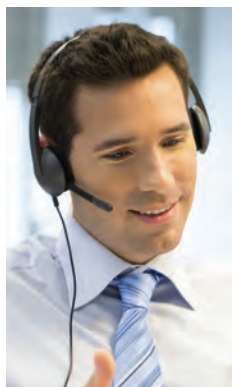


# THE NEED TO MAKE NOISE ABOUT HEARING AT WORK

The Case for Greater Employer Focus on the Hearing Health of Employees



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# INTRODUCTION

Hearing is an important part of our everyday lives – keeping us informed, safe and connected. In today’s fast-paced and technology-enabled world, we rely on our hearing to operate at quicker speeds and for longer periods of time than ever before. At the same time, noisy environments and unhealthy lifestyle habits are placing people at greater risk for hearing loss.

EPIC Hearing Healthcare (EPIC) recognizes that hearing loss can be very costly to individuals, businesses and society as a whole in the form of diminished job performance, isolation from relationships and an increase in overall health issues, such as anxiety and depression. While the majority of those with hearing loss are still in the workforce,<sup>1</sup> people tend to associate this condition with “old age.” As a result, they often put off needed hearing loss evaluation and treatment. Many also make poor lifestyle and health choices that further increase their risk for hearing damage.

EPIC founded the *Listen Hear!* public education initiative to change this paradigm and increase the urgency placed on education and treatment to promote healthy hearing. Through this program, EPIC undertook the largest employee and employer survey of its kind to uncover awareness and attitudes related to hearing loss at work. Conducted in December 2013, the online survey documented the attitudes and awareness of more than 1,500 employees and 500 employers on hearing loss and its financial, productivity and interpersonal consequences.<sup>2</sup> This report summarizes findings from the survey and centralizes relevant, secondary research to make the case for greater employer focus on addressing the growing hearing health crisis.

## IN THIS REPORT, EMPLOYERS AND OTHERS WILL:

- **Learn about the prevalence and impact of hearing loss on the job**
- **Be able to identify increasing risk factors within a workforce**
- **Understand barriers to care and ways employers can promote hearing health in the workplace**

# SUMMARY

More than 10 percent of full-time employees have a diagnosed hearing problem and another 30 percent suspect they have a problem but have not sought treatment, according to EPIC’s *Listen Hear!* survey. Of those with suspected hearing loss, nearly all report that this hearing loss impacts them on the job, with complaints ranging from misunderstanding what is being said and feeling stressed to pretending to hear when they cannot and having trouble hearing over the phone.

This problem is expected to be even larger in the future, as the massive baby boomer generation continues to age and as hearing loss rises across age groups due to increased noise exposure and overall health and lifestyle factors that contribute to hearing loss, such as diabetes, high blood pressure, obesity, smoking and medication use.

Primary barriers to employees seeking treatment include the stigma of hearing loss, such as concern over employer perception, and the financial hardship of covering the high cost of hearing aids. Another barrier is the general lack of awareness about the importance of prompt treatment to restore hearing before further hearing damage is done due to environment compensations (turning up the volume) and before the employee falls victim to social isolation and disengagement that accompanies hearing loss and can lead to a range of additional issues.

Employers can show their support of employees’ overall health and wellness by providing access to hearing benefit options covering preventive care and treatment, and by promoting education to employees on the importance of regular hearing check-ups and prompt treatment if hearing loss is detected. By taking such actions, employers can help their employees achieve a better quality of life, while preventing the health- and productivity-related consequences of untreated hearing loss.

# HEARING LOSS ON THE RISE

Hearing loss is one of the most common conditions affecting adults, and it appears to be increasing at alarming rates.

