DIABETES & DEMENTIA

THE HEARING LOSS "X" FACTOR

By Dr. Keith Darrow, PhD
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Hearing Center of Long Island

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INTRODUCTORY LETTER FROM DR. DARROW

"Hearing Loss is twice as common in people with Diabetes."

There are few certainties in life – aging is one of them. While we may not look forward to each passing birthday, the alternative (i.e. not having another birthday) is not a great option either. So, at the risk of sounding cheesy, live life to its fullest and cherish every moment – **and take care of yourself.**

The quote at the beginning of this document about the rates of hearing loss in patients with diabetes is perfect - because it uses the word 'common'. Diabetes is not a normal part of aging. Dementia is not a normal part of aging. Cardiovascular disease and Cancer are not a normal part of aging. Neither is Age-Related Hearing Loss - *a progressive degenerative disorder* that profoundly impacts cognitive function. There is a difference between 'common' and 'normal' aspects of aging. The trick is knowing the difference between the two and knowing when to speak with your Physicians, Pharmacists, Oncologists and Audiologists when you are dealing with a disease that may be 'common', but still have a **profound, negative, impact on your life.** Each disorder listed above, from Diabetes to Hearing Loss, are more common as we age, but they are not normal. Each disease listed above is also **treatable**, with no available cure.

It is estimated that nearly 31 Million people live with Diabetes. Which means nearly every family has somebody who suffers from this disease. I have it in my family – I watched my father progress from diet and exercise, to pills, to injections. Each of these 31 Million people are at **increased risk of developing hearing loss**, and each of these individuals is at a **200-500% increased risk of developing cognitive decline and Dementia.**

Diabetes is one of the many diseases that increase the risk of developing hearing loss. This is why all **Excellence In Audiology** member-clinics operate under the motto that Hearing Care Is Health Care. We understand the benefits of treating hearing loss on overall quality of life, improvements in cognitive function, and reducing the risk of developing the mind-robbing disease of Dementia.

In this report, I will highlight the research that explains the connections of Hearing Loss and Diabetes and include helpful tips on how to control Diabetes and how to treat hearing loss and the associated cognitive decline.

In this report, **'DIABETES & DEMENTIA: THE HEARING LOSS "X" FACTOR',** I include a comprehensive review of the current scientific literature, along with helpful lifestyle tips, to help you stay active and healthy. This report is part of our overall series, including the #1 Amazon Best-Selling book, **Stop Living In Isolation**, to help all people in our community live a longer and healthier, and more fulfilling life as we age.

Sincerely,

Dr. Keith Darrow

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NeuroScientist and Clinical Audiologist

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Owner of Hearing and Balance Centers of New England
President, Excellence In Audiology
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Professor at Worcester State University
Nationally Recognized Speaker, Trainer, and Researcher
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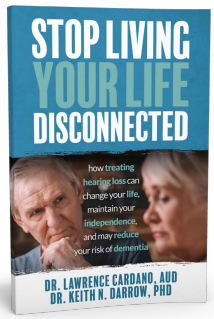

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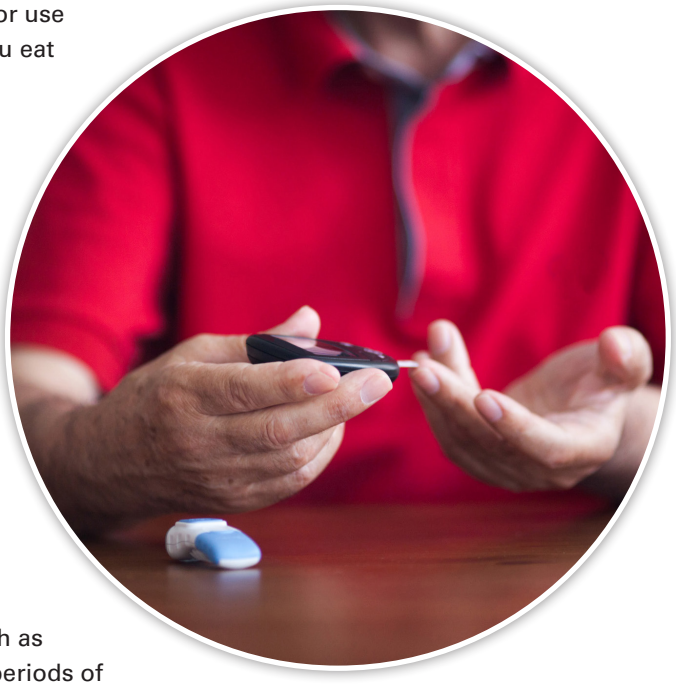
DIABETES: AN INTRODUCTION TO THE DISEASE



Diabetes is a disease that affects your body's ability to produce or use insulin. Insulin is a hormone. When your body turns the food you eat into energy, insulin is released to help transport this energy to the cells. Insulin acts as a "key." Its chemical message tells the cell to open and receive glucose. If you produce little or no insulin, or are insulin resistant, too much sugar remains in your blood – and this is where the problem begins!

