inheritance of blue eyes in Siberian Huskies. Owners can easily and reliably provide information on this trait—one glance and they could say whether their Husky had blue eyes.

"Owners like to be involved and to help out. This was a perfect case for them to be involved with," says Adam Boyko PhD, Associate Professor at Cornell University's School of Veterinary Medicine Department of Biomedical Services and a founder of Embark.

Looking at survey responses and then looking at the DNA profiles from the dogs helped Embark determine that a duplication on the canine version of chromosome 18 fit with dogs who had the blue eyes. This is different from some

### 5 THINGS

## 5 Tips to Help Catch Cancer Early

*As you know, earlier detection generally has a better prognosis*

**C**hase Away K9 Cancer developed useful tips for dog owners to use to watch for signs of cancer in their dogs. The sooner you notice a symptom, the faster you can get to the veterinarian for a diagnosis and treatment plan.

- 1 Take 10 minutes once a month to carefully go over your dog, feeling for any new lumps and bumps. Ideally, you should do this the same day every month so it becomes a routine.
- 2 Do a thorough check from head to toe and head to tail and be sure to look inside the mouth.
- 3 If there are changes (color, swelling, blood, lumps) or anything makes you suspicious, set up a visit with your veterinarian.
- 4 Write down any lumps or bumps you note, including size so you can track growth and any other changes.
- 5 Watch for subtle changes in your dog, including behavior, activity level, appetite, interest in activities. ■



other versions of genetic blue eyes in dogs and opens up new areas for research.

Having this large digital biobank means that researchers can look years later and potentially trace the development of a characteristic in a breed or a line in the breed. Statistical linkages can help researchers narrow down the exact genes they are interested in.

Most genetic defects do not have a simple one gene cause-and-effect arrangement. There are often modifier genes and genes that require environmental influences to become apparent. Polygenic conditions require a combination of genes for a defect to become apparent. Then, there are situations, such as incomplete penetrance, where a dog may have the gene but not show the condition.

Genetic research in dogs can also help humans. A defect in Briards, called congenital stationary night blindness, is detectable in young puppies and usually leads to a slowly progressive vision loss. The cause is a defect in the canine RPE65 gene. There is a similar condition in people known as Leber congenital amaurosis (LCA). Those people have a mutation in the human RPE65 gene.

Gene therapy was used at

Cornell's School of Veterinary Medicine to restore vision in affected Briard puppies. This treatment was tested and used to treat people with the same defect. Unfortunately, the positive results are short term (up to three years) in people, but this provides hope for the future.

DNA testing may be primarily for fun in the case of determining the heritage behind your mixed breed dog but obviously it can lead to dramatic progress in health for our dogs as well.

As Dr. Boyko says, "Our goal is to eventually be able to eliminate inherited disease in dogs." That will require careful attention to testing and breeding dogs with a partnership among researchers, your veterinarian who can provide input on clinical conditions, breeders using test results to carefully plan breedings, and you as owners helping to provide data via surveys and observations. ■



The Briard is an active, intelligent dog, loving and loyal.

# Is Your Dog Too Cold?

*Most dogs handle cold well, but some need help*

**A**lthough most dogs are much better equipped for winter than we are, some will need help to stay warm. “Any dog who is seeking sources of heat or shivering may be cold,” says Dr. Leni Kaplan, Cornell University School of Veterinary Medicine, Lecturer, Community Practice Service.

You may notice your dog curling up tightly in a dog bed or rumpling up blankets to make a nest. Maybe he chooses to lie close to a heat vent or radiator. While these signs don’t necessarily mean your dog is cold, if they’re abnormal or are combined with shivering, it’s worth investigating.

Dogs also shiver when they are stressed or afraid. “It is difficult to distinguish shivering due to cold from shivering due to anxiety or fear,” says Dr. Kaplan. “Context can often help distinguish feeling cold from feeling anxious or fearful, though a pet could be both cold and fearful.”

If you notice your dog shivering, take stock of the situation. If there’s something stressful or new in the house or he’s in a new environment, address that by reassuring your dog. If the shivering persists or if there is no reason for him to be anxious, then it’s time to make sure he is warm enough.

## Coats and Blankets

“The need for a coat or blanket depends on several factors including breed, hair coat, state of illness, body weight, age, and environmental temperature,” says Dr. Kaplan. Breeds selected to live and work in cooler areas, such as Siberian Huskies, often thrive in the cold. Coat density is a better indicator than coat length. Shih Tzu have long hair but lack a dense undercoat, while Greater Swiss Mountain Dogs have a short dense coat.

