

## The Case for Comprehensive Medical Case History in Audiological Practice



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What are the most common complaints  
heard by Audiologists ?

Hearing loss  
Tinnitus  
Balance-falls  
Dizziness



*All are symptoms which can occur secondary to significant  
medical conditions, disorders, and pharmacological reactions*

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## AudioVestibular System

It is the first sensory system to develop  
embryologically, with 49 days en utero

It has one of the smallest vascular supplies of any  
organ, its biochemical constitution acts as a battery.

Conditions may be congenital or acquired through  
disease, disorders or trauma

It's function is interdependent with the body's vascular,  
metabolic, and neurologic status

Hearing loss, tinnitus and vertigo may be indicators of  
a variety of medical conditions

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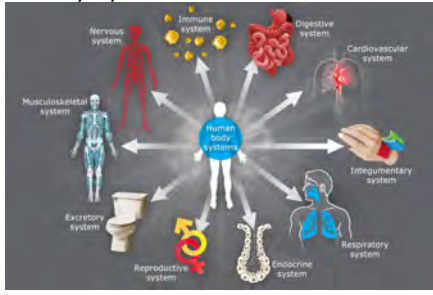
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The Audiovestibular system is interconnected with all the body's systems. It does not exist in isolation.



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What Conditions Can Cause Sensorineural Hearing Loss?

**Common Childhood Infections**

Mumps is the most common cause of one-sided total deafness in the United States. Frequently, the child and family are not aware of the hearing loss until years later. Other childhood infections, such as scarlet fever, may also affect hearing, particularly by destroying the eardrum and damaging the middle ear bones.

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What Conditions Can Cause Sensorineural Hearing Loss?

**Special Infections**

**Syphilis.** It can be acquired at birth or through sexual contact, and a person may have it a long time before hearing symptoms occur (sometimes for 30 or more years). Caught early, this form of hearing loss can be cured. However, if it is not recognized and treated, the hearing loss may progress and even become total.

**Lyme disease.** This increasingly common infection is spread through the bite of a tick. Lyme disease often causes a rash and joint pain, but these may be minor enough to escape notice. A diagnosis of Lyme disease can be made with blood tests. It is treated with antibiotics.

Numerous other infections including herpes, cytomegalo virus (CMV), measles, mononucleosis, chickenpox, pneumonia, flu, and fungal diseases may cause hearing problems as well.

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**Problems With Blood Flow**

Insufficient blood flow in the inner ear or related areas of the brain can contribute to hearing loss. This can happen as a result of cardiovascular disease, untreated high blood pressure, and other similar conditions. It also may be present in people whose blood tends to sludge and clot excessively (hypercoagulability), or who have too many blood cells (polycythemia).

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**Meningitis**

Hearing loss is one of the most common consequences of meningitis, especially bacterial or fungal meningitis. Meningitis is an infection of the membranes covering the brain and spinal cord. Anyone who has had meningitis should have a hearing test upon recovery.

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**AIDS**

AIDS is associated with ear infections and nerve damage. Conductive and sensorineural hearing loss both occur in people with AIDS. AIDS is also associated with tumors in the head and neck that can cause hearing loss.

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**Tuberculosis**

Tuberculosis and other similar illnesses have been associated with hearing loss. The problem may be due to the disease itself or to the medications used to treat the disease (such as streptomycin). Despite the availability of vaccines for tuberculosis, it is becoming increasingly common, especially among people with AIDS and those who come in contact with them.

**Arthritis**

Arthritis (inflammation of joints) and vasculitis (inflammation of blood vessels) commonly are associated with hearing loss. These include conditions such as **rheumatoid arthritis**, **lupus erythematosus**, and others. The hearing problem is probably related to abnormalities in blood vessels from these diseases.

**Allergies**

It is well recognized that allergic problems in children cause fluid to collect in the **eustachian tubes** and middle ear. However, in some cases allergies may also cause inner ear problems such as **Meniere's syndrome**. Allergy treatments usually resolve the problem.

**High Blood Pressure**

Some conditions associated with high blood pressure (such as hypolipoproteinemia, which is extremely high cholesterol and triglyceride levels in the blood) are also associated with hearing loss. In general, it appears that people with high blood pressure have a higher incidence of hearing loss. They may also be more prone to noise induced hearing loss than others.

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**Thyroid Problems**

Hypothyroidism (underactive thyroid) is commonly linked with hearing loss. About half of people with low thyroid function have hearing losses. Moreover, about 3% of people with **Meniere's syndrome** have hypothyroidism; and in some, control of the thyroid disease eliminates the symptoms of Meniere's syndrome.