One of the most devastating effects of Diabetes is its impact on small blood vessels throughout the body. Each cell, tissue, muscle, nerve and organ in our body relies on proper blood supply to keep our internal components working properly. Blood carries the most important ingredients for life to all of our organs: oxygen and glucose. Too much glucose in the blood leads to the symptoms of diabetes.

Blood vessels can be damaged by the effects of high blood glucose levels and this can in turn cause damage to organs, such as the heart, eyes, and ***ears!*** High blood glucose levels over long periods of time are known to lead to the blood vessels becoming damaged and destroyed. How the damage occurs is not so well understood, but it's impact on people is well understood, and is very real.

You are more likely to develop diabetes if you have a family history of diabetes, are overweight, or are over age 45. Physical inactivity, race, and certain health problems also affect your chances of developing diabetes. A history of gestational diabetes is an additional risk factor for women.

Depending on the type of Diabetes, symptoms can start quickly, in a matter of weeks, or develop slowly, over the course of several years. Many people with Type 2 diabetes have no symptoms. Some people do not find out they have the disease until they have the effects of diabetes and the related health problems, such as blurred vision, heart trouble, and/or decreased hearing clarity.

Diabetes can be the result of a number of factors, including genetics and lifestyle. Scientists believe that **Type 1** Diabetes is caused by genes and environmental factors, such as viruses, that might trigger the disease. Many current studies are working to pinpoint causes of Type 1 Diabetes and possible ways to prevent or slow the disease.

Type 2 Diabetes is the most common form of Diabetes and is caused by several factors, including lifestyle factors and genes.

"Blindness separates us from things, Deafness separates us from people."

Overweight, Obesity, and Physical Inactivity

You are more likely to develop Type 2 Diabetes if you are not physically active and are overweight or obese. Extra weight sometimes causes insulin resistance and is common in people with Type 2 Diabetes. The location of body fat also makes a difference. Extra belly fat is linked to insulin resistance, Type 2 Diabetes, and heart and blood vessel disease. To see if your weight puts you at risk for Type 2 Diabetes, check out a Body Mass Index (BMI) chart to find your risk.

Insulin Resistance

Type 2 Diabetes usually begins with insulin resistance, a condition in which muscle, liver, and fat cells do not use insulin well. As a result, your body needs more insulin to help glucose enter cells. At first, the pancreas makes more insulin to keep up with the added demand. Over time, the pancreas can't make enough insulin, and blood glucose levels rise.

Genes and Family History

As in Type 1 Diabetes, certain genes may make you more likely to develop Type 2 Diabetes. The disease tends to run in families and occurs more often in certain racial/ethnic groups. Genes also can increase the risk of Type 2 Diabetes by increasing a person's tendency to become overweight or obese.

Symptoms

Signs and symptoms of Type 2 Diabetes often develop slowly. In fact, you can have Type 2 Diabetes for years and not know it. Here are some of the 'symptoms' and things to look for:

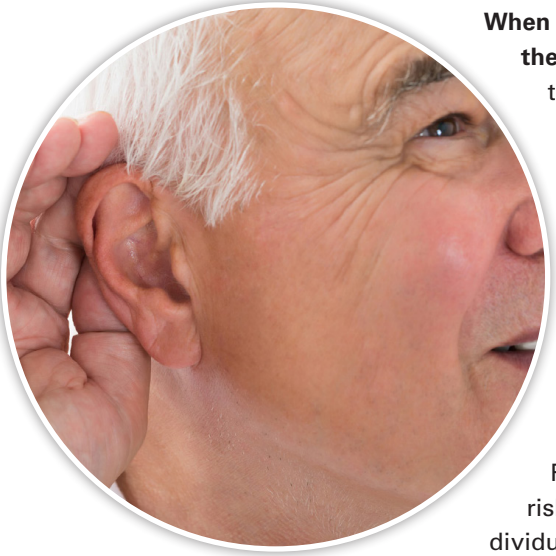
- **Increased Thirst and Frequent Urination.** Excess sugar building up in your bloodstream causes fluid to be pulled from the tissues. This may leave you thirsty. As a result, you may drink — and urinate — more than usual.
- **Increased Hunger.** Without enough insulin to move sugar into your cells, your muscles and organs become depleted of energy. This triggers intense hunger.
- **Fatigue.** If your cells are deprived of sugar, you may become tired and irritable.
- **Blurred Vision.** If your blood sugar is too high, fluid may be pulled from the lenses of your eyes. This may affect your ability to focus.
- **Loss of Hearing Clarity** – Diabetes can compromise the blood flow to the auditory system, and thereby decrease hearing clarity, especially in background noise.
- **Slow-Healing Sores or Frequent Infections.** Type 2 Diabetes affects your ability to heal and resist infections.
- **Areas of Darkened Skin.** Some people with Type 2 Diabetes have patches of dark, velvety skin in the folds and creases of their bodies — usually in the armpits and neck.

