Presentation Handout Material

From POA General Membership Meeting at
Laurel Manor Recreation Center
April 18 • 7 pm

Audiology & Hearing Loss

Main Speaker: Danielle Rosier

Second Speaker: Michael Mcquilkin

Michael spoke about the CaptionCall phone for people who are hard of hearing. This phone is free to those who qualify for the Federally funded program. The next page is a copy of Michael's handout, including Michael's contact information.

Main Speaker

Dr. Rosier's six pages of handout material are attached.

You can view the entire POA meeting, including the presentation on the POA's Facebook Page.

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Contact:
Michael Mcquilkin
352-409-7987
mmcquilkin@captioncall.com

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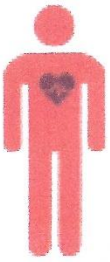
GENERAL FACTS

Hearing Loss and Adverse Health Effects

Untreated hearing loss is associated with other health problems[1]

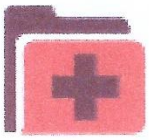


Heart disease
Impaired cardiovascular health negatively affects our hearing[4]

Cognitive Decline & Dementia
Untreated hearing loss may accelerate cognitive decline[2]

Depression
Feelings of sadness or depression are common in people with untreated hearing loss[5]

Diabetes
Hearing loss is more common in diabetics[3]



Hospitalisation
Increased hospitalisation rates for seniors with hearing problems[6]

Falls
Untreated hearing loss is linked to increased risk of falls[7]

Premature death
Untreated hearing loss is linked to increased mortality risk for older adults[9]

Chronic Renal Failure
Hearing loss is more common in patients with moderate chronic kidney disease[8]

TruEAR

THE DIFFERENCE IS CLEAR

UNTREATED HEARING LOSS

LINKED TO

AUDITORY DEPRIVATION & DEMENTIA

"Do I really need hearing aids? Maybe I'll wait another year or what if I just get one aid for my worse ear, what can it hurt?" Individuals commonly express many of these comments when they are diagnosed with a hearing loss. As an audiologist, my recommendations for hearing aids are more often than not met with some resistance. Many of these individuals have experienced hearing loss for a number of years and finally progressed to a point where it is making communication with family and friends increasingly difficult. Many of these individuals are seeking appointments at their spouse or family members insistence.

Estimates indicate there are approximately **36 million Americans with hearing loss** and yet only roughly 20% of individuals that may benefit from treatment such as hearing aids, will actually pursue it. On average, individuals typically wait 10 years or more following diagnosis of hearing loss before ever being fit with hearing aids (ASHA.org). Many are apprehensive about using hearing aids. They may believe hearing loss isn't life threatening and they can learn to compensate or adjust their lifestyle to accommodate the loss, feeling no harm done. This is far from the truth and these individuals may be causing more harm in ignoring their hearing loss than they think.

Untreated hearing loss not only leads to physical, social, emotional and psychological problems but recent studies have shown a link to reduced cognitive function as well. **According to the National Institute on Aging, individuals with untreated hearing loss are at a higher risk of developing cognitive disorders such as Alzheimer's disease and dementia.** A recent Johns Hopkins study indicated a link between untreated hearing loss and cognitive problems including dementia. The study examined individuals with varying degrees of hearing loss and no history of dementia. At the end of 20 years, almost 10% of participants were identified as having dementia. When compared to those with normal hearing, participants with mild loss were three times as likely to develop dementia; those with severe loss were five times as likely to develop the disorder.