The most quoted source on the prevalence of hearing loss in the U.S. is the MarkeTrak survey, supported by the Better Hearing Institute. This survey of 80,000 households is conducted every three to four years using the National Family Opinion (NFO) panel. In the most recent survey,<sup>3</sup> conducted in 2008, 34.5 million Americans – or 11.3 percent of the population – reported a hearing difficulty. This was an increase of 8.8 percent over the prior survey in 2004. This increase was not simply reflective of the growth of the population (given that the increase in U.S. households over the same period was only 4.5 percent), but also demonstrates that **hearing loss is a growing problem.**

Other sources indicate that prevalence of hearing loss may be even higher. Researchers at the Johns Hopkins University School of Medicine recently analyzed data from the National Health and Nutritional Examination Surveys (NHANES) and concluded in 2011 that **nearly 1 in 5 Americans ages 12 and over – approximately 48 million people – suffers from hearing impairment** severe enough (in one or both ears) so that it may make communication difficult.<sup>4</sup>

Not only is hearing loss on the rise, but it is also increasing across age groups, which is counter to common misperceptions that hearing loss is contained to the elderly. According to the Better Hearing Institute, the majority (65 percent) of people with hearing loss are younger than age 65.<sup>1</sup> **The main culprit, not surprisingly, is the baby boomer population.** Due to its overall large size, this group accounts for the highest number of hearing loss cases of any age demographic. (See **TABLE 1.**)



*The majority of people with hearing loss are younger than 65.*

– The Better Hearing Institute

HEARING LOSS POPULATION BY AGE GROUP

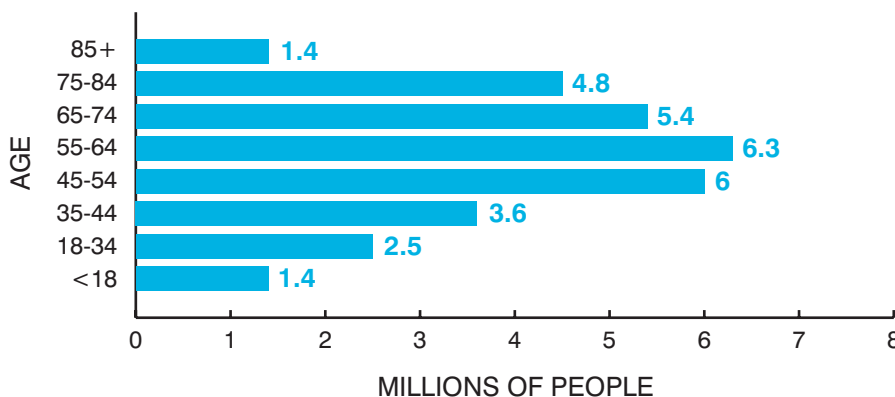


TABLE 1: Source: Better Hearing Institute<sup>1</sup>



## DID YOU KNOW?

### The Human Ear

The human ear is a fully developed part of our bodies at birth and responds to sounds that are very faint, as well as sounds that are very loud. Even before birth, infants respond to sound.

Hearing loss among the baby boomer population is of particular concern to employers, given that this group is still in the workforce and not planning to retire any time soon.<sup>5</sup> To put the size of the problem into perspective, consider that 1 in 6 baby boomers has a hearing problem.<sup>1</sup>

However, **hearing loss is an important concern for younger workers as well**, considering that 1 in 14 generation Xers (ages 29-40), or 7.4 percent, already has at least some hearing loss.<sup>1</sup>

The emerging and influential generation Y employees are also likely facing hearing loss at record levels. According to a study by Dr. Josef Shargorodsky appearing in the *Journal of the American Medical Association*, there was a 30 percent increase in hearing loss in adolescents (ages 12-19) between 1988 and 2006.<sup>6</sup> According to the research, about 1 out of 5 adolescents in the U.S. had at least some evidence of hearing loss and approximately 1 out of 20 had at least mild hearing loss. This group is now in the workforce.

Results from these research studies are in line with results of EPIC's *Listen Hear!* employee survey. While 12 percent of all employees surveyed say they have a diagnosed hearing problem for which they are getting treatment, this jumped to 17 percent among younger employees (ages 18-44).<sup>2</sup> (See **TABLE 2.**) **Another 30 percent of employees across age groups suspect they have a hearing problem, but have not sought treatment**, so hearing loss is likely a much more widespread issue than currently recognized.

