3.04 Functions and disorders of the ear

3.04 Understand the functions and disorders of the sensory system
3.04 Understand the functions and disorders of the sensory system

Essential Questions

• What are the functions of the sensory system?
• What are some disorders of the sensory system?
• How are sensory system disorders treated?
• How do you relate the body’s communication to the sensory system?
Understanding the functions of the ear: Hearing

3.04 Understand the functions and disorders of the sensory system
Understanding the functions of the ear

**External ear**

- **Pinna**
- **External auditory canal**
  - Contains cerumen—protects the ear by trapping foreign substances
- **Tympanic membrane—**
  - Protects the inner ear organs
Understanding the functions of the ear

**Middle ear**

- **Ossicles** - Three tiny bones that transmit sound waves from the ear drum to the inner ear

- **Eustachian tube** - Serves to equalize air pressure in the middle ear with the outside atmosphere

3.04 Understand the functions and disorders of the sensory system
Understanding the functions of the ear

**Inner ear**

- **Cochlea**: Special organ of hearing
- **Semicircular canals**: Contain fluid that vibrates when the sound waves from the stirrup bone strike against it.

3.04 Understand the functions and disorders of the sensory system
Understanding the functions of the ear

Pathway of hearing

- Trace the pathway of hearing.
  - Sound > pinna > auditory canal > tympanic membrane > ossicles > cochlea > cochlear nerve > temporal lobe

- What are decibels?
  The measure of sound.
Understanding the functions of the ear

Review the pathway of hearing

3.04 Understand the functions and disorders of the sensory system
How do you protect your hearing?
Disorders of the ear

3.04 Understand the functions and disorders of the sensory system
Disorders of the ear

What instruments are used to examine the ear?
Otoscope

What specialist studies the ears, nose, and throat?
Otolaryngologist

3.04 Understand the functions and disorders of the sensory system
Disorders of the ear

External otitis

Discuss what you see in this picture? (Besides a Q-tip!)

What causes external otitis?
Commonly called “swimmers ear”. An infection caused by bacteria and fungi. Commonly contracted from contaminated swimming pools and beaches.

How can it be prevented?
Clean and dry external ear after swimming or wear ear plugs.

3.04 Understand the functions and disorders of the sensory system
Disorders of the ear

Otitis media

- What is otitis media? Acute infection of the middle ear
- Who is most at risk of having otitis media? Why? Infants and young children because of their immature Eustacian tubes
- What are the treatment options? Antibiotics first, but if chronic, doctors may perform a myringotomy (tubes) into the tympanic membrane
Disorders of the ear

**Otосlerosis**

- What is it?
  - Oto-sclerosis

- What causes it? Excess bone growth in the middle ear

- How do they treat it?
  - Stapedectomy: Stapes is removed and replaced with plastic or wire substitute
Disorders of the ear

Meniere’s disease

- What are the symptoms of Meniere’s disease? **Dizziness** (vertigo)

- What causes these symptoms? The semicircular canals are affected, resulting in dizziness

- How is it treated? Medications, relieve stress
Disorders of the ear

**Tinnitus**

- What is tinnitus? Ringing of the ears

Explain this statement:

Tinnitus is a symptom, not a disorder.
Disorders of the ear

Presbycusis

- What is presbycusis? Deafness
- Who is most likely to develop presbycusis? Older people
- Conductive hearing loss: When sounds are blocked by ear wax or fluid in the middle ear or abnormal bone growth
- Sensory hearing loss: From damage to parts of the inner ear or auditory nerve.
Testing for hearing loss

Rinne test

Weber test

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The End