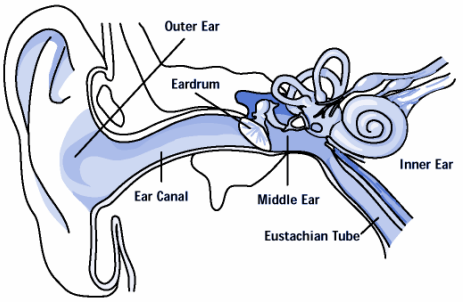
Ear Care

The Anatomy of the Ear

The anatomy of the ear is divided into 3 parts: the outer, middle and inner ear, as shown in the image below. Sound waves travel through the air into the outer ear towards the inner ear where the waves (or vibrations) are transferred into nerve impulses. The impulse is then carried by nerves to the brain where the sound is processed. The ability to hear sounds is dependant on normal function and structure.

General Ear Care



Hearing and ears should be checked by a health care professional periodically. The external part of the ears should be cleaned with a warm, damp washcloth wrapped around the end of a finger and gently wiped. Q-tips, cotton swabs or other similar objects should not be used for cleaning. This may cause damage to the eardrum and push wax or other objects further into the ear canal which could cause serious irreversible hearing problems.

Prolonged or repeated exposure to loud noises may lead to hearing loss. To protect against hearing loss, it is recommended to avoid exposure to loud noises. You should wear ear protection, such as ear plugs, whenever anticipated exposure to loud noises may occur, such as close proximity to lawn mowers or power tools and inside night clubs or rock concerts.

Common Ear Problems

Infections

Infections may be caused by either bacteria or fungus.

One of the most common infections in infants and small children is otitis media, commonly referred to as a middle ear infection. Children are susceptible to otitis media more so than adults because their eustachian tube is narrower and shorter and can easily be blocked. They are also more prone to ear infections following a cold, sore throat or an upper respiratory infection.
Ear infections occur most often when children spend a significant amount of time in day care centers, are bottle fed or use pacifiers, live in a house where they are exposed to cigarette smoke, have allergies or have had previous ear infections.

Common symptoms of otitis media include tugging or pulling at one or both ears, pain and/or discharge from ears, hearing loss, unusual irritability, difficulty sleeping, and fever (100^{o} F or higher). Tylenol or Motrin may be given to help alleviate pain and fever associated with otitis media. Additionally, a warm wash cloth may be placed on the ear to relieve pain. When a child has an ear infection, they should be encouraged to swallow more often because this can help to alleviate pressure and fluid that has accumulated behind the ears. Infants may be more comfortable in the upright position, therefore an object such as a pillow may be placed safely under the mattress to elevate the baby's head to help them sleep. Children should be encouraged to rest as much as possible whenever they have an infection.

Patients should seek medical attention whenever there is sudden hearing loss or blood and/or pus draining from the ears. A physician's appointment is necessary when a fever lasts for 48 hours or longer, is not relived with Tylenol (acetaminophen) or Motrin (ibuprofen), and when symptoms are severe or increase in frequency. Children experiencing mild pain lasting more than one week should also see their physician.

Swimmer's ear

Teenagers and young adults are commonly susceptible to swimmer's ear, which is an infection in the outer ear, also referred to as otitis externa. This often occurs after swimming in polluted water. It can also happen when the outside of the ear is scratched or an object is inadvertently lodged in the ear. Symptoms associated with otitis externa include ear pain, especially when pulling on the ear, itching, and yellow or yellow-green drainage of the ear. To avoid this type of infection a suspension with equal parts of alcohol and vinegar can be prepared and then, with the head tilted so the ear is towards the ceiling, the liquid may be placed into the ear in a drop-wise fashion.

Products Available:

Otic insufflation powders, which is useful with patients with "wet" ears, may contain:

Boric Acid (4%): helps to return biological system to proper pH and additionally has antifungal effects.
Amphotericin, Clotrimazole, Ketoconazole: added due to their anti-fungal properties.
Sulfanilamide and Chloramphenicol: used for antibacterial effects.
Hydrocortisone: used to alleviate itching.

Solutions:

May be compounded with:
Gentamicin (0.3%) used for bacterial infections
Clotrimazole (1%) and Ketoconazole (1%): for fungal infections
Desonide (0.05%): to relieve itching
Ibuprofen: used with azole antifungals to boost their effect

References

University of Rochester Medical Center: Information available at: http://www.stronghealth.com/services/Audiology/earhealth/index.cfm

Mayo Clinic: Information available at: http://www.mayoclinic.com/health/ear-infections/DS00303/DSCTION=symptoms

Cleveland Clinic: Available at http://my.clevelandclinic.org/healthy_living/ear_care/hic_ear_care_tips.aspx

WebMD, Ear Infection Health Care Center: Ear Problems and Injuries, Age 11 and Under.
http://www.webmd.com/cold-and-flu/ear-infection/tc/ear-problems-and-injuries-age-11-and-younger-to pic-overview

Medline Plus: Available at: http://www.nlm.nih.gov/medlineplus/ency/article/000673.htm