

PPOD + Audiology

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Evidence: CDC and NIH papers on Hearing Impairment and Diabetes

- **Diabetes and Hearing Impairment in the United States: Audiometric Evidence from the National Health and Nutrition Examination Surveys, 1999–2004.**
Ann Intern Med. 2008 July 1; 149(1): 1–10.
- **Three decade change in the prevalence of hearing impairment and its association with diabetes in the United States** *Preventive Medicine* 49 (2009) 360–364



Education

- **Education for consumers: Example: *Take Charge of Your Diabetes***
Simple language book, multiple chapters on diabetes control and complications, in process of being updated, print to digital, new topics
- **Consider one pager like “ If you have diabetes, saving your hearing matters”**
- **Education for providers: What would audiologists like other providers to know? Make the case.**



Take Charge messages: Chapter 12 — How Diabetes Affect Your Hearing

- **Hearing loss is twice as common in people with diabetes as it is in those who don't have the disease.**
- **If you have diabetes you are more likely to have hearing loss.**
- **Hearing loss may be an under-recognized complication of diabetes.**



Take Charge messages: Chapter 12 — How Diabetes Affect Your Hearing

- **Problems with your hearing may affect your ability to learn about how to manage your diabetes when you get diabetes education.**
- **Tell your diabetes educator about your hearing loss.**
- **Hearing loss can also make depression worse. And depression is more common in people with diabetes.**



How Are Diabetes and Hearing Loss Related?

- **Over time, high blood sugar levels can damage small blood vessels in the body.**
- **Parts of the body most affected by damage to small blood vessels are eyes, kidneys, and nerves of the body.**
- **Hearing depends on small blood vessels and nerves similar to those in other parts of the body that are affected by high blood sugar levels.**



Symptoms of Hearing Loss Can Often Be Hard to Notice.

- **Family members and friends sometimes notice the hearing loss before the person experiencing it.**

What are the signs and symptoms of hearing loss?

- **Frequently asking others to repeat themselves.**
- **Trouble following conversations that involve more than two people.**
- **Thinking that others are mumbling.**
- **Problems hearing in noisy places such as busy restaurants.**
- **Trouble hearing the voices of women and small children.**
- **Turning up the TV or radio volume too loud for others who are nearby.**

Diseases Affecting Hearing & Balance



- Diabetes
- Chronic renal disease
- Cardiovascular disease
- Hypothyroidism
- Alzheimer's disease
- Paget's disease
- Chron's disease

Audiological Concerns: Diabetes



Hearing Loss

- Cochlear microangiopathy
- Neural degeneration



Balance & Fall Risk

- Foot neuropathy and vision effects
- Vestibular effects of diabetes



Diabetic Pain & Infection Control

- Ototoxicity
- Vestibulotoxicity

Consequences of Hearing Loss

Symptoms

- Asks for repetition
- Brings 3rd-party interpreter
- Associated with cognitive decline and depression
 - Social isolation
 - Stress
 - Confusion