Overall, the study showed that **for every 10 decibels of hearing loss the risk of developing dementia increased by 20%.** Auditory deprivation has been suggested as a possible contributor to the cognitive disorder. Auditory deprivation occurs when the hearing nerve is under stimulated. Untreated hearing loss can result in auditory deprivation that can lead to a weakening of the entire auditory system. Because hearing loss in adults is typically gradual there may be a long period of time in which the auditory system and areas of the brain are deprived of adequate sound. This deprivation can result in atrophy in areas responsible for hearing and understanding speech. **Our ears bring in the sound, but we hear with our brain.** As sound is processed through the auditory system it isn't interpreted as speech until it reaches the auditory centers of the brain. When the auditory system is deprived of sound it affects the ability of the brain to understand speech. If a sound is not reaching the ear then it's not reaching the brain. The amount of auditory deprivation that individuals experience varies but is most likely dependent on the amount of hearing loss and length of time the auditory system has gone under stimulated.

The most common cause of auditory deprivation of the hearing system is not treating a hearing loss with amplification. Atrophy can even occur as a result of single hearing aid use when bilateral hearing loss exists. The aided ear takes most of the listening responsibility leading to a weakening of the unaided ear over time. Studies have shown that even when an unaided ear is later aided it will be more difficult to adapt to the sound because of the deprivation. This becomes very challenging.

Another often-overlooked cause of auditory deprivation can occur as a result of an improper hearing aid fitting. If the amplification isn't providing adequate sound to the auditory system atrophy can still occur. Annual hearing evaluations are an important step in preventing under amplification. They take into account changes in hearing levels, ensuring the aids are adjusted properly for the hearing loss.

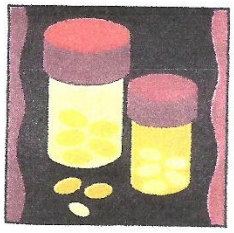
The key to avoiding auditory deprivation and atrophy of the auditory system is to keep it stimulated. Schedule a hearing evaluation at the first sign of hearing loss. If hearing loss is identified don't ignore it. An increasing number of studies have shown that individuals with hearing loss identified and treated early adapt easier and quicker to the amplification resulting in greater overall success. *Sheila Pack Au.D., Lic.-A*

Individuals who are concerned about hearing loss, but reluctant to take action, are encouraged to contact **TruEar Hearing** for a no-obligation hearing evaluation and consultation. **Call (352) 735-2501.**

Ototoxic Medications

Northern Virginia Resource Center for Deaf and Hard of Hearing Persons
3951 Pender Drive, Suite 130 • Fairfax, VA 22030
703-352-9055 (V) • 703-352-9056 (TTY) • 703-352-9058 (FAX)
www.nvrc.org • info@nvrc.org

The following lists of medications have been known to cause hearing loss or tinnitus in some people or exacerbate an existing hearing problem. Usually this problem will only be caused by exceeding the recommended dosage. Be sure to consult with your medical professional if you are unsure of your drug's ototoxicity or if you experience any changes in your hearing. Although there are times when the drugs can cause permanent damage, some hearing problems are reversible when the drug is discontinued.



Drugs That Can Cause Hearing Loss

Salicylates

- aspirin and aspirin-containing products
- salicylagtes and methylsalicylates *(liniments)*

(Toxic effects appear to be dose related and are almost always reversible once medications are discontinued.)

Chemotherapeutic Agents

- bleomycine *(Blenoxane)*
- bromocriptine *(Parlodel)*
- carboplatinum *(Carboplatin)*
- cisplatin *(Platinol)*
- methotrexate *(Rheumatrex)*
- nitrogen mustard *(Mustargen)*
- vinblastin *(Velban)*
- vincristine *(Oncovin)*

(The ototoxic effects can be minimized by carefully monitoring blood levels.)

Antibiotics

- aminoglycosides
  - amikacin *(Amakin)*
  - gentamycin *(Garamycin)*
  - kanamycin *(Kantrex)*
  - neomycin *(Found in many over-the-counter antibiotic ointments)*
  - netilmicin *(Netromycin)*
  - streptomycin
  - tobramycin *(Nebcin)*

(Of particular interest is that topical ear drop medications containing gentamycin or neomycin do not appear to be ototoxic in humans unless the tympanic membrane (ear drum) is perforated. When a solution of an aminoglycoside antibiotic is used on the skin together with an aminoglycoside antibiotic used intravenously, there is a risk of an increase of the ototoxic effect, especially if the solution is used on a wound that is open or raw, or if the patient has underlying kidney damage. Neomycin is the drug that is most toxic to the structure involved in hearing, the cochlea, so it is recommended for topical use only. But even topical therapy has resulted in hearing loss when large areas were treated which allowed for large amounts of the drug to be absorbed into the body. Hearing loss caused by this class of antibiotics is usually permanent.)