Smaller dogs are less tolerant of cold than large dogs. Puppies and senior dogs often struggle to regulate body temperature, as do dogs who are ill or underweight.

The weather itself also plays a role. Dr. Kaplan says, “If a dog will be outside in cold temperatures for an extended period, he will probably benefit from a coat or protective outer wear to help him stay warm and dry.”

Not all dogs will tolerate wearing a

coat. While you can try another style before you give up, if your dog is clearly unhappy (relentlessly trying to get it off or freezing in place), you may have to skip the blanket idea and limit outside jaunts to 10 minutes or less.

Snow that sits on top of your dog’s coat eventually melts, leaving the dog wet to the skin. Sleet and freezing rain also penetrate to the skin. Like us, dogs have a “cut off” temperature, meaning if it gets below a certain temperature they’re no longer comfortable. Temperature tolerance will vary from dog to dog and breed to breed.

## A Need For Shelter

“If dogs live outside, make sure to provide them with shelter from the elements,” says Dr. Kaplan. “Owners can purchase heated dog houses, heated dog beds, and microwaveable pet bed warmers for their canine companions as well.” If you use any of these devices, be careful that the cords are out of reach and cannot be chewed on. “Space heaters and heat lamps should be avoided because of the risk of burns or fires,” says the American Veterinary Medicine



Sled dogs are bred and raised to thrive in winter conditions.

Association (AVMA). “Heated pet mats should be used with caution because they are still capable of causing burns,” the AVMA says.

An acceptable outdoor shelter for a dog is insulated, waterproof, and large enough for him to stand, sit, lie down, and change his position. “The floor of the shelter should be off of the ground (to minimize heat loss into the ground),” advises the AVMA.

Be sure the shelter has fresh, thick bedding and that you change it frequently. The door should be covered but allow the dog to go in and out at will. Dogs who are outside playing for extended periods of time also will benefit from having shelter available, even if it is just a spot to get out of the wind. ■

# How to Choose a Dog Coat

*Be sure it’s one in which he can move and play normally*

**Y**ou’ll find a wide variety of dog coats on the market but don’t let those attractive colors and patterns steer you in the wrong direction. The three most important elements are style, fit, and weight.

## Style Choices

In general, you can choose from a blanket style and a jacket style, which resembles a pullover human jacket/ vest and covers his underbelly as well. Whatever you choose, the coat should allow your dog to urinate and defecate without problem.

A few coats come with a leash hole in the back, so check the placement to determine if it will work with your collar or harness, if that’s important to you. That said, many people have



Playing in the snow is so much more fun when you’re warm.

no problem with a leash connection that comes out over the collar. Reflective color, materials, or strips on the dog’s coat can be a wise addition for night-time visibility.

*continues on page 6*

Coats, continued from page 5

### Sizes and Fit Vary

Dog coats are sized by the measurement from the base of the neck to the base of the tail. Your dog should stand and look ahead when you measure him. It can help to ensure a good fit if you measure the neck and chest, too. Take the tape measure with you to the store or call if ordering online to get the measurements.

A good coat allows free shoulder movement. A dog will not be comfortable if every time he moves his leg forward his shoulder is restricted. Some blankets have shoulder gussets to help with movement.

If you've chosen a jacket-style blanket, check under the dog's front legs to be sure it's not tight. Straps and closures should not rub the dog when he moves or slide into uncomfortable places.

The overall fit of the coat should be snug but not so tight that you can't fit a flat hand in around the collar or shoulder area. It's OK if the coat is a little too long or too short, although dogs who like to keep their tails up might prefer shorter.

The coat must stay in place when your dog moves. Before you use it, try it on the dog to ensure it doesn't slide to the side when the dog trots around, turns, reaches around to his side, etc. Styles that also close up under the belly often stay in place better.

### Coat Weight

A heavy, cumbersome coat is not comfortable (think about the snowsuit scene in *A Christmas Story*). Fortunately, modern materials are warm without being heavy. Never over-dress your dog. You would be better off with a lighter coat and a shorter walk than risking him getting too warm.

