

### At-Home Ear Flushing

Once the ear has been cleaned in the office, a home treatment plan for the owners must be designed according to the organism or organisms found on cytologic studies or culture, the chronicity of the ear disease, and the presence of a tympanum. In many cases a prepared solution in a squeeze bottle is all that is necessary. If there is a great deal of purulent material, a bulb syringe should be used, and the owners instructed in its appropriate use. After each use the bulb syringe should be rinsed out several times with 50:50 vinegar with isopropyl alcohol to minimize bacterial overgrowth in the bulb. The bulb syringe should be changed every 2 to 5 weeks, depending on the severity of the infection.

In the case of severe otitis or in a fractious patient, a flushing device may temporarily be affixed to the animal. Heavy sedation or general anesthesia should be used. The open end of a red rubber feeding tube is secured via sutures or glue to the dorsal skin of the neck and head. The tube is then placed into the ear canal rostrally through the area of the pretragic incisure and secured in place with glue or suture. The tip of the tube should be trimmed so that the end of the tube is one half to three quarters of the way down the horizontal canal but not touching the tympanum or the middle-ear cavity. The tube should be approximately one-half to three-fourths the diameter of the horizontal canal. This helps minimize tube movement and subsequently patient discomfort. There should be enough space around the tube for fluid to backwash out of the ear during flushing. This will prevent a buildup of water pressure and possible middle ear and vestibular damage. The tube usually remains in place for 5 to 10 days, but it can remain in place longer if needed. There should be an Elizabethan collar on the dog at all times. Owners should be instructed to flush the cleaning solution (i.e., chlorhexidine solution (0.05% to 0.2%), saline, or 50:50 vinegar with water) through the tube gently with a 6- to 12-ml syringe. Each time the canal is flushed, a total volume of 10 to 15 ml should be instilled. As much of the fluid as possible should be evacuated from the ear canal after each infusion. The ear should be flushed once to three times daily, depending on the severity of the infection. Antibiotic solutions can also be instilled into the horizontal canal through this apparatus by infusing 0.5 to 1 ml of medication into the tube and then flushing the medication through the tube into the canal using air. The type of solution and frequency of flushing prescribed for home care depend on the severity of infection, consistency of the discharge, chronicity of the otitis, presence of yeast or bacteria, and presence or absence of a tympanum. For bacterial infections chlorhexidine solution (0.05 to 0.2%) and saline are good, gentle flushes. For *Pseudomonas aeruginosa* infections, a 5 to 10-minute contact time with Tris-EDTA, 50:50 vinegar:water or otic Domeboro solution (Bayer Pharmaceutical) is a better choice because these agents have bactericidal activity against *Pseudomonas*. It is important to remember that purulent discharge inactivates many topical antibiotics; accordingly the ear should be flushed before each application of antibiotic until the ear is producing little-to-no purulent material. Initially the frequency of flushing for severe cases, especially resistant *Pseudomonas* infections, can be three to four times daily. In most cases of less severe otitis, twice daily suffices. As therapy continues, the frequency should decrease to several times per week and then once weekly to every other week prophylactically. As with bacterial otitis, flushing ears can be important in the treatment of yeast otitis. Flushing helps to remove the waxy organism-filled debris, acidify, and then dry the horizontal canal, making the microenvironment of the canal unsuitable for yeast growth. The frequency of application again depends on the severity of otitis and the chronicity of the disease. In severe cases flushing may be one to two times daily but should

quickly drop to two to three times weekly. Over time it drops further to a maintenance level of once weekly to once every other week. The agents most commonly used are Epi-Otic, DSS, and 50:50 vinegar with alcohol. It is particularly important that dogs with chronic histopathologic ear canal changes such as fibrosis, stenosis, and lichenification be placed on a maintenance flushing program. Ears with chronic changes usually have increased cerumen production, hyperplasia of the stratum corneum, and decreased epidermal migration (self-cleaning). This leads to an increased buildup of debris in the canal. Flushing the ears helps to remove the debris and acidify the canal, which helps prevent recurrence of active infections. The frequency of flushing ranges from two to three times weekly to once every other week. The solutions commonly used are Epi-Otic, chlorhexidine flush, Otic Domeboro, and vinegar with alcohol or water (50:50). Although flushing is extremely important in the management of both chronic and acute otitis, it is imperative that the clinician remember that flushing too vigorously and too frequently can also be detrimental to the otic epidermis. The animal with severe otitis undergoing flushing numerous times per day should be checked frequently, and flushing should be varied, depending on the cytologic and otic examination. This prevents the ear flushes from doing more harm than good.