Your complete guide to natural dog care and training
Whole Dog Journal™

Kennel Cough

Prevention & Remedies

Understanding The Canine Respiratory System

A clear, vital respiratory system is central to your dog's robust health.

Randy Kidd, DVM, PhD

The respiratory system functions rather miraculously. Vital for life, critical for the health of the whole body, it's one of the major ways the dog's body unites his external environment with his inner milieu. As a primary site of contact with the outer world, the lungs are susceptible to diseases that can be caused by any airborne germ, irritant, or toxin that happens to be floating around.

Holistic practitioners understand that respiratory symptoms can be an indication of disease or a sign of healing – the key is differentiating between the two. Some alternative and complementary medicines have proven to be beneficial for many respiratory conditions, especially mild diseases and those that have become chronic.

Architecture of respiration

In addition to the nose, larynx, and pharynx, the respiratory system consists of the trachea, bronchi, bronchioles, alveoli, and the parenchymal tissue of the lungs.

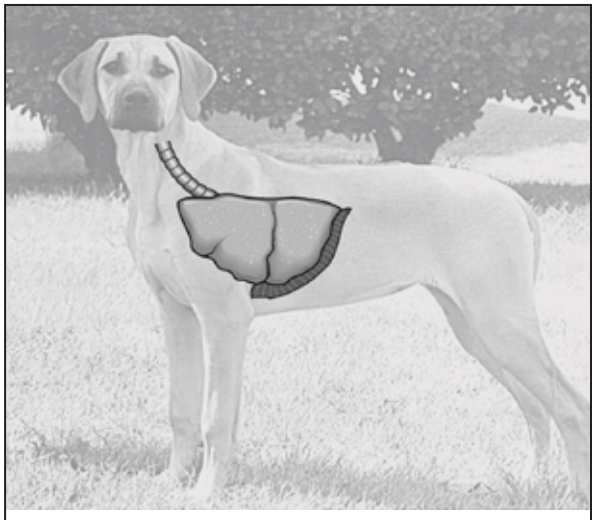
From the trachea to the alveoli, a map of the lungs would look like a tree – each branch dividing into many, ever-smaller branches until the end point of several million alveoli is reached. Each alveoli is a round receptacle where gas exchange occurs via contact of the inspired air with blood across an extremely thin layer of tissue surrounding the alveolar capillaries.

The respiratory system performs several functions. Its most important utility is to act as a gas exchange: it delivers oxygen for distribution to the body, and removes carbon dioxide produced by living cells. In addition, the respiratory system filters out particulate matter, maintains the body's acid-base balance, acts as a blood reservoir, protects its own delicate airways by warming and humidifying inhaled air, and is active in producing substances that initiate the immune system response. The upper airways also provide for the sense of smell and play a role in temperature regulation in panting animals.

Normal respiratory rates vary, depending on the size of the dog, from 10 to 30 breaths per minute; larger dogs have slower rates. Panting – a rapid, open-mouthed, and shallow breathing pattern – is a normal canine reaction, brought on by exercise and/or the need to cool the body.

In the healthy animal, particulate matter and the small amounts of mucus that are normally generated are removed by cilia (minute hairs that line the trachea and bronchi) and coughed up or swallowed. Many microorganisms live in the normally healthy respiratory system; their pathogenicity is held in check by local and systematic immune factors.

According to Western medical practitioners, disease of the respiratory system occurs when



The dog's left lung has two lobes; its right lung has four lobes. The trachea conducts air in and out of the lungs; the air is moved by relaxation and contraction of the diaphragm.

irritants greatly increase the amount of mucus produced (in excess of what the animal can expel naturally), when the immune system allows for attachment and growth of pathogenic microorganisms, or when local cells are stimulated to become malignant (from excess exposure to carcinogenic toxins, for example).

Alternative view

Traditional healers have long respected the healing power of correct breathing, and their ways of thinking about the respiratory system reflect this understanding.

For many cultures the breath is equivalent to the Qi (pronounced "chee" and often spelled chi) or Prana (vital force) that circulates throughout the body and gives it life and vitality. From this view, respiratory disease may be considered the result of a weakened protective Qi – from a deficiency of Lung Qi production or dissemination.

In most Eastern cultures (and some other cultures) considerable attention is paid to helping people stay healthy by teaching them proper breathing methods – through various forms of meditation, postures (yoga asanas), and active or passive exercises meant to enhance proper breathing.

In Traditional Chinese Medicine the lungs are thought to regulate the Qi of the entire body; a disharmony of the lungs can produce deficient Qi or stagnant Qi anywhere in the body.

The Chinese herbal mixture "Jade Screen" – which includes astragalus (Astragalus membranaceus) – and acupressure points are often used by traditional Chinese medical practitioners to strengthen both Lung and protective Qi. These practitioners also credit the lungs with helping to move moisture through the body. Disharmonies of the lungs' water-moving function, they say, can result in urinary dysfunction, edema (especially in the upper body), or problems with perspiration. A dog with robust lung health will have a bright, shiny coat and will be resistant to developing colds, persistent coughs, and other aggravating illnesses.

Signs of disease

Any kind of practitioner would recognize coughing as a first sign of respiratory disease. A sudden onset of coughing may be a dramatic indicator of serious disease – pneumonia, secondary symptoms of other viral diseases such as distemper, or lung tumors – or not-so-serious disease, such as common colds or kennel cough.

There are also more subtle signs to watch for, and since some of these signs may be related to either heart or lung problems, it is important to differentiate between the two. Exercise intolerance is the most prominent of these signs. A dog will demonstrate this by lagging back during her daily walks; wheezing, gasping, and straining for air when she is forced to exercise, when she climbs a flight of stairs, or jumps up on your bed; and she may tend to sit in an elbows-out posture. Exercise intolerance and the accompanying signs listed above are the classic symptoms of heart disease, and whenever they are seen, it is time for a visit to the veterinarian.

The same symptoms as those seen with heart disease, however, may also be a sign of aging. Some experts believe that the respiratory system declines in efficiency by up to 50 percent over a lifetime. Bronchial passages constrict, fibrous tissue in lungs increases, and the functional capacity of the alveoli is reduced. In addition, many dogs, over the years, have been exposed to lung damage caused by inhaled allergens, foreign bodies, and microorganisms – all of which can decrease functional lung capacity.

Your dog should visit his vet at least once a year for an annual physical – perhaps twice a year after he's reached about seven years of age. Use a veterinarian who takes the time to put a stethoscope to the dog's heart and chest to listen for abnormal sounds. If there is some question about the functional capacity of your dog's heart or lungs, further testing such as radiographs or an EKG may be indicated.

My own feeling is that the annual physical is absolutely necessary, to monitor how the dog is doing on a yearly basis. Please note that an annual vaccine is absolutely unnecessary, although this is the reason many vets give for seeing your dog every year. In my opinion, it is time for those

of us in the veterinary profession to concentrate on the annual physical exam rather than on selling vaccines.

Kennel cough and colds

The two most common afflictions of the respiratory system are the "common cold" and kennel cough. Both of these ailments are usually instigated by any of a number of viruses, often followed by secondary bacterial invasion. The severity of the symptoms varies widely, but in most "colds" they are mild and include wheezing, coughing, reluctance to move, and perhaps a mild fever.

Kennel cough (a.k.a. infectious tracheobronchitis), on the other hand, can produce symptoms that appear extreme, with a dry, hacking cough accompanied by frequent, intense gagging. I've had caretakers rush their kennel-coughing dog in to see me, thinking he has a bone caught in his throat. Despite its appearance, a typical case of kennel cough is not life-threatening, and it tends to run its course in a few days to a week or so. But it is a disease that is frustrating for pet and caretaker alike.

Kennel cough results from inflammation of the upper airways. The instigating pathogen may be any number of irritants, viruses, or other microorganisms, or the bacteria Bordetella bronchiseptica may act as a primary pathogen. The prominent clinical sign is paroxysms of a harsh, dry cough, which may be followed by retching and gagging. The cough is easily induced by gentle pressure applied to the larynx or trachea.

Kennel cough should be expected whenever the characteristic cough suddenly develops 5 to 10 days after exposure to other dogs – especially to dogs from a kennel (especially a shelter) environment. Usually the symptoms diminish during the first five days, but the disease may persist for up to 10-20 days. Kennel cough is almost always more annoying (to dog and her caretaker) than it is a serious event.

Other diseases of the respiratory system

Pneumonia is inflammation of the lungs with consolidation (hardening) of the tissues, and this inflammation can be from any number of sources – viral, bacterial, fungal, trauma-induced, or as the consequence of an allergic reaction. Oftentimes the initial stimulus for inflammation comes from airborne toxins – cigarette smoke, city smog, fumes from household cleansers, and outgassing from numerous sources such plastic food dishes or the formaldehyde found in household insulation, new carpets, and furniture.

Pneumonia is not a common malady in dogs, and when it occurs, the symptoms may vary from mild to extreme; in severe cases the disease can be life-threatening. If your dog has extreme difficulty breathing, or if he has stopped eating and is very reluctant to move, it's time to see the vet. Antibiotics and supplemental oxygen can be lifesaving at this stage.