**TABLE 2:** Which of the following describes your hearing?

Response	Employees Overall	18-44	45-64	65+
I believe my hearing is healthy	58%	53%	66%	57%
I suspect I have a hearing problem, but I have not sought treatment	30%	30%	30%	31%
I have a diagnosed hearing problem and I am getting treatment (wearing a hearing aid, etc.)	12%	17%	5%	12%

2013 *Listen Hear!* Employee Survey

While the majority of hearing loss is found among working adults, it is worth noting that children may suffer from hearing loss as well. Hearing loss is one of the most common birth defects. Approximately two to three out of every 1,000 children in the U.S. are born deaf or hard-of-hearing, and many more may develop hearing problems as they age, making this an important issue for parents.<sup>7</sup>

# RISK FACTORS FOR HEARING LOSS

There are several risk factors for hearing loss – some that can be controlled and some that cannot.

Heredity, gender and age can all play a role in whether a person is likely to develop hearing loss. There are also some genetic disorders that increase the risk for hearing loss. People who are born with hearing loss, or who are genetically predisposed to develop it as they age, may not be able to prevent it.

Issues such as infection or injury are also often outside our control. Repeated or poorly treated ear infections, particularly in one's childhood, may cause irreversible damage to the middle ear and cochlea, possibly leading to hearing impairments later in life. Risk for hearing loss

is increased by certain diseases as well, especially those that result in blocked blood flow, including atherosclerosis and collagen vascular disease. Illnesses that lead to high fever, such as meningitis may also cause harm.

The majority of hearing loss occurs as a result of a combination of risk factors – some outside people's control and some more within it – such as their exposure to noise and poor lifestyle habits.

Education on risk factors can help employers understand whether their workforce is in greater jeopardy, and can provide valuable insights to guide employee education efforts.

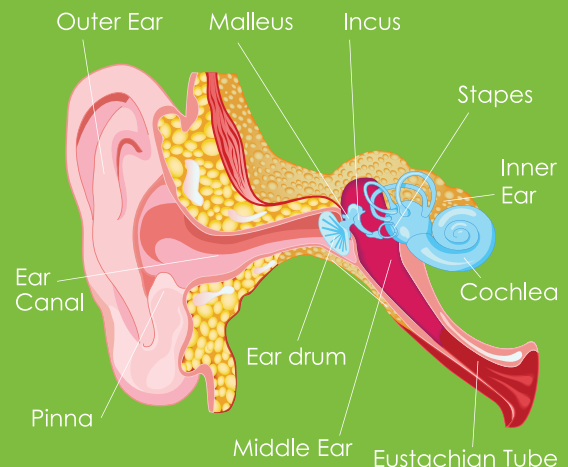
## HOW HEARING WORKS

The human ear is an incredible organ.

It is made up of three parts – the outer, middle and inner ear. The different parts of the ear work together to change sound waves in the air into the nerve impulses you eventually “hear” in your brain.

Sounds send vibrations or sound waves into the air. They are funneled by the outer ear through the ear opening, down the ear canal, where they strike the eardrum, causing it to vibrate. The vibrations are passed to the small bones in the middle ear, which transmit them to the cochlea of the inner ear, which is shaped like a snail and filled with fluid. The vibrations cause this fluid to ripple, creating a traveling wave that forms across an elastic partition (called the basilar membrane), which divides the cochlea. Hair cells sitting atop the basilar membrane ride this wave. Microscopic hair-like projections that perch on top of the hair cells bump against an overlying structure and bend. Bending causes pore-like channels, which are at the tips of the hair-like structures, to open up. When that happens, chemicals rush into the cell, creating an electrical signal. The auditory nerve carries this signal to the brain, which interprets the impulses as sound: the pitch of music, the intensity of thunder, the delight in a child's voice, the urgency of a boss' requests, etc.