DIABETES & HEARING LOSS: THE CONNECTION

There are a vast number of scientific studies that have explored the connections of Hearing Loss and Diabetes. These studies have found that Diabetes can cause profound damage to the inner ear (the organ of hearing), and thus result in decreased hearing clarity – especially in background noise!

Our ears are very delicate structures, and we depend on them in nearly everything we do. There is rarely a task, a job, a relationship we have (at home, at work, at play) that does not involve our sense of hearing. Hearing never stops – it is even on when we are sleeping! Our ears never get a rest. Perhaps Helen Keller, who was both deaf and blind, said it best when she said,

'Blindness separates us from things,
Deafness separates us from people'.



When Diabetes, especially with poorly controlled blood sugar, takes its toll on the small blood vessels throughout your body, your ears are very susceptible to damage too. Fortunately, some parts of your body can accommodate for damaged blood vessels by depending on alternative blood supplies, but unfortunately our ears lack that option – **and the resulting hearing loss is permanent.**

"There's no redundancy in the blood supply to the inner ear," explains hearing loss researcher and otolaryngologist Yuri Agrawal, MD, assistant professor of otolaryngology at Johns Hopkins University in Baltimore. This means that once a blood vessel is damaged, there's no back-up blood supply — **and your hearing clarity will decrease accordingly.**

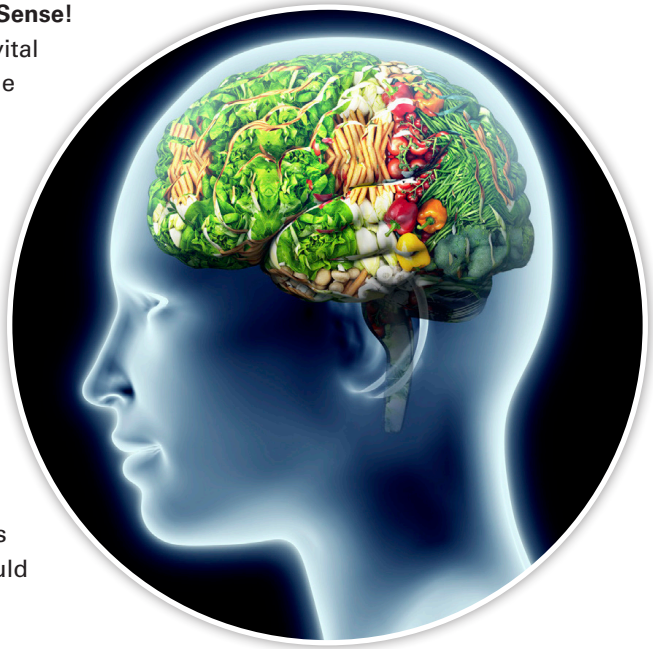
Regrettably, **as the hearing loss increases as a result of the Diabetes,** your risk factor for other debilitating diseases will also increase. For example, individuals with hearing loss will experience an increased risk of falling because your inner ear not only helps manage your hearing but also your sense of balance. When you combine this fact, with the loss of nerve endings in the periphery of people with Diabetes (i.e. sensation in the hands and feet), the increased risk of falls is frightening!

Another 'downside' to hearing loss, is the increased risk of developing Dementia. Reports from John's Hopkins (and others) have shown that hearing loss can increase the risk of developing cognitive decline and Dementia by as much as 200-500% (depending on the degree of hearing loss). More on this in the next section.

Some adults live with **Pre-Diabetes,** whose blood glucose is higher than normal but not high enough for a Diabetes diagnosis. These individuals are also at increased risk of hearing loss and its associated cognitive and overall health deficits. **Studies have found that Pre-Diabetes presents individuals with a 30 percent higher rate of hearing loss compared to those with normal blood sugar tested after an overnight fast.**

DIABETES & DEMENTIA: A COMMON LINK

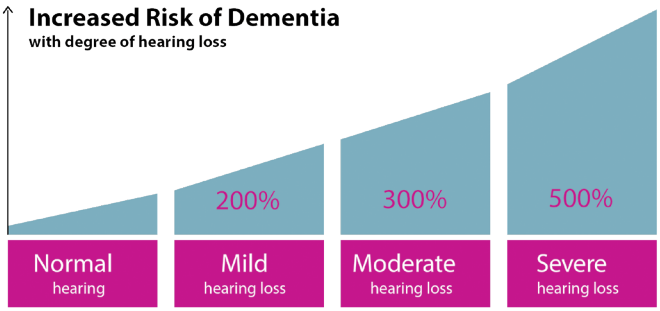
Diabetes Increases the Risk of Developing Dementia, and it Makes Sense! Dementia and Diabetes starve your brain, and tangles and twists vital cells. Alzheimer's Disease is the 5th leading cause of death in the elderly in North America. And the devastating disease of Dementia shares a strong link with another sickness that wreaks havoc on millions of individuals in North America — Diabetes.