Likewise, neither asthma nor emphysema are common problems in dogs, although they do occasionally occur. Asthma is a condition that causes recurrent bouts of wheezing and respiratory distress due to constriction of the bronchi, and is often allergy-induced. Emphysema is an abnormal accumulation of air in the spaces between the alveoli of the lungs. Both conditions can be difficult

Every dog should have an annual veterinary examinat – after age seven, perhaps two per year – including a check of his lungs and heart with a stethoscope.

to diagnose correctly, often requiring radiographs to determine the extent of damage.

Any dog who demonstrates periodic bouts of respiratory distress or who has had a chronic problem with breathing should be taken to a veterinary hospital for further evaluation. Holistic veterinarians (including me) have had excellent success treating asthma using acupuncture, coupled with immune-system boosters and other herbs to aid breathing.

Trauma that causes tissue damage and/or bleeding into the lungs can also be a cause of respiratory distress. The typical lung trauma case goes something like this: The dog arrives at the emergency clinic in respiratory distress. The owner reports that the dog had been out running loose for a while and he returned like this – a sudden onset. These dogs have often been hit by a car, and the major damage has been internal, to the lungs or diaphragm. Again, whenever your dog is in extreme respiratory distress, it is time to visit your vet.

Respiratory involvement can come secondarily, from other sources in the body, such as an extension of gingivitis from the mouth, diabetes (which lowers resistance to disease), and other infections such as distemper, parainfluenza, or adenovirus. The most common source of secondary respiratory problems, however, comes from the heart.

Cardiac insufficiency, whatever the cause, can cause a decrease in respiratory efficiency, and the clinical signs of coughing, wheezing, and exercise intolerance. Heart conditions, including heartworm infection, need to be differentiated from primary lung involvement, and your vet's stethoscope is the first step here, perhaps followed up with X-rays and other tests.

Lung tumors can be either primary (originating in the lung tissues) or secondary (metastasizing from other parts of the body and lodging in the lung tissues). Both of these can create nasty tumors that are difficult to treat, whatever method you choose to use. My experience with these is that if there is anything that can help them, it will be classical homeopathic remedies. Since it is thought that many lung tumors are instigated by contact with airborne toxins, it's important that we do all we can to eliminate them from our own and our dog's environment.

Care of the respiratory system

Oxygen is the most lung-friendly nutrient available for man or beast. Make sure your dog's lungs (and outlying tissues) are adequately supplied with oxygen, by taking – at minimum – a daily 20- to 30-minute walk at an easy trot pace (the pace where you can carry on a normal conversation with your dog so passersby will think you are crazy).

I also think that a daily anaerobic romp – sprinting to retrieve a ball, for example – helps to expand the functional capacity of the lungs. Be sure to have your dog's heart and lungs evaluated by a vet before you begin a new exercise program.

The second most important thing to do for the health of your dog's lungs is to eliminate all the toxins you possibly can. Many of the commonly found air pollutants cause irritation to the airways of the lungs and this irritation stimulates mucus production. The mucus in turn stimulates coughing. Other irritants cause the smooth muscles to constrict around the alveoli, eventually causing asthma or emphysema. Finally, many of the air pollutants are known carcinogens; persistent contact with them is a disaster waiting to happen.

While exploring ways to eliminate air pollutants is beyond the scope of this article, it is definitely a topic for you and your family to explore. As a first step, though, make sure your (and your dog's) house and living environment have adequate ventilation.

The next (and final) step to assuring respiratory health is to energize the immune system. Proper diet, limited stress, along with vitamins A, C, and E and other antioxidants such as the culinary herbs and Coenzyme Q10 are all beneficial to the immune system. Herbs that are directly beneficial for the immune system include echinacea and astragalus. Check with your holistic vet for correct dosages of these supplements and herbs.

Alternative medicines for respiratory conditions

There are two important things to remember about alternative medicines and the respiratory system:

1) In Western medicine, it is often impossible to treat a condition without knowing the cause; in most alternative medicines (Chinese medicine and homeopathy in particular), the treatment is always for the condition itself, regardless of the cause.

2) Holistic treatments begin with the realization that most respiratory infections are really signs of the body's healthy effort to expel toxicity – via mucus from the nose, sneezing, puffy red eyes with mucus-like secretions, and coughing and phlegm.

While the Western medicine man will focus intensely on diagnostic procedures to try to determine a specific diagnosis, the alternative practitioner observes symptoms as they occur and treats accordingly. And, whereas the Western practitioner's treatments are often aimed toward palliation of symptoms (easing the cough, for example), the alternative practitioner understands that respiratory symptoms may be a good sign that the body is responding in a healing manner.

• **Herbs**. There are several herbs that may be beneficial for treating respiratory conditions. The following have been used to treat the symptoms seen with respiratory disease. Herbal dosages and method of delivery vary with the needs of the animal; check with your herbal practitioner.

Herbs that enhance the immune system include echinacea (Echinacea spp.), astrag-alus (Astragalus membranaceus), Siberian ginseng (Eleutherococcus senticosus).

Herbs with antibiotic activity (for lung infections) include Oregon grape root (Mahonia aquifolium), goldenseal (Hydrastis canadensis), and echinacea. Herbs for bronchial congestion include oregano (Origanum vulgare), bloodroot (Sanguinaria canadensis), thyme (Thymus vulgaris), and ginger (Zingiber officinale).

Herbs for acute bronchitis include marshmallow (Althaea officinalis), cinnamon (Cinnamonum camphora), turmeric (Curcuma domestica), echinacea, fennel (Foeniculum vulgare), chamomile (Matricaria chamomilla), and peppermint (Mentha piperita).

To ease coughing, try the following herbs: marshmallow, pleurisy root (Asclepias tuberose), oats (Avena sativa), calendula (Calendula officinalis), licorice (Glycyrrhiza glabra), peppermint, elder (Sambuscus nigra), thyme, coltsfoot (Tussilago farfara), and mullein (Verbascum thapsus).

My own preference has been to use licorice root to ease the cough (and for its adaptogenic qualities), echinacea for its immune-stimulating properties, and Oregon grape root for its infection-fighting abilities. I then consider adding other herbs as the symptoms indicate.

• **Massage** may prove beneficial in preventing and treating respiratory diseases. Dogs can become very anxious whenever their breathing is difficult or restricted, and anxiety tends to constrict breathing. A whole-body massage may be relaxing enough to help produce more normal breathing patterns.

• **Acupuncture** is one of the best ways to treat respiratory disease, and it has been shown to be especially helpful for treating asthmatic patients. Acupuncture points along the Lung and Large Intestine Meridian are the primary points to use, with additional points possibly located along the Spleen, Kidney, and/or other Meridians, depending on the symptoms.

When treating a wet cough, in addition to herbs for bronchial conditions and coughing (see the herbal section, above), your veterinary acupuncturist will consider removing "dampness" from the lungs by needling the Spleen-6 and Kidney-3 acupressure points, while also enhancing the immune system by stimulating Large Intestine-11. You can use acupressure on the same spots (ask your acupuncturist to show you their locations). Use moderate pressure over the spots for several minutes, or until your dog seems to be uncomfortable with the pressure. Don't continue past that point!

The Lung and Large Intestine Meridians (the paired Meridians that are associated with lungs and respiratory function) run on either side of the dog's forearm; to stimulate points along this meridian, massage up and down the forearm beginning at the shoulders and extending down to the dew claw and first digit of the paws.

Each Organ system, in the Traditional Chinese Medicine way of thinking, has an emotional component attached to it. Sadness and grief are related to the lungs, and an excess of sadness or grief may weaken Lung Qi.

• **Flower essences** can be very helpful for treating emotional disturbances, and if your dog has problems with lung disease, especially if the problems are persistent or recurring, think about the possibility of sadness or grief as contributing factors. Consider flower essences whenever there is the potential for your dog to be sad or grieving, such as when a human member of the family leaves through divorce, or a four-footed companion who has lived with the family passes on.

When your dog seems to be grieving, try the flower essence remedies Star of Bethlehem, pine, and/or wild rose. If she seems to be extremely gloomy and utterly sad, try mustard or wild rose. If the sadness is the result of homesickness (from a recent move, for example) try honeysuckle and clematis. Walnut is an excellent remedy anytime there has been a transition in the family – a family member suddenly leaving, for example, or after moving from one house to another.

Flower essences can be used singly, or up to five remedies can be combined and used together. Remedies are typically diluted. Use several drops per ounce of spring water, and a few drops of this dilution can then be given orally, a few drops added to the dog's water, or the diluted solution can be placed in a misting bottle and spritzed over the dog's body. (See "Flower Power," March 1999, for more information about flower essence remedies.)

• **Homeopathic remedies**. There are literally dozens of homeopathic remedies that have been shown to be helpful for treating all sorts of respiratory illnesses, again depending on the symptoms observed. Examples include:

• For a dry, spasmodic cough: Belladonna, Bryonia, Stannum

• For coughing and difficult breathing: Arsenicum alb., Kali carb., Lycopodium, Phosphorous

• For asthmatic breathing: Apis, Sulphur, Lobelia inflata

• For cases of "heart cough": Naja, Prunus v., Spongia

Preventing and Treating Kennel Cough

Here are some of the best ways to prevent and treat that pesky (and sometimes serious) contagion, kennel cough.

By Denise Flaim

You're not likely to forget it if you've heard it even once: the half-cough, half-choke – sort of like a Canada goose in need of a Ricola lozenge – that signals your dog has come down with kennel cough.

