Several respiratory diseases are routinely encountered in small animal practice. Infectious canine tracheobronchitis, or “kennel cough,” is the most common acute infectious cause of lower airway disease in dogs. Bronchopulmonary disease is frequently diagnosed in dogs and cats (also known as chronic bronchitis, feline asthma). Currently recommended drugs for treating these diseases include steroids, bronchodilators, and antibiotics, which are administered systemically. The potential adverse effects of steroids (PU/PD, polyphagia, diabetes) and bronchodilators (gastrointestinal irritation, unwanted cardiac and CNS effects) are well-known.

An alternative method that is becoming increasingly popular when treating these diseases is aerosol therapy. This new treatment modality, which delivers treatment directly to the lungs and achieves high local drug concentrations, has the advantage of minimizing and perhaps avoiding the potential side effects of systemic therapy.

Indications
Kennel cough is a common (and contagious) cause of coughing in dogs seen in clinical practice. The disease tends to be difficult to treat due to the lack of antibiotic penetration into the tracheobronchial mucus (the infection typically is located on the luminal surface). In the late 1970s, it was shown that aerosolized antibiotics were effective in treating experimentally induced *Bordetella* infections. More recent work confirmed the ability of aerosolized gentamicin to successfully treat clinical cases of kennel cough, often in cases refractory to systemic antibiotics.

Aerosol therapy has also been recommended for treatment of chronic bronchitis and feline asthma. Although few scientific papers have been published, respiratory specialists have been successfully using inhaled steroids and bronchodilators for years, especially in cats. The efficacy of inhaled steroids and albuterol has been demonstrated in cats with asthma in separate studies. Aerosol treatment in birds and pocket pets has also been recommended.

How It Works
The NebulAir system (DVM Pharmaceuticals, Miami, FL) provides a method of aerosol delivery from either a solution (via their ultrasonic nebulizer) or from a metered-dose inhaler—

CNS = central nervous system; PU/PD = polyuria/polydypsia

**Image:** Canine ventilator circuit and ultrasonic nebulizer being used to administer a solution
Advantages
Treatment of kennel cough has been shown to be successful using aerosol therapy but has required that the owner bring the dog to the hospital twice a day. Updraft nebulizers (which have been used to date) require a compressed gas source (medical-grade air or oxygen) at a flow rate of 8 to 10 L/min to achieve output of properly sized particles. In addition to the inconvenience of twice-daily visits, this method has the drawback of placing a potentially contagious patient in the hospital. The NebulAir Veterinary Portable Ultrasonic Nebulizer open a new avenue for drug delivery in veterinary medicine.

Disadvantages
There are a number of potential disadvantages to using aerosol treatments in small animal practice. First is the learning curve involved for veterinarians to understand and use this new treatment modality. Not every drug can (or should!) be nebulized and not every patient will learn to accept the mask system used—although most do so readily. Instructional videos, manufacturer’s literature, talks being given on this topic, and the list of suggested reading that accompanies this article will help you learn this new treatment option.

Economic Impact
There is an initial cost associated with the equipment required for any aerosol treatment, but overall the cost is economical if you consider that the disorders it treats are usually long term (maintenance therapy), as in the case of chronic bronchitis and feline asthma. When you add in the potential stress, cost, and inconvenience that owners experience when bringing their pets to the hospital for repeated treatments, the initial cost of the equipment can easily be justified.

See Aids & Resources, back page, for references, contacts, and appendices.

M. Gatz Riddell, Jr., DVM, MS, Diplomate ACT, is professor at Auburn University College of Veterinary Medicine. He worked for two practices in Tennessee before pursuing his Masters degree at Auburn, where he also completed his residency in theriogenology. Dr. Riddell is a current parliamentarian and past-president of the American Association of Bovine Practitioners. He is chair of the AVMA’s Council on Biologic and Therapeutic Agents and past-chair of the AVMA’s Clinical Practitioner Advisory Committee. Dr. Riddell is also on the board of NAVC.

Elke Rudloff, DVM, Diplomate ACVECC, is clinical instructor and director of education at Animal Emergency Center, Glendale, Wisconsin. She also serves as program chair for the Veterinary Emergency and Critical Care Society. Dr. Rudloff completed her residency training at Animal Emergency Center. She is an internationally recognized educator in the field of veterinary emergency medicine/critical care and has a special interest in fluid resuscitation and pain management in the critically ill. Dr. Rudloff is a frequent speaker at NAVC.

Vicki L. Thayer, DVM, Diplomate ABVP—Feline, is the owner of Purfect Practice PC, Lebanon, Oregon, a house call practice for cats which also offers relief and consulting services for feline practices. She worked as an associate veterinarian for two small animal practices in Vancouver, Washington before opening her first practice—Civic Feline Clinic in Walnut Creek, California, which was selected as one of the top five veterinary hospitals in the San Francisco Bay area (May 2003). Dr. Thayer is currently leadership chairperson and alternate delegate to the AVMA for the American Association of Feline Practitioners. She has also served as president and in various other roles for the AAFP and was responsible for organizing speakers for the AAFP-sponsored day at NAVC.

See Aids & Resources, back page, for references, contacts, and appendices.