Medical Management

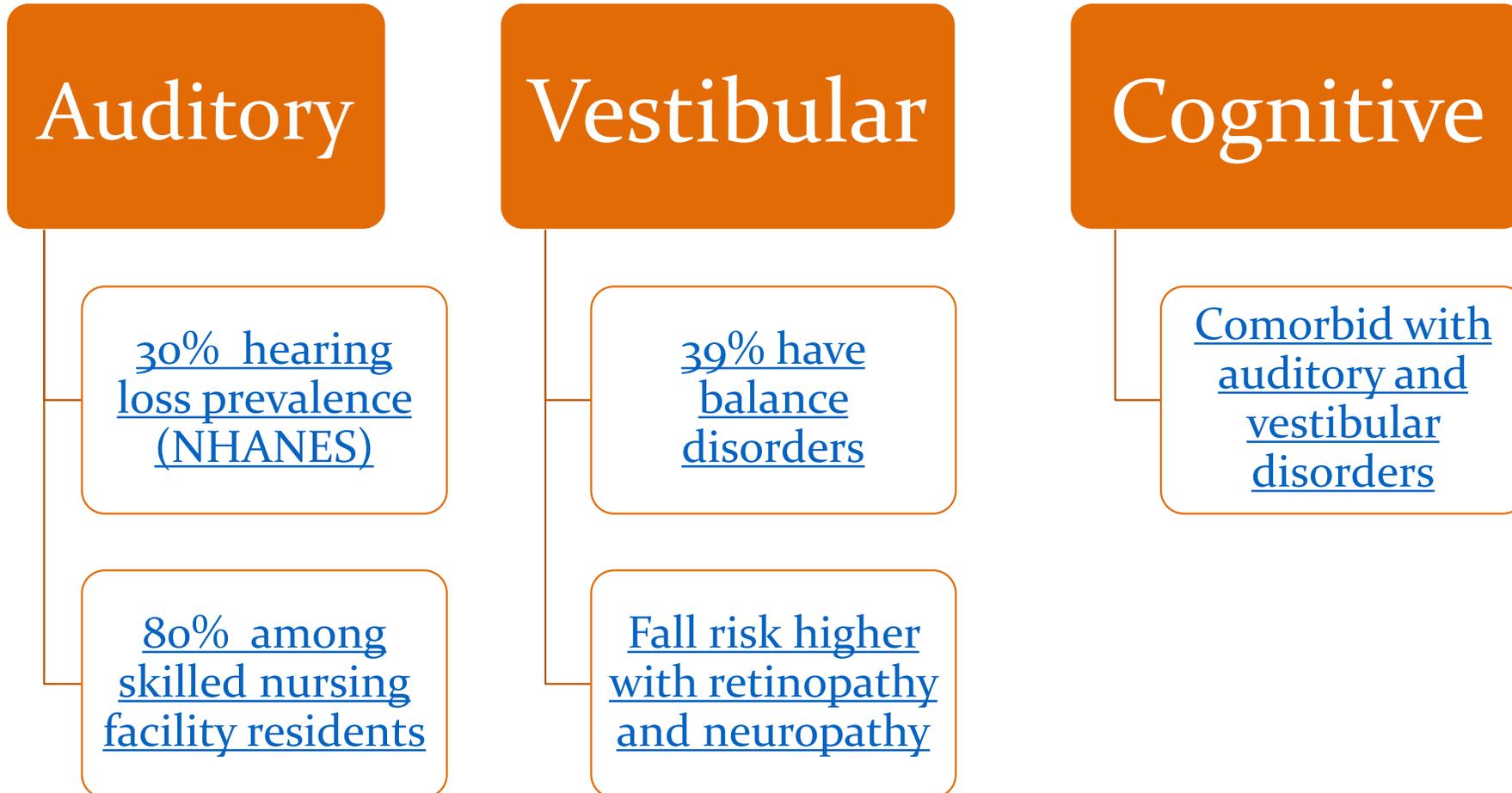
Misses verbal instructions

Noncompliance

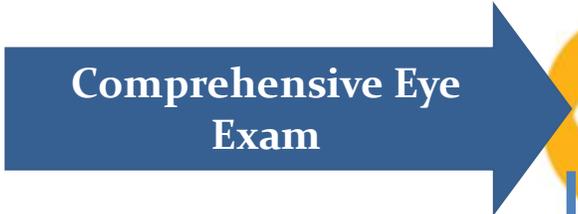
Worse patient outcomes



Complications of Diabetes



Hearing loss is higher among those with diabetic retinopathy



Vision loss due to diabetes is associated with major depression. ¹⁷

Diabetic retinopathy is associated with periodontal disease. ¹⁸

Worsening diabetic retinopathy is associated with elevated diastolic blood pressure. ¹⁹

65% of individuals with Vision Impairment could achieve normal vision with an eye exam and new glasses, reducing falls leading to fractures. ²⁰

Retinal plaque signals obstructive vascular disease of the heart or carotid artery. ²⁴