As canine illnesses go, kennel cough has something of a split personality. Usually, it's "self-limiting," which means affected dogs generally recover without any interventions whatsoever, leaving the victim none the worse for wear. But every so often, a dog develops serious complica-

This puppy, a shelter ward, has the honking cough and runny nose that indicates kennel cough. The condition can be caused by viruses or bacteria, and can last from days to weeks

tions, necessitating hospitalization and extreme measures. Given that, plus the condition's highly contagious nature, means that most boarding facilities and even veterinarians sometimes treat it with the kind of alarm usually reserved for an ebola outbreak.

Kennel cough is a generic name for a group of pathogens that produce a contagious upper-respiratory infection in dogs. Sometimes referred to as bordetella (one of the bacteria that can cause it), kennel cough is also called canine infectious respiratory disease (CIRD) as well as canine infectious tracheobronchitis. The abundance of names reflects the fact that kennel cough is really a loosely defined confederacy of viruses as well as bacteria, any of which can produce a cough that lasts from several days to weeks – and sometimes much longer, if complications such as pneumonia arise.

Kennel cough is spread through respiratory secretions, and since few dogs have learned the kindergarten trick of sneezing into the inside of their elbows, it can spread widely and quickly. As its name suggests, places where large numbers of dogs congregate can be a hotbed for spreading the disease, from boarding kennels to dog runs. Most dogs show symptoms within three to 10 days of exposure. In addition to the trademark gagging cough, infected dogs may exhibit sneezing, nasal discharge, and mild lethargy. Healthy adult dogs generally don't otherwise act sick or stop eating, and likely will continue to play and be active, though physical exertion may trigger more hacking episodes.

In dogs who are very young, very old, highly stressed (for example, in a shelter), or immunocompromised, or who have an underlying condition, kennel cough can advance to the lower-respiratory tract and cause pneumonia, which is life threatening.

If this sounds like a wide range of symptoms, it may be because the illness actually is a range of illnesses, and caused by a variety of infectious organisms, bacterial and viral. (For the difference between kennel cough and canine influenza, as well as the newly identified circovirus, see sidebar.)

When she was a veterinary student more than 35 years ago, holistic veterinarian Christina Chambreau of Sparks, Maryland, did an externship at the National Institutes of Health's foxhound breeding colony.

"My job for the summer was to do throat cultures on every coughing dog – and lots of them were coughing," she remembers. "And every dog I cultured had a different combination of bacteria."

At the same time, Chambreau worked part-time at a number of different veterinary clinics. "Each one had a completely different conventional treatment protocol – one used Prednisone, another used antibiotics, another said, 'They'll just get better.' When you see multiple treatment protocols like that, it means none of them are ideal."

Is it any wonder this condition is called the kennel cough complex?

Getting a Noseful

For many conventional veterinarians, the reflexive answer to preventing kennel cough is to vaccinate for it.

Holistic veterinarian Marcie Fallek, who practices in both New York City and Fairfield, Connecticut, is not a fan of the vaccine, pointing out that it is

short-lived and may not be adequately protective, as there is no way to cover all the pathogens that can cause kennel cough.

"It seems to cause disease more than prevent it," she says, adding that facilities that insist on vaccinating new boarders on site are operating largely on reflex – and fear. And in reality, they aren't doing a thing to protect their other clients.

"It takes several days, if not a week, for the kennel cough vaccine to be effective," she explains. "So when you give it on the spot like that, it doesn't protect the other dogs. If it's going to give any protection, which is minimal, it's only going to be the animal that receives it."

Using this logic, some owners have persuaded boarding and day-care facilities to accept a signed waiver in lieu of a vaccine, agreeing not to hold them responsible should their dog contract the disease.

Veterinarian Jean Dodds of Garden Grove, California, says she "rarely" recommends vaccinating for kennel cough, because generally speaking kennel cough is "not a serious problem and the vaccines are not 100 percent efficacious." But if an owner does decide to vaccinate, she does not recommend using the injectable form; instead, she recommends the intranasal vaccine, which is squirted up the dog's nose, or the oral form, which is taken by mouth.

Intranasal vaccines for bordetella activate interferon, a pathogen-fighting protein, in the dog's body, an action that does not result from injectable forms of the vaccine. "The interferon also helps cross-protect against other respiratory organisms," says Dr. Dodds.

If you want to or need to vaccinate your dog for bordetella, it might make the most sense to ask your veterinarian for the intranasal bordetella vaccine that also contains a vaccine for CAV-2, a strain of canine adenovirus that affects the respiratory tract. A dog who is immunized against that form of adenovirus is also protected against the far more serious CAV-1, or infectious canine hepatitis, which can be life threatening. This might be unexpectedly welcome news to those who use minimal vaccination protocols that do not include canine hepatitis (including the popular one recommended by Dr. Dodds).

Dr. Dodds notes that, as with every vaccine, there are some dogs who react adversely to the kennel-cough vaccine, especially those with "a hypersensitivity-like response" in which the body responds to an immune challenge so severely that it can be life threatening. If your dog has had an adverse reaction to a kennel-cough vaccine, he should not be given any more of those vaccines for any reason.

For her part, Dr. Fallek recommends using a kennel-cough nosode, a homeopathic remedy that contains the energetic imprint of the disorder; while sometimes referred to as "homeopathic vaccines," nosodes work differently, rebalancing the body rather than prompting it to mount an immunological attack. "Kennel-cough nosodes are not 100 percent protective, but neither are vaccines," she points out. Dr. Fallek recommends that those who wish to use the nosode to protect a dog who will be in a high-risk environment start dosing the dog several days before the expected risk, giving the remedy once or twice a day with a 30C potency for a maximum of five days.

Building Your Dog's Immune System & Treatment Plans

By Denise Flain

When it comes to preventing kennel cough, the best defense is, well, a good defense.

"The bottom line is, the healthier you can get your dog, the better," Dr. Chambreau says. "You want to build the immune system so she fights it off herself."

The basic building blocks of good health are just that – basic. Make sure your dog receives the best-quality food and water possible. Avoid and limit

exposure to toxins. And pay attention to the early-warning signs that the body gives when it is beginning to weaken, but before disease manifests.

"These are little things your vet won't think are wrong," Dr. Chambreau says, including goopy discharge that accumulates in the corners of the eye, slight waxiness in the ears, a little red line in the gums, minor behavioral problems, and a slight overall odor that necessitates baths every couple of weeks. She recommends keeping a daily journal so you can see patterns in your dog's well-being emerge over time.

"Any holistic treatment that builds the immune system will usually take care of kennel cough," adds Dr. Chambreau, who is a staunch believer in what she calls "R&R" – a flower essence remedy called Rescue Remedy and reiki, a healing "life force energy" practice. "You take one course in how to do reiki, and you can start offering it to your dogs every day on a regular basis," says Dr. Chambreau. And while Rescue Remedy and flower essences in general won't cure kennel cough or any other disease, many dog owners report that these gentle plant distillations can center emotions and help alleviate anxiety or distress about kennel cough, as much for you as your dog!

Another thing you can add to your preventive toolbox is the thymus thump. During the early part of a dog's life, the thymus programs the T-cells that are so central to the functioning of the immune system. "By tapping the thymus, you reactivate it," Dr. Chambreau explains.

To find your dog's thymus, run your hand down her throat, and below the throat feel for the firm, bony protuberance that is the sternum. Gently thump that area with your hand several times a day, or whenever you remember.

Quite an array of supplements, herbs, and tonics are reputed to help strengthen the immune system; the most commonly cited include coconut oil, apple cider vinegar, aloe vera juice, and whole food supplements.

Melissa Oloff of Canterbury, Connecticut, keeps her Ridgeback Coco on an immune-boosting regimen of Vitamin C and probiotics daily, as well as an echinacea capsule several times a week. When the doggie daycare that Coco attends had an outbreak of kennel cough, Oloff increased the frequency of administering echinacea, giving her dog a dose every day during the week when Coco was exposed. "She was fine, no symptoms," Oloff says. "The kennel had to send home 50 percent of their dogs."

Treatment Plans

As Dr. Chambreau noted when she first began in veterinary medicine, conventional treatment for kennel cough varies, from simply keeping the dog quiet and avoiding drafts and strenuous exercise, to administering antibiotics (which are useless if the pathogen involved is a virus and not a bacterium). Some veterinarians may recommend a cough suppressant, but others, such as Dr. Fallek, contend that cough suppressants further weaken the immune system.

Dr. Fallek is trained in homeopathy, and she finds kennel cough relatively easy to treat with this energy-based modality. Though a dog's individual symptoms should be used to select the correct remedy, one that Dr. Fallek finds works in many cases is Bryonia, which is indicated for coughs that are made worse by movement.

Dr. Chambreau, who is also a homeopath, notes that kennel cough often can be stopped in its tracks if the homeopathic remedy Aconite is administered at the very beginning. "If you find there is a remedy that works for you [the dog owner], then you might use that," she says. "Often people and their animals need the same remedy."

When kennel cough is a concern in Dr. Dodd's facility (a canine blood bank, utilizing retired racing Greyhounds who are available for adoption!), Dr. Dodds brews a tea made of the herb mullein, which is used for calming the respiratory tract and treating lung ailments.