As mentioned prior, individuals affected by Type 1 and Type 2 Diabetes have a notable resistance to insulin. Type 1 is caused by the body's inability to produce insulin, and Type 2 is caused by the deterioration of the body's insulin receptors and associated with the consumption of too much refined carbohydrate like processed grains and sugar. But when studies began to appear in the 2000's that indicated an alarming correlation between insulin and brain cell deterioration, major breakthroughs were made around Alzheimer's and Dementia prevention. This spurred many health practitioners to ask a critical question — could Alzheimer's Disease simply be Type 3 Diabetes?

Multiple studies have shown that Type 2 Diabetes is a risk factor for Dementia, including Alzheimer's Disease, Vascular Dementia and other types of Dementia. Cardiovascular problems that are associated with diabetes are also associated with Dementia, including:

- Obesity
- Heart disease or family history of heart disease
- Impaired blood vessels
- Circulation problems
- High cholesterol
- High blood pressure



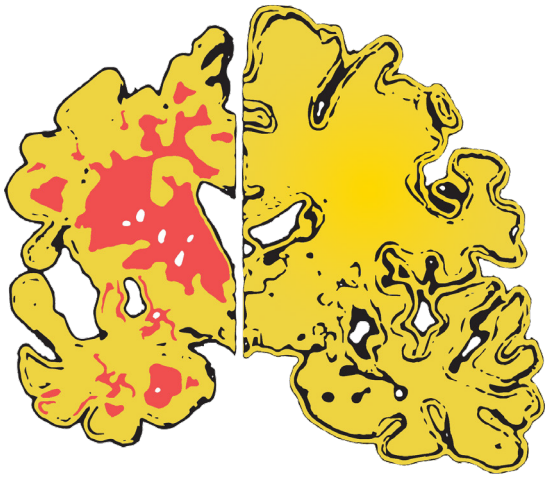
Research has also proved that, similar to Diabetes, glucose is not used properly in the brains of people with Alzheimer's Disease. This can be caused by nerve cell death, which reduces the brain's ability to interpret messages. In the case of Vascular Dementia, brain cells die due to lack of oxygen, preventing brain cells from communicating with each other.

Beta amyloid plaques, which build up in the brains of people with Alzheimer's Disease, have also been shown to prevent insulin receptors in the brain from doing their job. This can impact insulin production and cause brain cells to become insensitive to insulin.

Is Alzheimer's Disease "Type 3 Diabetes"?

It is scary to think that Diabetes and Dementia may be so strongly connected, that many scientists have proposed a 'Type-3 Diabetes'. Several studies suggest that the brains of people with Alzheimer's Disease are in a ***'diabetic state'***, partly due to the decrease and insensitivity to insulin. There are many similarities in the brains of people with Diabetes and the brains of people with Alzheimer's Disease; however, Diabetes only remains a risk factor. Some people with Diabetes may go on to develop Dementia, but some will not.

It is already known that diabetics are at least twice as likely to experience Dementia. The cells of your brain can become insulin-resistant just like other cells in the body. What was once considered a mysterious accumulation of beta amyloid plaques characteristic in the Alzheimer brain is now associated with the same lack of insulin that negatively affects cognition.



Brain With Hearing Loss **Brain With Normal Hearing**

Schematic representing the potential cerebral atrophy in an individual with age-related hearing loss.

Reducing Your Risk for Diabetes and Dementia

This is easy to remember, and easy to do: ***What's good for your heart is good for your brain!*** Living a healthy lifestyle that promotes cardiovascular health will benefit your brain, your body, and your **ears!**

- Eat a healthy diet rich in vitamin D, folate, and B6 and B12 vitamins
- Exercise regularly – both your body and mind
- Stay socially active and challenge yourself daily

Your hearing loss directly impacts these factors. People with hearing loss tend to have a poorer diet, exercise less, become less socially active, and are highly susceptible to depression. If you or a loved one are experiencing signs of hearing loss (issues with clarity, difficulty hearing in background noise, tinnitus), showing signs of cognitive impairment (confusion, poor motor coordination, loss of short-term or long-term memory, identity confusion, and/or impaired judgment and/or dealing with Diabetes, speak to your physician and seek treatment with an Excellence In Audiology hearing health care specialist.

CONSUMER NOTICES

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