For some dogs, a lightweight fleece or sweater coat will be perfect inside, but a more protective blanket will be needed outside. Few dogs need a coat when the temperature is over 40°F, unless it's windy, raining, or snowing. A word of caution: If your dog is very active, he may prefer a lighter coat outside, too, just as you would if you were jogging in the cold temperatures.

Finally, since the colder months usually bring rain, sleet, and snow, your dog's outdoor coat should be at least "water resistant." This means it has been designed to resist moisture from going through the blanket onto the dog's skin. Waterproof means it's made so no moisture will get past its surface. ■

## Intact Bitches and Pyometra

### The monster under the bed explained

If you have owned a female dog, you may have heard of pyometra (or "pyo" for short). A lot of myth and horror surrounds this word, but it shouldn't. No, it's not pleasant, but it's also not the guaranteed gory death that it is sometimes made out to be. That said, pyo is something you should understand.

### The Pyo Infection

Pyometra is an infection of the uterus. When a female dog is going through estrus, or her heat cycle, her cervix loosens. This is to allow sperm to enter the uterus if she is bred, but this opening also allows bacteria to enter the uterus. With the right conditions, bacteria can colonize the uterus and cause a serious infection. *E. coli* is the most common offender, and it may form a biofilm, which is a protective layer that helps the bacteria resist their host's immune system and antibiotic therapy, making the infection more difficult to treat. Pus forms inside the uterus, and the bacteria also may produce toxins that can absorb into the dog's bloodstream.

Cases of pyometra are often classified as "open" or "closed." This refers to the cervix. "Dogs with closed pyometra (no drainage from the vagina) tend to be more septic than dogs who have open (draining) pyometra," says Dr. Jim Flanders, Diplomate of the American College of Veterinary Surgeons and Associate Professor of Small Animal Surgery at Cornell University School of Veterinary Medicine. "Open pyometra allows the uterus to decompress somewhat, so the chance of uterine necrosis is reduced. Also, the pressure within the uterus driving bacteria into



Fear of pyometra should not be a reason to spay your bitch. Evaluate her risk.

the bloodstream is reduced. If the disease is not caught in time, the uterus can rupture within the abdomen and cause severe peritonitis."

While a closed pyo is more severe, both types of pyo are dangerous. Pyo that is left untreated usually results in death.

### Symptoms and Risk Factors

Clinical signs of pyometra include:

- ▶ Discharge from the vagina
- ▶ Foul odor
- ▶ Increased drinking
- ▶ Lethargy or depression
- ▶ Anorexia
- ▶ Fever
- ▶ Distended abdomen
- ▶ Vomiting
- ▶ Diarrhea

Bitches experiencing pyometra often appear acutely ill, but a vigilant owner can catch signs that something is wrong early in the process. If your dog has been in heat recently and is acting off, make

### What You Can Do

- ▶ Keep track of your bitch's heat cycles. Pyometra most commonly occurs within two months of being in estrus.
- ▶ If she seems ill, take her temperature and consider a veterinary appointment. Surgery is less risky if the dog is in overall good health as opposed to extremely ill.
- ▶ If your dog has discharge from her vagina and/or is acting sick, call your veterinary office immediately.
- ▶ Ask your breeder about pyometra in your dog's relatives. While pyo is not strictly a hereditary condition, it may have a genetic component and that will help you make informed decisions about your bitch's reproductive health.

a veterinary appointment. Not every dog will show every sign, and catching pyometra early will make treatment easier and less stressful.

According to the article "Breed Variations in the Incidence of Pyometra and Mammary Tumours in Swedish Dogs," published December 2012 in *Reproduction in Domestic Animals*, pyometra occurred in 19 percent of intact bitches up to 10 years old. This study also found some breed tendencies for developing pyometra, which suggests that there is a genetic predisposition.

Older females are at an increased risk of developing pyometra. Senior dogs also have the added risk of having concurrent health problems, which may make treatment and recovery more difficult.

### Diagnosis

A diagnosis is usually made based on examination, the dog's health history, and diagnostic measures. An enlarged uterus from a closed pyo can be seen on x-ray. On bloodwork, a bitch with pyo may have an increase in white blood cells and globulins (both signs of infection). Urinalysis may show debris and/or a low specific gravity. Ultrasound can show an enlarged uterus and evaluate the thickness of the uterine walls.

### Treatment A – Surgery

The most common treatment for pyometra is to spay. This will prevent future recurrences.

