

# Hearing loss and dementia.

Information for your patients.



## Today, greater emphasis is being placed on hearing health.

As a physician, you may be routinely asking patients whether they have had their hearing checked. Beyond referring patients for hearing tests and encouraging treatment of hearing loss, it is important to inform them of the risks if they ignore hearing loss - dangers that include certain life-threatening co-morbidities.

*"Seniors with hearing loss are significantly more likely to develop dementia over time than those who retain their hearing... Our findings emphasize just how important it is for physicians to discuss hearing with their patients and to be proactive in addressing any hearing declines over time."*<sup>1</sup>

## The link between untreated hearing loss and development of dementia and Alzheimer's disease.

Multiple studies indicate hearing loss can be linked to the onset of dementia and Alzheimer's disease. Leaving hearing loss untreated could pose a serious risk that has not been widely shared with the hearing-impaired population. Providing this information will encourage patients and their loved ones to make more informed and timely decisions about their hearing care.

Frank R. Lin, MD, Ph.D conducted a study commonly cited by medical professionals on the topic of hearing loss and cognitive decline.<sup>2</sup> Conducted with 1,984 older adults, the study indicated that the more severe the hearing loss, the greater the likelihood of developing a cognitive disorder, and the steeper the decline in mental function. However, even subjects with mild hearing loss were found likelier to experience cognitive failures.

*"Declines in hearing abilities may accelerate gray matter atrophy and increase the listening effort necessary to comprehend speech... Hearing aids may not only improve hearing but preserve the brain."*<sup>3</sup>

In 2014, Dr. Lin's team used magnetic resonance imaging (MRI) to show that people with hearing impairments lost more than an additional cubic centimeter of brain matter annually, and experienced greater shrinkage of tissue in the structures responsible for processing sound and speech, than those with normal hearing. The atrophy affected the middle and inferior temporal gyri, which play key roles in memory and sensory integration. Similar damage to these regions can be seen in patients with Alzheimer's disease.<sup>4</sup>

At the time the initial study results were released, Dr. Lin and other experts put forth several theories as to why hearing loss may lead to dementia and Alzheimer's disease:

- The effort it takes those with hearing loss to hear and comprehend creates a regular strain that interferes with normal cognition
- Hearing impaired people tend to withdraw socially and the lack of regular interaction leads to mental stagnation
- A combination of all these factors contributes to cognitive decline

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*“Untreated hearing loss is linked to reduced earnings, increased workplace absenteeism, and lower workplace productivity, as well as depression, anxiety, and cognitive decline.”<sup>5</sup>*

Researchers have offered a few convincing theories as to the exact reason for a link between hearing loss and cognitive decline. One is that in the presence of hearing loss, the individual has to exert much greater mental effort trying to hear and understand. This increased listening effort or cognitive load means that the brain devotes more resources trying to compensate for the hearing loss, at the expense of other processes, such as memory and thinking. Another idea suggests that with hearing loss, the parts of the brain responsible for hearing atrophy. These same areas also play roles in memory and sensory integration, and have been shown to be involved in the early stages of cognitive impairment and Alzheimer’s disease. A third theory involves social isolation. Individuals who have a hard time hearing tend to withdraw from social interactions. The subsequent social isolation has been linked with cognitive decline by numerous studies.

#### **Hearing aids slow the progression of dementia and Alzheimer’s disease.**

Hearing aids make sounds in the environment audible, speech clearer and music more enjoyable. When patients are no longer constantly worried that they won’t hear an approaching car or doorbell ring, can freely hear and understand conversation, and can enjoy the sounds of nature and beautiful music, cognitive load and stress decrease. Hearing aid wearers can fully engage in social activities and interactions with friends and family, and also in hobbies and physical exercises that keep the body and mind active. In fact, there are now hearing aids that have been clinically proven to reduce listening effort based on brainwave measurements.<sup>6</sup>

A recent study following 3,700 participants over the course of 25 years revealed that participants with hearing loss had lower scores for cognitive ability at the beginning of the study than the control group with normal hearing. However, those who wore hearing aids experienced a shallower rate of decline in cognitive abilities that nearly matched their naturally hearing peers. Conversely, the participants with hearing loss who did not wear hearing aids experienced a markedly steeper decline in cognition.<sup>7</sup>

Another group of researchers also reached the conclusion that wearing hearing aids improves cognition in patients with hearing loss.<sup>8</sup> In this study, hearing impaired participants took cognitive exams that measured memory, attention, and processing speed then wore hearing aids for two weeks and took the tests again. The results were compared and showed a significant uptick in percentages scored for recalling words and selective attention, and an increase in processing speed resulting in correct answers.

Researchers theorize that hearing loss requires the brain to devote the majority of its resources to understanding speech, diverting it from other cognitive duties. This cognitive “overload” is relieved by the use of hearing aids, thus alleviating strain and avoiding one of the pathways to dementia.

#### **Early diagnosis and treatment of hearing loss slows the progression of dementia and Alzheimer’s disease.**

As evidence continues to mount that hearing loss is a contributing factor in the development of dementia and Alzheimer’s disease, it is imperative to inform patients of the profound consequences of ignoring their hearing loss. People with hearing loss wait an average of seven years from when they are diagnosed to seek treatment, even though the sooner hearing loss is detected and treatment begins, the more hearing ability can be preserved. Considering early diagnosis and medical intervention can also slow the progression of dementia and Alzheimer’s disease, it is more important than ever for physicians to encourage patients to get their hearing loss treated sooner rather than later.

*“Using hearing aids attenuates cognitive decline in elders presenting with hearing loss.”<sup>8</sup>*

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