- erythromycin

- (EES) *- (E-mycin)*
- (Ilosone) *- (Eryc)*
- (Pediazole) *- (Biaxin)*
- (Zithromax)

(Usually ototoxic when given in intravenous doses of 2-4 grams per 24 hours, especially if there is underlying kidney failure.)

- vancomycin (Vancocin)

(Similar to aminoglycosides in that it may be ototoxic when used intravenously in life-threatening infections. The fact that aminoglycosides and vancomycin are often used together intravenously when treating life-threatening infections further exaggerates the problem.)

- minocycline *(Minocin) (Similar to erythromycin)*
- polymixin B & amphotericin B *(Antifungal preparations)*
- capreomycin *(Capestat) (Anti-tuberculosis medication)*

Non-Steroidal Anti-Inflammatory Drugs (NSAIDS)

Most NSAIDS have the potential for causing hearing loss and/or tinnitus. Because new drugs are being frequently approved for use, it is important that you check with your doctor or pharmacist to determine if the drug you were prescribed can cause a problem.)

- dicofenac *(Voltaren)*
- etocolac *(Lodine)*
- fenprofen *(Nalfon)*
- ibuprofen *(Motrin, Advil, Nuprin, etc.)*
- indomethacin *(Indocin)*
- naproxen *(Naprosyn, Anaprox, Aleve)*
- piroxican *(Feldene)*
- sulindac *(Clinoril)*

(Toxic effects are dose related and are almost always reversible once medications are discontinued.)

Mucosal Protectant

- misoprostol *(Cytotec)*

Diuretics

- bendroflumethazide *(Corzide)*
- bumetadine *(Bumex)*
- chlor-thalidone *(Tenoretic)*
- ethacrynic acid *(Edecrin)*
- furosemide *(Lasix)*

(These are usually ototoxic when given intravenously for acute kidney failure, acute hypertensive crisis, or acute pulmonary edema/congestive heart failure. Rare cases of ototoxicity have been found when these medications are taken orally in high doses by people with chronic kidney disease.)

Quinine

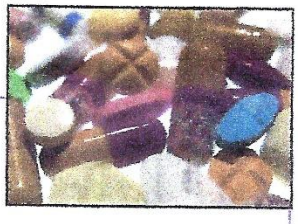
- chloroquine phosphate *(Aralen)*
- quinacrine hydrochloride *(Atabrine)*
- quinine sulfate *(Quinam)*

(The ototoxic effects are very similar to those of aspirin.)

Narcotic Analgesics

- hydrocodone *(Lorcet, Vicodin)*

Drugs that Can Cause Tinnitus



Antibiotics

- aminoglycosides *(see previous section)*
- amphotericin B
- chloramphenicol *(Chloromycetin)*
- minocycline *(Monocin)*
- polymyxine B
- sulfonamides *(Septra, Bactrim)*
- vancomycin *(Vancocin)*

Cardiac Medications

- celiprolol
- flecainide *(Tambocar)*
- lidocaine
- metoprolol *(Lopressor)*
- procainamide *(Pronestyl)*
- propranolol *(Inderal)*
- quinidine *(Quinaglute, Quiniedex)*

Glucocorticosteroids

- prednisone *(Deltasone)*
- prednisolone *(Prelone)*
- ACTH *(adrenocorticotrophic hormone) (Acthar)*