While mullein is not an endangered plant – the ultimate volunteer, it can get a roothold anywhere, including sidewalk cracks – some popular herbs are. Dr. Chambreau suggests substituting

marshmallow root for slippery elm, which is being overharvested because of the popularity of its medicinal bark. As a bonus, marshmallow is the gentler of the two, while still providing soothing relief to inflamed mucous membranes. For throat soothing, Dr. Chambreau suggests aloe vera and raw honey.

No matter what modality they use, Dr. Chambreau encourages owners to do their homework. No treatment is without its risks, and working with a trained practitioner is the best way to ensure that your healing intentions come to fruition.

The Holistic Toolbox for Treating Kennel Cough

I've had dogs for most of my adult life, and I've dealt with kennel cough more times than I can count – though less and less as the years go by and I learn how to rear dogs with immune systems that can shrug it off. Like anything, how we choose to protect and treat our dogs is an evolution and a journey. Here's where mine has taken me.

Early on in my life with dogs, I vaccinated for kennel cough. Until, that is, one of my fully vaccinated dogs picked it up at a show. Despite being put on antibiotics, he developed pneumonia, and though he recovered, his hospitalization left me with a whopper of a vet bill. I drew two conclusions from that experience: One, I needed pet insurance. And, two, maybe the vaccine wasn't all it was cracked up to be.

From that point on, I didn't vaccinate for kennel cough (along with a lot of other things, but that's a different story). I found that my young dogs tended to develop the most severe symptoms when they first encountered kennel cough, usually at a dog show. By contrast, my oldsters, with their wise and still vibrant immune systems, didn't even sniffle.

After some trial and error, I came across what has become my go-to modality any time I hear that telltale hacking: the homeopathic remedy Drosera. Any time I administer it, the coughing stops in its tracks, and asymptomatic dogs in the household stay that way.

That said, I've talked to holistically minded folks who have had zero success with Drosera. One homeopath told me it has never worked for her, even though it is considered a potential remedy for kennel cough. Perhaps there is just something about me and my home that dovetails with Drosera energetically. Whatever it is, it has never failed me –with one exception.

Several months ago, I had a litter of puppies that was off to a shaky start. The dam had a Caesarian section, and the litter was less than half the size of a typical one for my girls: only four puppies, one of which faded hours after she was born. Less than a week later, Cocoa started hacking: It was kennel cough, picked up in those few hours at the vet's office.

Trusty Drosera to the rescue: I dosed Cocoa, and her coughing stopped within hours. I dosed her babies, too, and, because I had never had puppies this young exposed to kennel cough – and none of my mentors or fellow breeders had, either – I started them on antibiotics.

(I feel a little self-conscious and even defensive about admitting here that I used antibiotics prophylactically, even though I believe the decision to have been a correct, potentially even life-saving one; the small litter size and fading puppy suggested to me the possibility of a low-grade infection. But it says something about how militant "holistic medicine" enthusiasts can be when a conventional modality is chosen as a first course of action; sometimes we fall into the same reflexive judging that we complain about with an allopathic approach! And that's not "wholism.")

Several days later, the large male (who was so big and vigorous that we had dubbed him "Chubsy") began making odd noises, which got worse if he moved around. Despite all my precautions, he had contracted kennel cough, and the noise I was

hearing – sort of a snore, really – was a "stertor," caused by a partial obstruction of the airway above the larynx. Thankfully, Chubsy was still active and eating, and a quick vet visit showed his lungs to be clear. I consulted my copy of Boericke's materia medica (a homeopathic encyclopedia) for other remedies that might help him fight off the kennel cough. But he didn't improve.

After several days, I decided to switch to another modality I was comfortable with, essential oils, which shouldn't be used in conjunction with homeopathic remedies because they antidote them.

I have had success staving off colds with Thieves Essential Oil. A proprietary blend of therapeutic-grade oils from Young Living, it's named for the four grave-robbers of medieval legend who avoided contracting the plague from the cadavers they pilfered by swathing themselves in oils (that turn out to have antimicrobial properties). The oil is a wonderful immune booster; when colds and viruses make their wintertime rounds, I do family foot rubs of Thieves diluted in almond oil to keep us sniffle-free.

Mindful that essential oils can be very powerful, I used a diffuser to disperse the oil in the puppies' room, for short periods several times a day. I watched the puppies and their mother closely for any negative reactions.

To the contrary: Chubsy improved almost immediately, and within a few days, all signs of the infection – including that sleep-anea-like stertor – had disappeared.

Thanks to that experience, I have another addition to my toolbox if kennel cough crosses my dogs' paths again.

Remedies for Kennel Cough

Natural, gentle remedies to prevent or treat kennel cough.

By CJ Puotinen

Anyone who's heard it will recognize the dry, hacking, something's-stuck-in-my-throat cough that won't quit. It's the signature symptom of canine infectious tracheobronchitis, also known as Bordetellosis, Bordetella, and most commonly as kennel cough. Whatever you call it, tracheobronchitis is one of the world's most widespread canine diseases.

Like the common cold in humans, tracheobronchitis is highly contagious, rarely fatal, and runs its course in a few days. Fortunately, there are several ways to help make canine patients more comfortable, speed recovery, and prevent future infections.

Tracheobronchitis is called kennel cough because of its association with boarding kennels, animal shelters, veterinary waiting rooms, grooming salons, and other areas where dogs congregate in close quarters. It can strike dogs of any age but is most common in puppies, whose immune systems are still developing, and adult dogs with conditions that impair immune function.

Although often referred to as Bordetella, tracheobronchitis isn't caused by Bordetella bronchiseptica bacteria alone. Several infectious agents contribute to the condition, primarily parainfluenza. Other viruses that may be involved include canine adenovirus, reovirus, and the canine herpes virus.

When Bordetella and parainfluenza combine to cause tracheobronchitis, symptoms appear within a week of exposure (usually after three to four days) and continue for about 10 days. Even after symptoms disappear, the recovering patient

Shelters and kennels are infamous for spreading the viruses and bacteria that can cause "kennel cough." However, outbreaks are not necessarily due to poor disinfection practices. Stress and crowding can make a dog's immune system vulnerable to this infection, which is much like the common cold in humans.

remains contagious, shedding Bordetella bacteria for up to 14 weeks.

In mild cases, infected dogs remain active and alert, with good appetite. In more severe cases, symptoms may progress toward pneumonia and include lethargy, fever, and a loss of appetite.

The main symptom of tracheobronchitis – its cough – has been described as unproductive, throat-clearing, goose-honking, hacking, dry, harsh, gut-wrenching, gagging, wheezing, and croup-like – not to mention annoying to the dogs who can't stop coughing and the humans they live with. Vigorous exercise triggers it, but even resting dogs may cough every few minutes throughout the day.

The cough is caused by irritation and damage to the lining of the trachea and upper bronchi. In the trachea, exposed nerve endings are aggravated by the passage of air over damaged tissue as the dog inhales and exhales.

Just as the virus that causes the common cold is carried by water vapor, dust, and air, the bacteria and viruses that cause tracheobronchitis spread in all directions. When inhaled by a susceptible dog, they attach to the lining of upper airway passages whose warm, moist conditions allow them to reproduce and eventually damage the cells they infect.

Risk factors

Some people catch frequent colds and others never get sick. Some dogs are susceptible to tracheobronchitis and others never get it, even after repeated exposure.

According to Wendy C. Brooks, DVM, Educational Director of VeterinaryPartner.com, "The normal respiratory tract has substantial safeguards against invading infectious agents. The most

What you can do . . .

- Watch for symptoms of tracheobronchitis in puppies, recently rescued dogs, and dogs under stress.
- Soothe a coughing dog's sore throat with honey, herbal teas, or cough preparations.
- Keep track of your dog's symptoms in case they worsen or last longer than 10 days.
- Have natural preventives, treatments, and immune-boosters on hand to help prevent or treat the illness.

important of these is probably what is called the mucocillary escalator."

Cilia are tiny hairlike structures that protrude from the cells that line the respiratory tract. They are covered with a protective coat of mucus, and they beat in a coordinated fashion. As viruses, bacteria, and other debris become trapped in the sticky mucus, the cilia move everything up (hence the escalator analogy) toward the throat, where it can be coughed up or swallowed.

Conditions that damage the mucocillary escalator include shipping stress, crowding stress, heavy dust exposure, exposure to cigarette smoke, viruses, and poor ventilation. "Without this protective mechanism," says Dr. Brooks, "invading bacteria, especially Bordetella bronchiseptica, may simply march down the airways unimpeded."

Poorly ventilated, crowded conditions increase the odds of contracting tracheobronchitis, but dogs can catch the disease almost anywhere. All they need is exposure to a dog who has an active infection or is recovering from one – or to the viruses and bacteria an infected dog left behind.

Treatment

Most veterinarians treat tracheobronchitis the way physicians treat the common cold. They let it run its course while keeping the patient comfortable. Some veterinarians routinely prescribe antibiotics, which are effective against bacteria, thus addressing part of the infection. But because antibiotics have no effect on viruses, this treatment is not a cure, and most vets save antibiotics for more serious conditions, such as the secondary infections that sometimes develop in dogs with tracheobronchitis.

For partial relief of symptoms and to help the dog feel more comfortable, minor cases are often treated with nonprescription cough remedies such as Robitussin (dextromethorphan). Recommended for chronic, dry, unproductive coughing, Robitussin should not be used for moist or productive coughs. Products that contain acetaminophen or caffeine should not be given to dogs.