Dr. Flanders warns that a spay procedure to treat pyometra is a more involved and risky procedure than a routine spay. "Dogs with pyometra can be severely ill due to sepsis," says Dr. Flanders. "Septic dogs can be dehydrated from vomiting and very toxic due to the high numbers of bacteria in the uterus and in the bloodstream. The risk of anesthesia in a septic dog is very high. Veterinarians will pretreat dogs with intravenous fluids and antibiotics, but the dogs can still have low blood pressure and even cardiac arrhythmias during anesthesia. The blood vessels supplying the ovaries and uterus are more engorged due to inflammation and uterine enlargement so extra care must be taken to ligate these larger vessels and the enlarged uterine body. If the uterus had ruptured inside the abdomen, the dog will need to be treated for peritonitis and abdominal drains may need to be placed temporarily."

Care after surgery will depend on how



Fertility can decrease after pyometra.

ill your dog was prior to the procedure and any complications. "Recovery from a pyometra spay may take several days due to the time it takes for the dog to recover from the toxicity caused by such a high bacterial load," says Dr. Flanders. "So even though the source of the infection (the uterus) is removed, it may still take several days of fluid and antibiotic therapy to get the patient back on her feet again."

Dr. Flanders says, "The most common complications are dehydration, electrolyte imbalance, low blood pressure, cardiac arrhythmias, and septicemia. All of these issues are compounded because pyometra usually develops in older dogs." Fluid therapy, antibiotics, and medications to regulate heart rate and circulation will be used as needed to address these issues.

### Medical Treatment

Prostaglandins are the cornerstone of pyometra treatment. Prostaglandins are what cause the cervix to open and the uterus to contract when it is time for puppies to be born. Given to a dog with pyometra, they can turn a closed pyo into an open one to expel pus and bacteria.

While this sounds like a great option, it is not a reliable treatment and comes with a variety of side effects and complications. The first issue is that it takes about 48 hours to see improvement, which is too long to wait if the bitch is already critically ill. There is also the risk that causing the uterus to contract could rupture it if the cervix has not opened sufficiently, leading to peritonitis and sepsis. Other side effects include abdominal pain, vomiting, panting, restlessness, and drooling. Your dog will need to be hospitalized during treatment so that she can be closely monitored.

If prostaglandin and antibiotic therapy are successful in treating a case of pyometra, the bitch is still at risk for recurrence.

How do you decide what is the best way to treat pyometra in your bitch? The most common reason to choose medical treatment is if the owner wishes to breed her. In these cases, most reproductive specialists recommend breeding on her next heat and then spaying her after the litter. Fertility is somewhat decreased after pyometra, but bitches can go on to have successful litters. For most owners, surgery is the simpler and more economical solution.

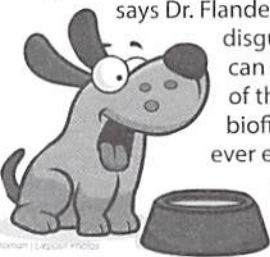
### Prevention

The only way to prevent pyometra is to spay your dog. "There is nothing (i.e. diet, supplement) that would lower the risk of pyometra in a dog that continues to cycle," says Dr. Flanders. Intact bitches are not guaranteed to develop pyometra over the course of their lives, but it is a serious condition that every owner of an intact bitch should be aware of and watch for early symptoms. ■

## Can Dirty Bowls Cause Pyometra?

Ohio State University and the AKC Canine Health Fund released a study showing that *E. coli* involved in pyometra can produce a biofilm, a protective layer that helps the bacteria resist their host's immune system and antibiotic therapy. Biofilms are found in dog bowls, causing concern about whether dirty bowls could put female dogs at an increased risk for developing pyometra.

"Dogs are extremely effective at clearing bacteria from things that they ingest," says Dr. Flanders. "If you just take a moment and think about some of the disgusting things that they eat without causing a problem, you can get an idea of the amazing decontamination capabilities of the canine gastrointestinal tract. So, although there may be biofilms on a water bowl, it is unlikely that those bacteria would ever enter the bloodstream in sufficient numbers to colonize the uterus. Most of the bacteria found in pyometra are fecal bacteria and the source is most likely ascending infection from the vagina."



# Choose The Perfect Puppy

*It doesn't need to be a guessing game*

Let's assume you've done your homework and know what type of dog you want to share your life with. How do you figure out which puppy in a litter would be the best match for you?