Vapors, Solvents

- cyclohexane
- dichloromethane
- hexane *(gasoline)*
- lindane *(Kwell)*
- methyl-chloride
- methyl-n-butyl-ketone
- perchlor-ethylene
- Styrene
- tetrachlor-ethane
- toluol
- trichloroethylene

Anesthetics

- bupivacain
- tetracain
- lidocaine *(Novacaine)*

Antimalarials

- chloroquine *(Aralen)*
- hydroxychloroquine *(Plaquinil)*

Non-Steroidal Anti-inflammatory Drugs

(NSAIDS) *(Please see notation for NSAIDS under "hearing loss.")*

- aspirin
- acematacine
- benorilate
- benoxaprofen
- carprofen
- diclofenac *(Voltaren)*
- diflunisal *(Dolobid)*
- fenoprofen (*Nalfon*)
- feprazon
- ibuprofen *(Motrin, Advil, Nuprin)*
- indomethacin *(Indocin)*
- isoxicam
- ketoprofen *(Orudis)*
- methyl salicylates *(BenGay)*
- naproxen *(Naprosyn, Anaprox, Aleve)*
- D-Penicilliamin
- phenylbutazone *(Butazolidine)*
- piroxicam *(Feldene)*
- proglumetacin
- proquazon
- rofecoxib *(Vioxx)*
- salicylates
- sulindac *(Clinoril)*
- tolmetin *(Tolectin)*
- zomepirac

Miscellaneous Toxic Substances

- alcohol
- arsenum
- caffeine
- lead
- marijuana
- nicotine
- mercury
- auronofin *(gold, Ridaura)*

(Ironically, several of these drugs found to cause tinnitus, are also used to treat tinnitus; for example: amitryptiline, benzodiazepine class, carbamazepine, furosemide, lidocaine, prednisone.)

Diuretics

- acetazolamide *(Diamox)*
- bumetanide *(Bumex)*
- bendrofluazide
- clorothalidone *(Hygroton, Tenoretic)*
- diapamide
- ethacrynic acid *(Edecrin)*
- furosemide *(Lasix)*
- hydrochlorthiazide *(Hydrodiuril)*
- methylchlorthizide *(Enduron)*

Psychopharmacologic Agents

- amitryptiline *(Elavil)*
- benzodiazepine class
  - alprazolam *(Xanax)*
  - clorazepate *(Tranxene)*
  - chlordiazepoxide *(Librium)*
  - diazepam *(Valium)*
  - flurazepam *(Dalmane)*
  - lorazepam *(Ativan)*
  - midazolam *(Versed)*
  - oxazepam *(Serax)*
  - prozepam *(Centrax)*
  - quazepam *(Doral)*
  - temazepam *(Restoril)*
  - triazolam *(Halcion)*
- buptopion *(Welbutrin)*
- carbamazepine *(Tegretol)*
- diclofensine
- doxepin *(Sinequin)*
- desiprimine *(Norpramin)*
- fluoxetin *(Prozac)*
- imipramine *(Tofranil)*
- lithium
- melitracen
- molindon *(Moban)*
- paroxetin
- phenelzin *(Nardil)*
- protriptilin *(Vivactil)*
- trazodon *(Desyrel)*
- zimeldin

Anti-neoplastics

- bleomycin *(Blenoxane)*
- cis-platinum *(Platinol)*
- carboplatinum *(Paraplatin)*
- methotrexate *(Rheumatrex)*
- nitrogen mustard *(Mustagen)*
- vinblastin *(Velban)*

Others

thalidomide *(Thalomid)*

Adapted from the pamphlet:

Ototoxic Medications: Drugs that can cause hearing loss and tinnitus
Article by Orin S. Kaufman, D.O.

League for the Hard of Hearing
50 Broadway, New York, NY 10004
www.lhh.org

For a more complete list of medications we recommend:
Ototoxic Drugs Exposed by Neil G. Bauman. Ph.D.
http://www.HearingLossHelp.com