Prescription cough suppressants and most antibiotics are reserved for cases in which a fever develops, symptoms last longer than a few days, or the cough becomes more severe.

It might be something else

Tracheobronchitis usually clears up on its own without complications. If it doesn't, there may be a secondary bacterial infection (such as pneumonia), or the problem may be due to something entirely else entirely. Dogs cough for many reasons.

For example, dogs can create their own tracheal irritation by pulling on the leash. A body harness with a leash attachment in front of the chest or on the back instead of the collar can prevent this cough-inducing problem.

Dogs with heart disease, including congestive heart failure and heartworm infestations, often cough after exercise or excitement. Heartworm disease is endemic in some parts of the country, and less common in others, but is a possibility in any area where mosquitoes are common. Congestive heart failure, which occurs when the heart's valves leak, is most common in middle-aged or older dogs, including small breeds.

Coughs due to tracheal collapse can be triggered by drinking water.

Diseases of the larynx or esophagus can cause coughing after eating. A damaged larynx may not close properly, allowing swallowed food to enter the trachea. Paralysis of the larynx is more common in large breed dogs.

An abnormally dilated esophagus may allow food to pool, then pass back up to the mouth and down into the lungs, causing infection and coughing. Tracheal collapse is most common in middle-aged and older, overweight small-breed dogs.

The cough resulting from tracheobronchitis is usually dry. A moist cough sounds that way because of accumulated fluid in the lungs or airways. The fluid can be water, blood, or pus. Hunting dogs and dogs who spend most of their time outdoors may inhale seeds, pollen, grasses, or other foreign matter that travels through the nose to the lung, causing pyothorax, an infection that produces a large amount of pus.

Dogs of any age can develop allergic lung disease from exposure to dust, pollen, or smoke.

While lung cancer is unusual in dogs, it too can cause coughing. Short-nosed breeds exposed to second-hand smoke and any dog exposed to asbestos may be at risk.

Pneumonia and other secondary bacterial infections can develop in pet store puppies with tracheobronchitis and in older dogs with weak immune systems or other illnesses.

Any dog who doesn't recover quickly from what appears to be tracheobronchitis should receive a thorough veterinary exam. To help your veterinarian reach an accurate diagnosis, keep track of your dog's symptoms, noting on a calendar or notebook the date of each symptom and its description.

It's not the flu

Three years ago, canine flu seemed to be an epidemic affecting dogs of every description.

The cough produced by the canine flu virus is soft and moist, and it's usually accompanied by a high fever and nasal discharge, none of which are symptoms of tracheobronchitis.

Fortunately, of the strategies that help prevent and treat tracheobronchitis work for canine flu as well as other infectious diseases. The herbs, supplements, and treatments described here can help your dog stay healthy when exposed to many different viruses and bacteria.

Vaccination

Most boarding facilities require proof of Bordetella vaccination for dogs who will be visiting. However, because there are many strains of Bordetella, and because no vaccine protects every patient, some immunized dogs contract tracheobronchitis despite being vaccinated. Veterinary recommendations range from vaccinating every four months to not at all.

"There are two kinds of Bordetella vaccine," says Stacey Hershman, DVM, a holistic veterinarian in Hastings-on-Hudson, New York. "The intranasal vaccine is highly effective and very safe since it is not systemic but goes down the nose into the throat. I do not recommend the injectable vaccine since it can cause negative side effects like lethargy, fever, vomiting, or diarrhea.

"I never vaccinate animals more than once a year for kennel cough, and then only if they are going to a boarding kennel. Kennel cough is not fatal in adult dogs, who usually board, therefore it would be over-vaccinating in my opinion to do it more than once a year. Healthy, strong immune systems are resistant and do not catch it, which is another reason not to vaccinate unless the dog is going to a kennel that requires it."

No matter what your dog's vaccination status, a few natural preventives can't hurt, especially whenever your dog is exposed to dogs with active or recent infections.

Honey and coconut oil

The single treatment for tracheobronchitis that conventional veterinarians, holistic vets, and

Honey and coconut oil are powerful health-boosters for you and your dog. They are also inexpensive and easy to find in your local health food store.

caregivers of every description agree on is honey. Honey soothes the throat, but it does far more than that.

As noted in the article "A Honey of a Cure", all honey has disinfecting properties. One of the most expensive honeys sold in the United States and around the world is manuka honey from New Zealand, where bees harvest nectar from the manuka bush (Leptospermum scoparium). Twenty years of research at the University of Waikato show that manuka honey has impressive antibacterial, antimicrobial, antiviral, antiseptic, anti-inflammatory, and antifungal properties. While all honeys share these properties, they are especially pronounced in manuka honey.

Most dogs enjoy honey's sweet taste, so it's easy to feed from a spoon or, if the honey is thick, you can roll it into a treat-sized ball. Honey can be fed by itself, mixed with powdered herbs for additional benefit, or added to herbal teas that double as cough syrups.

There is no specific recommended dose, as both larger and smaller doses are safe and effective, but for most dogs ½ to 1 teaspoon of honey three or four times per day works well.

In recent years, coconut oil has become a popular supplement for people and pets. Because its medium-chain fatty acids kill harmful bacteria, viruses, yeast, fungi, and parasites, its advocates call it an all-purpose infection fighter. As coconut oil expert and book author Bruce Fife, ND, explains, "Taking coconut oil daily is like a daily inoculation. It will help prevent your dog from becoming infected."

The recommended maintenance dose is 1 teaspoon coconut oil per 10 pounds of body weight per day in divided doses, always starting with smaller amounts and increasing gradually. When your dog has been exposed to tracheobronchitis or any other infection, the dose can be doubled. The only adverse effects of a too-high dose of coconut oil are loose, greasy stools and a temporary feeling of fatigue (thought to result from detoxification). Most dogs adjust easily to a coconut oil regimen, and because they're usually fond of the taste, coconut oil can be fed from a spoon or added to your dog's food.

Honey and coconut oil work well together. Combine these two infection fighters for both the treatment and prevention of tracheobronchitis and other contagious diseases.

Herbs for tracheobronchitis

Most natural foods markets and pet supply stores sell herbal products that help coughing dogs.

Licorice (Glycyrrhiza glabra or G. uralensis) is a favorite of herbalist Juliette de Bairacli Levy. In her book, The Complete Herbal Handbook for the Dog and Cat, which describes her "Natural Rearing" approach to pet care, Levy recommends making a strong infusion (steeped tea) by combining 1 tablespoon dried licorice root with 2 cups cold water, bringing it to a boil, removing it from heat, and letting it stand until room temperature. Add 1 teaspoon honey to each tablespoon of licorice tea and give 2 tablespoons to the dog before meals. Small dogs and puppies can take less and large dogs more, but precise measurements aren't necessary. Refrigerate leftover tea for up to five days.

Levy also recommends as cough remedies teas made of sage leaves (Salvia officinalis), blackberry leaves (Rubus spp.), elder blossom (Sambucus nigra), and thyme (Thymus vulgaris). "Sage is the best," she writes.

Apitherapy Honey Wild Cherry Bark Syrup from Honey Gardens in Vermont, sold in natural foods markets, contains raw honey, apple cider vinegar, wild cherry bark (Prunus virginiana or P. serotina), elecampane root (Inula helenium), propolis (a bee product), rosehips (Rosa spp.), ginger root (Zingiber officinale), licorice root, slippery elm bark (Ulmus fulva), and the essential oils of lemon, peppermint, and eucalyptus.

All of these ingredients are traditionally used to support upper respiratory health and soothe sore throats. The human adult dose is 1 teaspoon every other hour while symptoms persist. Adjust the dose for your dog's weight, and to make the

product more palatable, try mixing it with honey and/or coconut oil or add it to a small amount of interesting food.

Kennel-Koff, an herbal product from Amber Technology, contains infection-fighting olive leaf (Olea Europaea), mustard seed (Brassica spp.), black seed (Nigella sativa), and pau d'arco (Tabebuia impetiginosa).

Described as an antimicrobial that aids upper respiratory infections, Kennel-Koff is given orally four times per day for up to 10 days. The recommended dose for most dogs, based on weight, is 15 drops at a time. According to the manufacturer, this product is designed to stimulate immunity, rid the lungs of congestion, kill viruses and bacteria, soothe digestion, rid the body of free radicals, and protect pets who are exposed to illness.

Australian herbalist Robert McDowell's favorite treatment for tracheobronchitis is a blend of rosehips, garlic (Allium sativum), fenugreek (Trigonella fornum), marshmallow, elecampane, coltsfoot (Tussilago farfara), kelp (Laminaria digitata), yarrow (Achillea millefolium), and mullein (Verbascum thapsus), which he makes in a base of apple cider vinegar.

"All this sounds like a lot," he says, "but the old-fashioned way of treating chest and respiratory infections works well. These herbs provide important minerals and vitamin C, and they act as healing tonics, expectorants, and lymphatic supplements. The result is an herbal mix that gets rid of the cough, and by continuing for several weeks after the cough has gone, it builds up the immunity. I recommend that it be kept on hand and given to the whole kennel at any signs of cough showing up, at which time all dogs should be given a short course. One dog recovered quickly when given this blend after six prescriptions for antibiotics failed."

Juliette de Baircli Levy's famous Natural Rearing (NR) Herbal Compounds tablets contain garlic, rue (Ruta graveolens), sage, thyme, eucalyptus (Eucalyptus globulus), wormwood (Artemisia absinthium), and vegetable charcoal.