Diabetic retinopathy is associated with early kidney disease-Albuminuria. ²³

Signs of diabetes detected in the eye are associated with peripheral neuropathies of the foot and foot ulcers. ²²

Reduced corneal sensitivity, dry eye, and ocular muscle palsies are early indicators of diabetes and associated neuropathies. ²¹

References available by request:

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Audiology and PPOD Professions



***Ongoing IPE and IPC/IPP
with the other professions***

Align with Pharmacy for otovestibulotoxic monitoring

Collaborate with Podiatry for better balance and foot care

Ensure Optometry Evaluation to help lower risk of falls

Counsel patients to see Dentist several times a year



What Should You Do If You Think You May Have Hearing Loss?

- **Talk to your doctor.**
- **You may want to have your hearing checked**
- **Get help from hearing specialist like: an audiologist, or a doctor who specializes in hearing problems. You'll learn more about your hearing loss from a full hearing exam.**
- **You will also be told what can be done to treat it.**
 - **Watch out for other causes of hearing loss such as: loud noises, certain medicines, and smoking.**



Make New Friends

- **Establish public and private partnerships.**
- **Professional orgs: AADE, ADA, AACE, PPOD professional orgs**
- **Consumer groups**
- **Leverage resources in the public domain: Example: VSP adaptation of PPOD *Healthy Eyes Matter* and *4 Steps to Control Your Diabetes for Life***



DIABETES AND YOU:

Healthy Ears Matter!

Audiology is under recognized in diabetes care. It is very important to take good care of your ears (hearing and balance) when you have diabetes. If you don't hear well, you will miss important information about your health plan. Good news! You can take steps now to keep your ears healthy.

How Can Diabetes Harm Your Ears?

- Diabetes damages small blood vessels in your inner ear and disrupts the hearing signals to the brain
- Hearing loss is 30% higher in people with diabetes. 80% of residents in nursing homes have trouble hearing.
- You have a greater chance of falling with diabetes due to vision loss, foot neuropathy and the effects in the vestibular system.

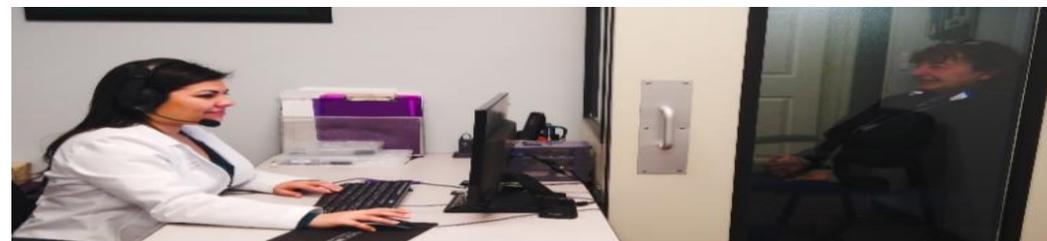
What Types of Ear Diseases are Common Among People with Diabetes?

Sensorineural Hearing Loss

- Your audiologist will recommend treatment options or refer you to a medical ear specialist if your hearing loss is treatable with medication or surgery.

Balance problems

- You can be at greater risk of falling because of 1) the loss of sensation in your feet, 2) changes in your vision and 3) changes in your vestibular system.



Visit your audiologist right away if you:

- Hear ringing or other noise in your ears
- Have sudden changes in your hearing and balance
- Become dizzy with rapid head movements, fall or have a fear of falling
- Have a sudden change in how clearly you understand
- Struggle understanding in background noise or feel that people are mumbling



DIABETES AND YOU: Healthy Ears Matter!



Schedule an audiology exam when you are first diagnosed.