Good breeders and experienced rescue groups work hard to make the best match to ensure puppies go to the right homes and stay there for their entire lives. But they don't just guess; there are puppy evaluation tests that help predict the type of dog that puppy will become.

## Rating the Puppy

Puppy evaluation tests look at canine aptitudes. They're not pass/fail tests. Rather, they look for a puppy's strengths and weaknesses. This is important because a trait you might consider positive, someone else may not like.

The tests consider things like sensitivity to touch, reactions to sounds and novel sights, retrieving aptitude, and human focus. You'll see differences among breeds and types, but also within a litter. One puppy in a litter may be highly sociable and another more standoffish. A terrier pup might run off with a toy instead of retrieving.

## The Volhard Tests

Wendy and Jack Volhard (volhard.com) are experienced dog trainers, authors, and judges who developed one of the most widely used sets of Puppy Aptitude Tests. (The Volhards were inducted into the International Association of Canine Professionals in 2006.)

The Volhards recommend that puppies be taken to a novel location for the testing. The person who does the tests should be unknown to the pups, and the scorer needs to be an experienced and objective observer.

The ideal test age is 49 days old. Puppies receive a score of 1 to 6 based on their reaction to the test situations (see sidebar). A score of 1 is a strong reaction, while a 6 is a pup who runs away or does



*A puppy who willingly plays with you may become a dog who is easier to train.*

not respond. An individual pup may have scores that range the full extent of 1 to 6.

Puppies who have mostly 3s and 4s tend to make the best family pets, while a dog with mostly 1s may be too strong a personality for the average family. The pup with the 1s might be a great working dog, however, and just the puppy a canine officer, for example, is looking for.

## The Avidog Tests

Avidog (avidog.com) has a puppy testing system called APET (Avidog Puppy Evaluation Test). It includes many of the same tests as the Volhard test but is more comprehensive.

The APET test system has a total of 23 components and looks at 33 temperament traits.

The Avidog testing is generally recommended at older ages than the Volhard program, at 52 to 55 days for

## © HAPPENING NOW...

**Pet-Food Verdict:** According to the U.S. Department of Justice, two companies—Wilbur-Ellis Company, San Francisco, Calif., and Diversified Ingredients, Inc., Ballwin, Mo.—were found guilty in federal court of adulterating and misbranding pet food ingredients. Both companies pleaded guilty of the misdemeanors. The companies were sentenced to probation and ordered to pay a total of more than \$7 million. The adulterated ingredients did not pose a threat to the health or safety of any animal. ■

most breeds but up to 70 days for some toy breeds.

## Bottom Line

All puppy testing programs are a snapshot of how the puppy reacts at that moment. Some tests stand up over the puppy's lifetime, but other reactions may be the result of an off day. In addition, training and socializing can influence puppy behaviors over time.

An experienced breeder or rescue group can evaluate puppies to pick the ideal home for each one. In fact, many experts believe it's best to have the breeder choose the "perfect puppy" for you based on a questionnaire from you stating exactly what you hope to find in your new canine companion. ■

## Volhard Basic Tests

- ▶ **1. Social Attraction.** Degree of social attraction to people, confidence or dependence.
- ▶ **2. Following.** Willingness to follow a person.
- ▶ **3. Restraint.** Degree of dominant or submissive tendency and ease of handling in difficult situations.
- ▶ **4. Social Dominance.** Degree of acceptance of social dominance by a person.
- ▶ **5. Elevation.** Degree of accepting dominance while in a position of no control, similar to what would happen at the veterinarian.
- ▶ **6. Retrieving.** Degree of willingness to do something for you, which can be a key indicator for ease or difficulty in training.
- ▶ **7. Touch Sensitivity.** Degree of sensitivity to touch and a key indicator to the type of training equipment required.
- ▶ **8. Sound Sensitivity.** Degree of sensitivity to sound, such as loud noises or thunderstorms.
- ▶ **9. Sight Sensitivity.** Degree of response to a moving object, such as chasing bicycles or squirrels.
- ▶ **10. Stability.** Degree of startle response to a strange object as well as recovery from the startle.

### Coming Up ...

- ▶ [How to Properly Feed the Tiny Dog](#)
- ▶ [Why Does He Eat Poop?](#)
- ▶ [Blood Tests in Dogs](#)
- ▶ [Mammary Cancer](#)