Faith Thanas' Doberman, Sasha, was a Katrina dog. After being shipped in a van with about 20 other rescued dogs, she developed a severe cough. Thanas, an aromatherapist, developed Cough Drop! to treat Sasha's cough.

Levy recommends giving dogs 3 to 6 tablets daily to help fight and prevent disease. "These tablets maintain health and promote a cure in the sick," she explains. "Use them daily for prevention, especially before and after your animal is exposed to any public place where other animals have been."

Holistic health consultant Marina Zacharias recommends Bioprin, a Chinese blend of 21 herbs.

"This formula is the best for any type of viral infection," she says, "as well as helping the overall immune system, and it acts like a natural anti-inflammatory. Combined with the kennel cough nosode (a homeopathic remedy designed to help increase the body's defense against the infection),

Bioprin usually brings quick relief, often within one to three days.

"Most of the people I work with have multiple-dog households, so we give the remedies to everyone preventatively whenever we know there has been exposure or when one of the household members has contracted the infection. The results are great as no one else in the house gets sick."

Clearing the air

When Faith Thanas, an aromatherapist who lives in Leicester, Massachusetts, adopted a Doberman Pinscher from Louisiana one year after Hurricane Katrina, Sasha arrived in a van carrying 20 rescued dogs. A few days later, she started coughing.

To help soothe Sasha's throat, Thanas mixed a blend of essential oils to spray in the air around the dog. She started with Ravensare (Cinnamonum camphora), one of the "must have" essential oils listed by Kristen Leigh Bell in her book Holistic Aromatherapy for Animals. As Bell explains, this gentle and tolerable antiviral, antibacterial essential oil supports the immune system and has tonifying effects.

Thanas then added Eucalyptus radiata, the gentlest of the many eucalyptus varieties available. It is known for its antiviral, anti-inflammatory, and expectorant properties. Bell writes, "Due to its gentleness, it is very appropriate for use in blends for animals for congestion, and it makes an excellent room air cleaner, deodorizer, and flea repellent."

Eucalyptus globulus, the next ingredient, is the eucalyptus commonly found in chest rubs, cough drops, and cough syrups. It has a fresh antiseptic fragrance and, when inhaled, acts as a decongestant.

Thanas added Spike Lavender (Lavendula latifolia) for its powerful antibacterial properties.

After diluting the essential oils, Thanas used a spray bottle to mist the air around Sasha. "The results were instantaneous," she recalls. "She stopped coughing, she was able to breathe, and she was so much more comfortable."

Thanas wasted no time adding Cough Drop! to her AromaDog line of aromatherapy pet products. She describes it as an all-natural cough suppressant that works quickly, helps open breathing passages, acts as an expectorant (antitussive), soothes the chest and respiratory system (balsamic), reduces swelling (antihistamine), helps reduce excess mucus secretion (anticatarrh), and acts as an immune system stimulant.

"The bottle should be shaken well for at least three seconds before use," she says." Repeat the application every three hours. In households with other animals, or in boarding kennels, spraying the air, bedding, and other surfaces can help keep the illness from spreading."

Another way to disperse essential oils into the air is with a diffuser. Aromatherapy supply companies, such as Aromatherapeutix, sell different models. A nebulizing diffuser consists of a nebulizer (glass receptacle) attached to the hose of a small air compressor. Drops of essential oil placed in the nebulizer are atomized into tiny droplets that are sprayed into the air.

Bell notes that disinfecting essential oils dispersed by a nebulizing diffuser effectively clean the air, deodorize the room, and help clear up and prevent contagious illnesses.

A new type of ultrasonic cold mist diffuser runs silently (unlike nebulizing diffusers with their noisy air compressors) and can be set for constant or intermittent dispersal. To use, simply fill the unit with water, add a few drops of essential oil, and turn it on. Buttons on the unit control the frequency and duration of misting. Simpler models, such as the SpaMist diffuser, run constantly. Ultrasonic diffusers have become popular accessories for aromatherapists and those who use essential oils.

Any blend of disinfecting essential oils, such as Ravensare, Eucalyptus radiata, or Spike Lavender, can be dispersed into the air with a diffuser.

Canine nutritional consultant Linda Arndt has a favorite remedy for clearing the air and helping dogs recover from and avoid respiratory infec-

tions. The Nzymes product Ox-E-Drops (not to be confused with Oxy Drops, an eye drop from a different manufacturer) contains sodium clorite, which breaks down to form chlorine dioxide, a microbiocide.

To use in a warm steam vaporizer (an inexpensive appliance sold in pharmacies), mix 1 teaspoon Ox-E-Drops Concentrate with one gallon of water. For severe cases, use up to 1 tablespoon. In a small bathroom, other enclosed room, or in a crate covered by a sheet, direct the vapors toward the dog's head, keeping the vaporizer far enough away so that its hot steam doesn't pose a safety hazard.

"Allow your pet to breathe the vapors for 15 to 20 minutes each hour for four to five hours," says Arndt. "Repeat the procedure for two to three days until symptoms improve."

It's in the water

Ox-E-drops can be added to drinking water as well as spayed in the air. "Use 1 drop per 20 pounds of body weight, diluted in 1 to 3 teaspoons of water," says Arndt, "and give this amount three times per day for all types of illness or respiratory problems."

Faith Thanas at AromaDog created Lickity Spritzer, a blend of colloidal silver and lemon balm (Melissa officinalis) hydrosol, to help keep dogs healthy while traveling as well as at home. Colloidal silver, a suspension of submicroscopic metallic silver particles in a colloidal base, is promoted as an all-purpose disinfectant and infection-fighter. In her book Hydrosols: The Next Aromatherapy, Suzanne Catty writes that the hydrosol (distilled flower water) of lemon balm makes a good prophylactic in flu and allergy season and has both immune-stimulating and infection-fighting properties.

"Together," says Thanas, "these two super-power ingredients knock out the potential for infection from bacteria, fungi, and viruses, stimulating the immune system and emotionally calming your pet. Lickity Spritzer purifies your pet's yucky water bowl so it becomes a clean source of good health. This product is great for dogs or cats and multiple pet households."

Special supplements

According to San Diego veterinarian Stephen R. Blake, DVM, the most important defense against any infection, whether fungal, viral, or bacterial, is the gastrointestinal system.

Dr. Blake's favorite supplement for immune support is bovine colostrum from New Zealand, where all cattle are pasture-fed and organically raised. Colostrum is the "first milk" a cow produces after giving birth, and it contains all the immune support a calf needs to avoid infection. Cows produce colostrum in greater quantities than their calves can consume, so the excess is collected for supplement use.

"I recommend a dose of 500 mg colostrum per 25 pounds of body weight once or twice a day, depending on the dog's risk factor," says Dr. Blake.

Other supplements that support the gastrointestinal tract include probiotics, such as Lactobacillus acidophilus and other "friendly" or "beneficial" bacteria, which help make up the body's first line of defense against viruses and other pathogens.

Probiotics are especially important for dogs who have been treated with antibiotics, as antibiotics destroy these beneficial microbes. Several probiotic supplements have been developed for dogs and are sold in pet supply stores or veterinary clinics. And don't neglect vitamin C. Consider giving your dog 500 mg vitamin C three times per day, or half that amount for small dogs, in addition to the animal's usual supplements for as long as the infection lasts.

The best defense

Controlling your dog's exposure to other animals is one way to help prevent tracheobronchitis, canine flu, and other contagious diseases. Another is to disinfect the air and surfaces around her.

These are commonsense precautions. But your dog's best defense against infection is a strong immune system, which you can boost with nutrition, exercise, and supplements like those mentioned here. And if your dog ever contracts a respiratory infection, you'll know how to use simple remedies to turn it around in record time.

Vaccine Titer Tests

These blood tests are the best way to determine whether your puppy or dog is protected against common infectious diseases.

By Nancy Kerns

It's always been interesting to me that few people know why young puppies have to be vaccinated several times, a few weeks apart – and yet, few question the practice. There's a term for it: puppy shots! The concept is widely accepted – and rarely explained. In my experience, when people ask why a puppy needs repeated vaccinations, they are told something vague and inaccurate, such as, "It takes a few shots to build the puppy's immunity."

The use of vaccine titer tests can help you decide whether or not your puppy is completely protected from disease after her "puppy shots," or if your adult dog really needs any more core vaccines. It's a similar situation with annual or semi-annual so-called vaccine "boosters" – not many people know much about their dogs' vaccination status, so they take their veterinarians' word that their dogs are "due" for more vaccinations.

The truth is, there is no single vaccination protocol that will protect all dogs for all things, without over-vaccinating most of them. Vaccination really ought to be determined on a case-by-case basis, because each dog's risk factors are unique, based on his age, genetic inheritance, current health, geographic location, and lifestyle.

That said, there is a very useful tool that can help an owner gain solid information about whether her dog is likely to be protected against the most common infectious diseases: the vaccine titer test. Positive test results can also give a dog owner some solid ammunition for countering those who blindly promote (or require, in the case of some boarding or training facilities) so-called "current" vaccinations, which can mean many different things to different people.

The use of vaccine titer tests can help you decide whether or not your puppy is completely protected from disease after her "puppy shots," or if your adult dog really needs any more core vaccines.