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**Kidney Disease**

Many of the things that damage the kidney also damage the **cochlea** in the inner ear. Parts of the kidney and cochlea are quite similar and can be damaged by the same drugs, for example. Hearing loss is not uncommon in people with kidney disease.

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**Cancer**

Cancers that involve the ear and the brain can cause hearing loss. However, cancers elsewhere may also be related, particularly because many of the treatments for cancer produce hearing loss. Chemotherapy agents can affect the ear. Radiation may also cause hearing loss if the ear is included in the radiation field. Individuals who receive chemotherapy or radiation therapy should have an audiogram before treatment is begun, and usually during and after treatment.

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**Diabetes**

Diabetes is one of the most common diseases in the United States. Nearly 26 million people in the U.S. have diabetes. About 40 percent of people with diabetes have hearing loss.

A recent study found that hearing loss is twice as common in people with diabetes as it is in those who don't have the disease. Of the 79 million adults in the U.S. who have pre-diabetes, the rate of hearing loss is 30 percent higher than in those with normal blood glucose.

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**Glaucoma**

The relationship has been controversial, but it is probable that there is a significantly increased incidence of hearing loss in people with glaucoma, a condition in which there is high pressure within the eye. This is especially true for people with a type of glaucoma called narrow-angle glaucoma.

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**Sickle Cell Disease**

About seven percent to nine percent of black Americans carry the sickle cell trait. About 1 in 400 has sickle cell disease, and 20 percent to 25 percent of people with sickle cell disease have sensorineural hearing loss. Sudden deafness has also been reported in connection with this condition, although in some cases hearing will return.

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**Fainting Disorders**

A person who has hearing loss (often severe) along with fainting may have a condition called Jervell and Lange-Nielson syndrome. This hereditary condition accounts for approximately 1% of all cases of hereditary deafness. If hearing loss and fainting occur together, a person's heart should be checked immediately. The fainting can be due to heart arrhythmias (irregular heartbeats) that may cause sudden death.

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**Hereditary Diseases and Syndromes**

There are over 500 known AV hereditary diseases, syndromes, and mitochondrial that can lead to hearing loss. The syndromes involve defects in virtually any part of the body. When it runs in families from generation to generation, the hearing loss usually follows a hereditary pattern called "autosomal dominant."

However, the absence of a family history does not mean that hearing loss is not genetic. "Autosomal recessive" inheritance is common. It means that neither parent has hearing loss, but both carry a gene that causes it. On the average, the hearing loss will be present in one child out of four.

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## The Review of Systems (ROS)

is an inventory of specific body systems performed by the physician in the process of taking a history from the patient.

The ROS is designed to bring out clinical symptoms which the patient may have overlooked or forgotten.

In theory, the ROS may illuminate the diagnosis by eliciting information which the patient may not perceive as being important enough to mention to the physician. The rules for documenting the ROS are identical for both the 1995 and 1997 E/M guidelines.

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## Review of Medical Systems

1. Constitutional (e.g., fever, weight loss)
2. Eyes
3. Ears, Nose, Mouth, Throat
4. Cardiovascular
5. Respiratory
6. Gastrointestinal
7. Genitourinary
8. Musculoskeletal
9. Integumentary (skin and/or breast)
10. Neurological
11. Psychiatric
12. Endocrine
13. Hematologic/Lymphatic
14. Allergic/Immunologic

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There are three levels of ROS recognized by the Evaluation and Management (E/M) guidelines:

1. Problem Pertinent ROS: Requires review of ONE system related to current problem(s)
2. Extended ROS: Requires review of TWO to NINE systems
3. Complete ROS: Requires review of at least 10 systems

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E/M University Coding Tip: There are no specific rules about how much to ask the patient about each system. This is left up to the discretion of the individual examiner.

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E/M University Coding Tip: When documenting the ROS, it is not necessary to list each system individually. It is acceptable to document a few pertinent positive or negative findings and then say: "All other systems were reviewed and are negative."

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E/M University Coding Tip: It is not necessary that the physician personally perform the ROS. It is acceptable to have your staff record the ROS or to let the patient fill out an ROS questionnaire. However, the physician MUST review the information and comment on pertinent findings in the body of the note. In addition the physician should initial the ROS questionnaire and maintain the form in the chart as a permanent part of the medical record.