- Ask a family member to join you at the appointment.
- Bring your medication list as well as your medical history of illnesses and hospitalizations.
- During the exam, you will respond to very soft and different pitch sounds. The audiologist will measure how clearly you understand speech. Other tests of hearing function will be explained.
- A balance screening will assess your risk of falls.
- Schedule a follow up appointment to monitor your hearing and balance.
- Find an audiologist:
 - webportal.audiology.org/Custom/FindAnAudiologist.aspx
 - audiologist.org/audiologist-directory

To-do List for Healthy Ears

- Get a baseline audiology exam for hearing and balance as soon as you are diagnosed with diabetes.
- Your audiologist will recommend the next evaluation based on your medical history.
- Contact your audiologist about changes in your ability to hear or your risk of falls.
- Wear ear protection around loud noises (lawn mowers, leaf blowers, chain saws).
- Manage your ABCs! Read the important information below.

Manage Your ABCs!

Ask your health care team to help you set and reach goals to manage your blood sugar, blood pressure, and cholesterol—also known as the **ABCs** of diabetes. Teach your family about your diabetes and the **ABCs** so they can help you, too.

- **A1c:** The goal set for many people is less than 7% for this blood test, but your doctor might set different goals for you.
- **Blood pressure:** High blood pressure causes heart disease. The goal is less than 140/90 mmHg for most people, but your doctor might set different goals for you.
- **Cholesterol:** LDL or “bad” cholesterol builds up and clogs your blood vessels. HDL or “good” cholesterol helps remove the “bad” cholesterol from



NDEP **National Diabetes Education Program**

A program of the National Institutes of Health and the Centers for Disease Control and Prevention

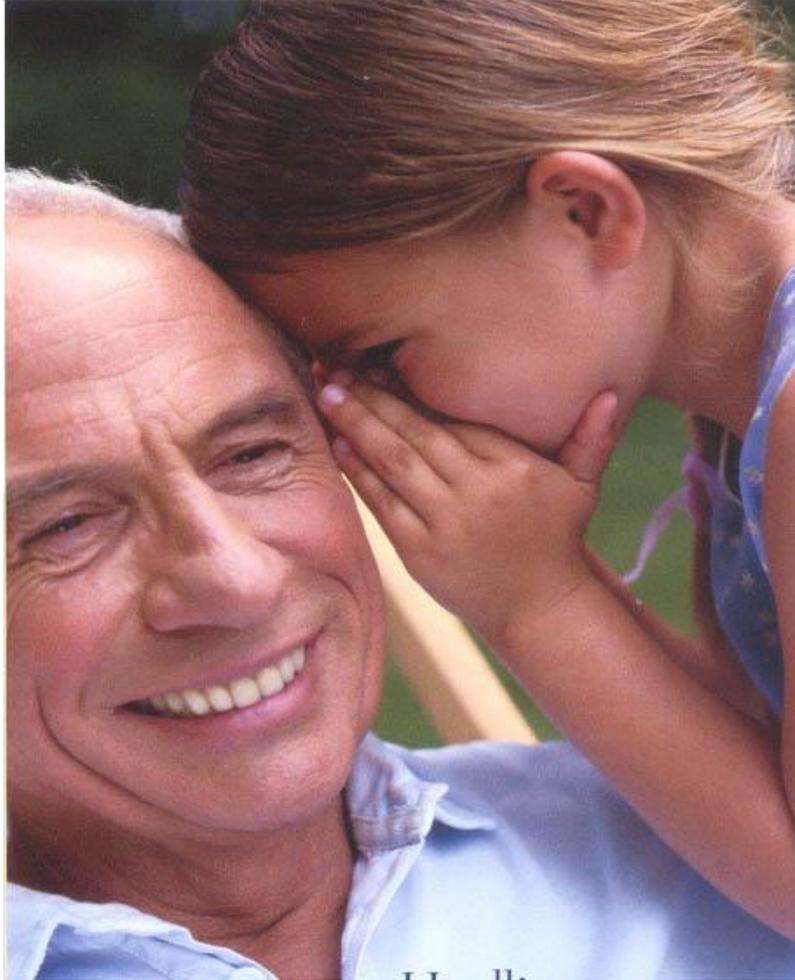
For more information, call 1-800-CDC-INFO (800-232-4636)

TTY 1-888-232-6348 or visit www.cdc.gov/info.

To order resources, visit www.cdc.gov/diabetes/ndep.



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