Core Vaccines

The closest thing that there is to a universal list of recommendations for canine vaccinations in North America is produced by the American Animal Hospital Association (AAHA). The veterinary medical experts who have contributed to the AAHA's recommendations agree that there are a handful of infectious diseases that pose a threat to all dogs and that all dogs should receive vaccinations for those diseases; these are commonly referred to as the "core" vaccines.

Core vaccines include:

- Canine distemper virus (CDV, commonly referred to as **distemper**)
- Canine parvovirus (CPV, **parvo**)
- Canine adenovirus (CAV, better known as **canine hepatitis**)
- **Rabies**

Among healthy dogs, the first three "core" vaccines are expected to induce a protective immune response lasting at least five years. However, much longer protection from these vaccines has been demonstrated in dogs in many studies – sometimes, even as long as the dogs' lifetime.

Rabies is a slightly different case. Because the disease poses a significant risk to human beings, it's the only vaccine that is required by law to be administered to dogs. Each state has its own legal requirements for rabies vaccination. Some require annual rabies vaccinations; the rest require the vaccination be given every two or three years (depending on the state). There is ample evidence that rabies vaccines confer protection from rabies for longer than three years, but given the public health risk to humans, there is considerable push-back from public health officials to the idea of extending the legal requirement for rabies vaccines.

Noncore Vaccines

There are also a number of vaccines for infectious diseases that can pose a risk to some dogs, depending on individual risk factors and geographic location. These are called the **"noncore" vaccines**, and they include:

- *Bordetella bronchiseptica* (Bb, **kennel cough**)
- *Borrelia burgdorferi* (**Lyme disease**)
- Canine **coronavirus**
- Canine **parainfluenza** virus (CPiV, parainfluenza)
- Leptospira spp. (**leptospirosis**)
- **Measles** virus

Most of these vaccines are useful in certain circumstances, but the evidence falls short of proving that they are helpful to all dogs everywhere. Further, there is proof that some of the noncore vaccines can be harmful to certain dogs. For these reasons, the AAHA recommends that the administration of these vaccines should be decided on an individual basis by a veterinarian familiar with the puppy or dog and the local risks.

As just one example, Lyme disease is prevalent in some parts of the country, and quite rare in others, and it is transmitted by tick bites. Also, some dogs can suffer serious side effects from the vaccine. So if a dog lives in a part of the country where Lyme is not common, and/or if you have a dog who has very little exposure to environments where ticks are likely, the risks of vaccinating that dog for Lyme outweigh the potential benefit.

A Test of Protection

Let's go back to the diseases that every dog should be protected from; these are the ones that are most likely to appear on the reminder postcards sent out by your veterinarian – and the ones that you will experience the most pressure (from your veterinarian's staff) to repeat in order to keep "current." Depending on your vet, "current" may be defined as annually, every three years, every five years, or longer. As little as 20 years ago, it was widely thought that annual vaccinations "couldn't hurt, and might help," and most veterinary practitioners recommended that their clients vaccinate every dog annually. But today, we understand that canine vaccines don't "wear off" or "become due" in any standard amount of time. Also, it's better understood today that randomly stimulating the immune system can have negative consequences that we don't fully understand, so we should be more discriminating about vaccinations.

Let's put a fine point on it: The core vaccines are an important and life-saving component of responsible dog care when administered properly – neither too frequently nor inadequately. Which brings us back to the original question: How do you know when your dog is protected – or unprotected – against the core diseases?

The best tool at our disposal today is something called a vaccine titer test, and in our opinion, every dog should be tested at least once, and again every three years or so.

When we vaccinate a dog, we administer disease antigens (in a weakened, modified, or killed form that can't cause disease) in order to stimulate the dog's immune system to produce antibodies,

molecules that are produced to recognize and neutralize that specific antigen, should they ever cross paths. A vaccine titer test checks for and quantifies the amount of antibodies to specific diseases that a dog has circulating in his blood.

The technology exists to detect any specific antibody for which we may have vaccinated a dog; we can test whether a dog possesses circulating antibodies for any disease. But as it turns out, that's not necessary.

There are two types of antibodies that are highly predictive of the competence of a dog's overall immune response to vaccines: distemper and parvo. If a dog has been vaccinated against distemper and parvo, and develops antibodies to these diseases, the odds are very good that he has developed antibodies for any other core disease for which he has been vaccinated.

In other words, a positive vaccine titer test for parvo and distemper can put your mind at ease – and should put your veterinarian's mind at ease – that your dog is adequately immunized against the core disease vaccinations he has received.

The AAHA – and vaccine-savvy veterinarians – recommend that puppies receive a vaccine titer test about two weeks after they have been given their final puppy core vaccinations (which should occur when the puppy is about 14 to 16 weeks old). Again, a positive result for both distemper and parvo antibodies indicates that the puppy is properly immunized. The AAHA's recommendation is that adult dogs are tested about every three years, to ensure that they still possess circulating antibodies for the core diseases.

Negative Results

What about when vaccine titer tests come back negative for distemper and/or parvo antibodies? The significance of this result depends on a few factors, including the dog's age and vaccination status, and the vaccine used.

If the test was for a puppy who recently completed a series of core vaccines, he should be revaccinated promptly, and then a titer test run again about three weeks later. The most likely explanation is that something called "maternally derived antibodies" (MDA,antibodies he received via colostrum from his mother) were still active in his bloodstream when the vaccines were given, and they neutralized the antigens present in the vaccines.

Maternal antibodies don't last forever, however; they "fade" at an unpredictable rate. The maternal antibodies can fade quickly (or may be absent) if a pup's mother was unvaccinated, or he received very little or no colostrum from his mother. If his mother had an unusually high antibody titer herself (the highest levels result from surviving an infection with the disease itself), her pups' MDAs might take longer than usual to fade. This would render all of the puppy's early vaccinations useless; only vaccinations given after the MDA faded would stimulate the puppy's own antibody production.

However, if the puppy was undoubtedly more than 20 weeks old when he was vaccinated the final time, and his vaccine antibody titer test results (from a sample taken three weeks after the last vaccination) were still negative, it could indicate that he was a "non-responder" – a dog who could not be properly immunized.

It's been estimated that 1 in 1,000 dogs are not able to respond to the canine parvovirus vaccine; those dogs will be at a lifetime risk of contracting the disease (though the risk if greater when they are puppies; adults are more likely to pull through with prompt and dedicated care). Far more rare are dogs who cannot respond properly to the distemper vaccine antigen; this is estimated to occur in about 1 in 10,000 dogs.

The third possibility for the dog's failure to produce antibodies in response to vaccination: bad or improperly stored vaccine. In this case, a different vaccine should be used, and the dog re-tested a few weeks later. According to the AAHA guidelines, "If, after one or more attempts at revaccination with a product different than the one originally used, the dog fails to develop an antibody response" to distemper or parvo vaccines, the dog should be considered a nonresponder.

Canine vaccine experts agree that if a dog previously had a positive antibody titer for both distemper and parvo, and upon later titer testing is negative for one or both antibodies, he should be revaccinated with the core vaccines, and another titer test should be ordered about three weeks later.

There are people who disagree, however. The antibodies may no longer be in circulation, but if they had been present earlier in the dog's life, the dog should have immune memory cells – that we can't detect with lab tests – which should, if a dog is exposed to the disease antigen, recognize the antigen and re-start production of the appropriate antibodies.

It's a valid theory . . . but the most-respected small-animal vaccine expert in the country, Ronald D. Schultz, PhD, of the University of Wisconsin-Madison, disavows the wisdom of the practice. Dr. Schultz has studied animal vaccines for decades, and as a consultant and researcher, has helped develop many of the ones on the market. "You have to consider a dog who has no detectable antibodies against disease to be unprotected for that disease," he says firmly. "I would revaccinate the dog. The risks of contracting the disease are far greater than the risk posed by vaccines – particularly in a very infrequently vaccinated animal."

Caveats

I can tell you from personal experience that it can be difficult to be the first in your veterinarian's practice to ask for a vaccine titer test in lieu of automatic revaccinating. The staff may not understand which test to order; a practice manager once told me it would cost $500 – $1000 for a test of each vaccine in the combination shot the vet wanted to give my dog Otto. I actually helped them find and order the appropriate test from their laboratory catalog, and switched veterinarians shortly afterward.

During my second visit to the next veterinary clinic I tried, one of the practice owners spent 20 minutes arguing with me about the value of titer tests. "There is no way to know what titer numbers are protective," she stated, and added that "even dogs with positive titers can contract disease."

Those statements are both technically true – but it's very, very rare for a dog who has any circulating antibodies to a disease to become infected with that disease upon exposure. Practitioners who make statements like this are unlikely to add the corollary to this – that dogs who do not have detectable antibodies to a specific disease may be able to fend off a challenge (exposure) to that disease, again, thanks to as-yet immeasurable "cell-mediated immunity."

I want a collaborative professional relationship with my dogs' veterinarian. If we have very different opinions about something as basic as vaccination, the chances are we will butt heads over other treatments, too. I advise looking for a new doctor to work with if your vet is resistant to running a titer test in lieu of needless and potentially harmful overvaccination. In my experience, veterinarians who are either under 40 or interested in holistic medicine (or both) will readily and with professional curiosity order a titer test for your dog.