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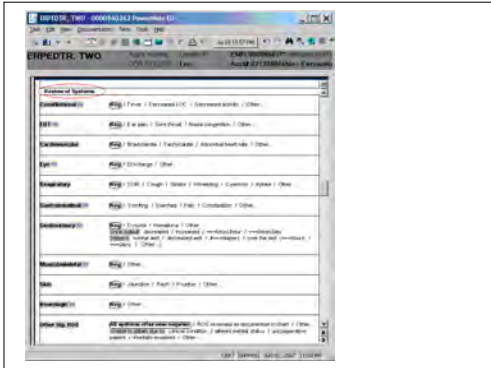
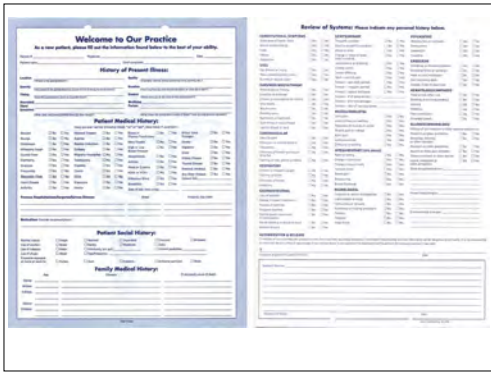
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## Eyes-Vision

Cataract  
Glaucoma  
Macular degeneration  
Retinopathy  
Low vision  
Status of correction - recent, appropriate?

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## Ear-Hearing

Hearing loss  
unilateral- bilateral  
gradual - sudden  
Tinnitus  
pulsatile  
ringing, buzzing etc...

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## Cardiovascular

Heart attack  
Bypass  
Stent  
Pacemaker  
Hypertension  
Peripheral arterial disease (PAD)

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# Musculoskeletal

- Cervical spine
- Hips
- Knees
- Ankles
- Other



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# Endocrine

- Diabetes
- Thyroid
- Hypoglycemia

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# Neurology

- Migraine
- Stroke
- Parkinson's
- Dementia /Alzheimer
- Multiple Sclerosis
- Peripheral Neuropathy
  - hands
  - legs / feet

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# Psychiatric

- Anxiety
- Depression
- Personality disorders
- Associated medications

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# Pharmacology

- Anxiety
- Anti-seizure/ convulsants
- Depression
- Sleeping
- Erectile dysfunction
- Alcohol
- Recreational
- OTC supplements

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# History of Falls



- inside or outside the home
- slips or trip
- use of assistive device
- injury - fractures
- incidence rate

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**What is an Audiologist**

is an exciting and tremendously varied specialty. It is an outpatient-based specialty focused on the diagnosis, investigation and management of hearing and balance disorders. However, while this may seem a narrow focus, the specialty covers multiple systems as the disorders we see, for example dizziness, can result from a variety of system disorders.

Typical patients have problems such as hearing loss, tinnitus, dizziness, imbalance, eye movement disorders and speech problems of peripheral otological and central nervous system origin.

The specialty covers all age ranges with a strong interest in (re)habilitation including the management of the social and psychological impact of these disorders. It is a specialty that can make a significant difference to an individual's quality of life. Audiologists work in a variety of settings, from community based clinics through to highly specialist academic centres.

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**General Description of Training Program**

This is a 4 year Specialty Training Program with approximately covering the basic sciences of audiovestibular and 4 years clinical training in Pediatric Audiology, Pediatric Vestibular, Adult Audiological Medicine and Adult Vestibular. The specialty offers clinical and intellectual challenges as well as research opportunities. Audiovestibular trainees develop a good understanding of the basic sciences underpinning hearing and balance physiology and disorders.

Trainees will become familiar with the execution and interpretation of a range of specialist investigations of the audiovestibular system. As well as core training in audiovestibular physiology and pathology, the specialty training includes aspects of Developmental Pediatrics, Elderly Medicine, Clinical Genetics, Neurology, Ophthalmology, Otolaryngology, Psychology and Psychiatry.

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**What personal qualities are needed?**

Audiologists need excellent clinical and interpersonal skills, as many conditions seen are complex and long-term. Career satisfaction comes from improving the quality of life in diverse patient groups that are at times neglected.

This can include the auditory, communication, social, educational development in a neonate with a profound hearing loss or a person with troublesome tinnitus, multifactorial dizziness or balance problems. A multidisciplinary approach is adopted to these problems aimed at improving the well-being and quality of life of the individual concerned. An ability to work well with others is, therefore, essential.

Will it suit me?

Audiology will particularly suit trainees who are

- interested in complex medical problems
- able to work with children and adults
- good team players.

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