

# DEAFNESS

## BASICS

### OVERVIEW

- Lack or loss of sense of hearing
- May be complete or partial inability to hear

### SIGNALMENT/DESCRIPTION of ANIMAL

#### Species

- Dogs and cats

#### Breed Predispositions

- More than 30 breeds of dog have a known susceptibility for deafness (such as the Australian shepherd, Boston terrier, cocker spaniel, Dalmatian, German shepherd dog, Jack Russell terrier, Maltese, toy and miniature poodles, and West Highland white terrier)
- White cats with blue irises; the iris is the colored or pigmented part of the eye

#### Mean Age and Range

- Congenital (present at birth) deafness—very young age
- Acquired (condition that develops sometime later in life/after birth) deafness—any age; more common in senior dogs

### SIGNS/OBSERVED CHANGES in the ANIMAL

- Deafness involving only one ear (known as “unilateral deafness”) is difficult for most owners to ascertain; thus, most animals brought to clinics for hearing problems have deafness involving both ears (known as “bilateral deafness”)
- Conduction problems in which sound waves do not reach the nerves of hearing (conditions that involve the external ear canal or ear drum may lead to conduction problems)—usually relatively small hearing losses
- Pet does not respond to everyday sounds, does not respond to its name, or cannot be aroused from sleep by a loud noise
- Pet does not respond to the sounds of squeaky toys

### CAUSES

#### Conduction (*Sound Waves Do Not Reach the Nerves of Hearing*)

- Inflammation of the outer ear (known as “otitis externa”) and other external ear canal disease (such as narrowing of the ear canal, presence of tumors, or ruptured ear drum)
- Inflammation of the middle ear (known as “otitis media”)

#### Nerve

- Degenerative nerve changes in an old dog
- Anatomic disorders—poor development (known as “hypoplasia”) or lack of development (known as “aplasia”) of the part of the ear (known as the “spiral organ”) that contains the nerve receptors for hearing; condition in which fluid builds up in specific areas of the brain (known as “hydrocephalus” or “water on the brain”) with damage to the part of the brain involved with hearing
- Tumors or cancer involving the nerves of hearing
- Inflammatory and infectious diseases—inflammation of the inner ear (known as “otitis interna”); canine distemper virus (may cause alterations in hearing, not complete deafness); inflammatory masses that develop from the middle ear or eustachian tube (known as “nasopharyngeal polyps”) in cats
- Trauma

#### Toxins and Drugs

- Antibiotics—aminoglycosides; polymyxin; erythromycin; vancomycin; chloramphenicol
- Antiseptics—alcohol (ethanol); chlorhexidine; cetrимide
- Chemotherapy drugs—cisplatin
- Medications to remove excess fluid from the body (known as “diuretics”)—furosemide
- Heavy metals—arsenic; lead; mercury
- Miscellaneous—products used to break down waxy material in the ear canals (waxy material known as “cerumen;” products known as “ceruminolytic agents”); propylene glycol; salicylates

### RISK FACTORS

- Long-term (chronic) inflammation of the outer, middle, or inner ear (otitis externa, media, or interna)
- Merle, piebald gene, or white coat color
- Use of certain drugs

## TREATMENT

### HEALTH CARE

- Directed toward acquired (condition that develops sometime later in life/after birth) causes
- Congenital (present at birth) deafness is irreversible
- Inflammation of the outer, middle, or inner ear (otitis externa, media, or interna)—medical or surgical approaches depend on extent of disease, bacterial culture and sensitivity test results and X-ray findings
- Conduction problems in which sound waves do not reach the nerves of hearing (conditions that involve the external ear canal or ear drum may lead to conduction problems)—may improve as inflammation of the outer or middle ear (otitis externa or media) resolves
- Hearing aids—have been used; apparatus must be modified for practical use

### ACTIVITY

- Restricted to avoid possible injury (for example, a deaf dog cannot hear an approaching car)
- Environment—may need to control for pet's protection

### SURGERY

- Surgery may be indicated in cases where the ear canal is narrowed severely or blocked or when a tumor or inflammatory mass that develop from the middle ear or eustachian tube (nasopharyngeal polyp) is present
- Surgery may be indicated in some cases of inflammation of the middle ear (otitis media) to drain the middle ear (procedure known as “bullae osteotomy”)

### MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- None specific for deafness
- If present, treat infection or inflammation of the outer, middle, or inner ear (otitis externa, media, or interna)—treatment may include antibiotics, steroids, medications to kill ear mites (*Otodectes*), or medications to treat fungal infections

### FOLLOW-UP CARE

#### PATIENT MONITORING

- Weekly to assess treatment of ear disease until resolved
- Brainstem auditory-evoked response (BAER) test—a test used to evaluate hearing; may be used to monitor response to treatment of inflammation of the inner ear (otitis interna)

#### POSSIBLE COMPLICATIONS

- Depend on underlying cause

#### EXPECTED COURSE AND PROGNOSIS

- Depend on underlying cause

### KEY POINTS

- Lack or loss of sense of hearing
- May be complete or partial inability to hear
- Congenital (present at birth) deafness is irreversible