Ordering Vaccine Titer Tests & a Tale of Two Shelter Dogs and Vaccination

By Nancy Kerns

The veterinary medical laboratories that provide vaccine titer tests all offer a combined canine distemper/parvo vaccine titer test that is less than the cost of running two separate tests. The price you pay will vary, depending on which lab your vet uses and how much your vet charges for taking a blood sample for your dog and sending it to a lab; your veterinarian may also mark up the cost of the test.

The labs operated by veterinary vaccine experts

Jean Dodds, DVM (Hemopet) and Ronald Schultz, PhD (Dr. R.D. Shultz Laboratory at the University of Wisconsin-Madison) charge a flat fee for the tests, but you still have to pay your veterinarian for taking and shipping the blood sample. Dr. Shultz's lab has the lowest-cost test of $25; this price is partially underwritten by Maddie's Fund, as the samples submitted become part of ongoing studies in vaccine research.

The large national labs charge different prices depending on the size of the local market and the volume of tests (all the lab tests, not just titers) ordered by your individual veterinarian.

Some vets now offer in-office vaccine titer tests, such as the Synbiotics TiterCHEK® CDV/CPV test. This can be run while you and your dog are in the clinic for an examination, making it possible for you to follow up on the spot with a vaccination if your dog has a negative result. Again, the price charged by your own veterinarian will vary for these tests.

- **ANTECH DIAGNOSTICS: $75 - $150**
  Irvine, CA
  (888) 397-8378
- **HEMOPET: $52**
  Garden Grove, CA
  (714) 891-2022; hemopet.org
- **IDEXX LABORATORIES: $75 - $150**
  Westbrook, ME
  (888) 433- 9987; idexx.com
- **DR. R. D. SCHULTZ LABORATORY: $25**
  School of Veterinary Medicine, University of Wisconsin-Madison. (608) 263-4648. To download an order form to submit a blood sample to the Dr. R.D. Schultz Lab, go to the link at: http://www.maddiesfund.org/Maddies_Laboratory.html click on "Related links" and "Dr. Ronald Schultz: Serum Submission Form"

A Tale of Two Shelter Dogs and Vaccination

I adopted my mixed-breed dog Otto from a local shelter in June 2008. He was estimated to be about 7 months old and had been turned into the shelter in early May, about six weeks before I adopted him. At the time I adopted him, he had been vaccinated five times already, with four combination vaccines and once for rabies. Given his estimated age when I adopted him – at least 6 or 7 months old – I felt confident that no maternally derived antibody would interfere with any of those vaccines, and that Otto was more than adequately immunized. (In fact, it's likely that he was overvaccinated, a practice that is typical in shelters.) Had he been younger, so that maternally derived antibodies could have nullified his vaccinations, I probably would have ordered a vaccine titer test at the time of adoption, to confirm his immunization status.

In May 2009, Otto was due for and received a (legally required) rabies vaccination. Standard practice calls for the use of a one-year vaccine when the dog is first vaccinated for rabies, and then vaccines that are approved for longer periods after that. In California, the longest period that a dog can legally go between rabies vaccinations is three years, so I asked for a three-year rabies vaccination at that time.

The veterinarian who saw Otto for that visit gently recommended another combination vaccine, but I demurred and this sufficed. However, the invoice I received for the visit indicated that Otto was "due" for a "DHLPP-C annual vaccine" and a "Bordetella annual vaccine" the following month – a year after his last combination vaccine. No one seemed very concerned about the vaccinations at this time, least of all me.

In April 2010, I made an appointment with the veterinarian who had seen Otto the previous spring; I needed to get a new prescription for heartworm preventatives for Otto. At this ap-

pointment, the vet (a gentleman who is probably in his late 60s or early 70s) pressed hard for Otto to receive another combination vaccine. We bantered a bit about vaccination schedules and overvaccination. I finally asked if he'd feel better if we had a titer test result that showed Otto still had circulating antibodies to parvovirus and distemper. He said he would, so I had him take a blood sample and send it off to IDEXX Laboratories. (Despite his age, this was probably a first for his clinic. The office manager first quoted me $500 for the titer test. When I insisted that was too much, she admitted that she was looking at a price book for the lab and wasn't certain which of the tests she was supposed to order. I helped her locate the code for the correct test, which IDEXX called the "Vaccination Profile Canine (ELISA)," and paid $100 for the test.

I have ordered annual vaccine titer tests for Otto ever since, and every one has come back with strong positive results. He was vaccinated with another three-year rabies vaccine in 2012, and is next required by law in early 2015. I have no plans to vaccinate him for anything else unless one of his titers comes back negative.

In January of this year, my son adopted a puppy from the same shelter. Cole's estimated age was 12 weeks. He had been vaccinated with a combination vaccine four times since he arrived at the shelter.

I brought him to see my veterinarian at the estimated age of 18 weeks for a titer test. The result came back positive for parvo, but negative for distemper! Oh no! Did we inadvertently adopt a non-responder, who would be at risk for distemper throughout his lifetime?

I had ordered the test from Dr. Shultz's lab, and the results take a little longer than from the big commercial outfits, so it was two weeks before I took Cole back to the vet to discuss the results. We agreed we should revaccinate with a different product, and then run another titer test. During this consultation, the vet examined Cole thoroughly, and suddenly was struck by Cole's teeth. "I don't think he's 20 weeks old," she said. "I bet he's more like 16 weeks today." We surmised that "maternal interference" was to blame for his negative titer for distemper antibodies.

We revaccinated Cole and ran another titer two weeks later. This time, the results were a nice high positive. Whew! I can rest now, knowing he's protected.

Resources Mentioned in This Article

American Animal Hospital Association (AAHA) 2006 Canine Vaccine Guidelines
American Animal Hospital Association, Lakewood, Colorado; (800) 883-6301
aahanet.org/PublicDocuments/VaccineGuidelines-06Revised.pd

Dr. Dodds Protocol for Minimal Vaccine Use
(NOTE: Dr. Dodds does not recommend the CAV/adenovirus 2 vaccine that the AAHA and Dr. Ron Schultz does.) itsfortheanimals.com/DODDS-CHG-VACC-PROTOCOLS.HTM

The Academy of Veterinary homepathy Leucadia, CA. (866) 652-1590; theavh.org/referral
a referral list of veterinarians who use homeopathy in their practices.

PRODUCTS

Apitherapy Honey Wild Cherry Bark Syrup.
Honey Gardens Apiaries, Inc., Ferrisburgh, VT.
(802) 877-6766 or honeygardens.com

Aromatherapy diffusers from Aromatherapeutix, Los Alamitos, CA. (800) 308-6284 or
aromatherapeutix.com

Bioprin. JBNI Biodrux Products, Bothell, WA.
(425) 408-9091 or jbni.us. Sold at naturalrearing.com and other retailers.

Bovine Colostrum. Sedona Labs, Cottonwood, AZ. (888) 816-8804 or sedonalabspro.com

Cough Drop! and **Lickety Spritzer.** Aromadog, Leicester, MA.
(508) 892-9330 or aromadog.com

Kennel-Koff. Amber Technology, Lake Point, UT. (801) 966-8895 or (877) 727-8243 or ambertech.com

Manuka honey. Manuka Honey USA, Aurora, CO. (720) 524 3237 or manukahoneyusa.com

NR Herbal Compounds, Natural Rearing, Jacksonville, OR. (541) 899-2080 or naturalrearing.com

Nzymes Ox-E-Drops, Las Vegas, NV. (702) 228-0097 or nzymes.com

Thieves Oil
Young Living Essential Oils, Lehi, UT
(800) 371-3515

PEOPLE

Linda Arndt, GreatDaneLady.com, GrDaneLady@aol.com

Stephen Blake, DVM. San Diego, CA. (858) 566-3688 or thepetwhisperer.com

Wendy C. Brooks, DVM. VeterinaryPartner.com

Bruce Fife, ND. Coconut Research Center, Colorado Springs, CO. coconutresearchcenter.org

Stacey Hershman, DVM, PC. Hastings-on-Hudson, NY. (914) 478-4100 or naturalvetforpets.com

Robert McDowell, Australia. International call 61-2-6331-3937, herbal-dogkeeping.com

Faith Thanas, AromaDog. Leicester, MA. (508) 892-9330 or aromadog.com

Marina Zacharias, Natural Rearing, Jacksonville, OR. (541) 899-2080 or naturalrearing.com

BOOKS

The Complete Herbal Handbook for the Dog and Cat, by Juliette de Bairacli Levy. Faber & Faber, 1992

Holistic Aromatherapy for Animals, by Kristen Leigh Bell. Findhorn Press, 2002

Hydrosols: The Next Aromatherapy, by Suzanne Catty. Healing Arts Press, 2001

-Denise Flaim of Revodana Ridgebacks in Long Island, New York, shares her home with three Ridgebacks, 10-year-old triplets, and a very patient husband.

-CJ Puotinen is a frequent Whole Dog Journal contributor and freelance writer living in New York. She is also the author of The Encyclopedia of Natural Pet Care and many books on holistic health care and herbal remedies for humans.

-Dr. Randy Kidd earned his DVM degree from Ohio State University and his PhD in Pathology/Clinical Pathology from Kansas State University. A past president of the American Holistic Veterinary Medical Association, he's author of Dr. Kidd's Guide to Herbal Dog Care and Dr. Kidd's Guide to Herbal Cat Care.

-Nancy Kerns is the Editor of the Whole Dog Journal..