Loud noise can lead to permanent hearing loss by damaging and causing the eventual death of the hair cells in the ear. While bird and amphibian hair cells can grow back, human hair cells do not. They are gone for good.



## AGE

It is probably no surprise that age is a significant risk factor for hearing loss. Just as other parts of the body experience a natural wear and tear, the hearing system ages as well, and hearing loss is a common side effect. In addition, as people age, they have greater cumulative exposure to noise, a top contributor to hearing loss, and they also tend to acquire overall health issues that place them at further risk for hearing damage.

People are much more likely to experience hearing loss in their later years. According to the National Institute on Deafness and Other Communication Disorders (NIDCD), while 18 percent of American adults ages 45-64 have hearing loss, this number jumps to 30 percent for adults 65-76 years old and to 47 percent for adults 75 years or older.<sup>7</sup>

Because of this, age is certainly the most recognized risk factor for hearing loss among employees and employers alike, with 61 percent of employees and 76 percent of employers correctly identifying it as a contributor.<sup>2</sup>

(See [TABLE 3](#).)

**TABLE 3: Which of the following, if any, do you think can place you at greater risk for permanent hearing loss?**  
(Multiple responses allowed.)

Response	Employees Overall	Employers
Getting older	61%	76%
Cumulative exposure to moderate noise (noise loud enough you would need to turn the volume up on the TV to hear)	54%	76%
Shorter-term exposure to loud noise (noise loud enough you couldnot hear someone speaking to you within an arm's length)	48%	56%
Having excessive ear wax	39%	33%
Your occupation	35%	74%
Using Q-tips	35%	34%
Having diabetes	22%	26%
Use of certain prescription medications, like antibiotics	21%	37%
Use of certain over-the-counter medications, like certain pain relievers	15%	21%
Smoking	14%	17%
Being overweight	13%	11%
Sleeping on your side (with one ear to your pillow)	9%	4%
Being of a specific ethnicity	8%	7%
Being of a specific gender	8%	10%
None of the above	8%	2%

## GENDER

Men consistently experience hearing loss more often than women. While some experts theorize that female hormones, such as estrogen, may play a protective role, most also agree that men more often engage in occupations and recreational activities that increase their exposure to noise, and, thus, their risk for hearing loss. This was confirmed in a 2009 study showing that men are 2.5 times more likely to develop noise-induced hearing loss than women.<sup>8</sup>

According to the *Listen Hear!* employee survey, 16 percent of men report a diagnosed hearing problem, contrasted with only 6 percent of women. Men are also more likely to suspect a hearing problem, but not seek treatment. More than one-third of men (34 percent) have such suspicions, versus only a quarter (26 percent) of women.

However, this does not mean that women are in the clear. According to researchers from the University of Washington Medical Center, it is true that men tend to have more high-frequency hearing loss (associated with noise exposure), but women tend to lose low-frequency hearing at a faster rate than men as they age.<sup>9</sup> Speech consonants are high-frequency, while vowels are low-frequency. Hearing loss of either type can make understanding speech much more difficult.

## NOISE

The most common and preventable contributor to hearing loss is noise. Excessive noise exposure damages the delicate hair cells in the inner ear. Damage often results in permanent, sensorineural hearing loss and tinnitus (ringing of the ears).<sup>10</sup>

According to the National Institute of Deafness and Other Communication Disorders (NIDCD),<sup>11</sup> noise-induced hearing loss can be caused by a one-time exposure to an intense “impulse” sound, such as an explosion, or by continuous exposure to loud sounds over an extended period of time, such as noise generated in a woodworking shop.

Sound is measured in decibels (dB). Sounds of less than 75 dB, even after long exposure, are unlikely to cause hearing loss. However, long or repeated exposure to sounds at or above 85 A-weighted sound levels (dBA) can cause hearing loss, according to the U.S. Department of Labor Occupational Safety & Health Administration (OSHA).<sup>12</sup> This level of sound can be found in an environment in which you would have to raise your voice to be heard by someone within an arm’s length away. According to the Better Hearing Institute, sound at just 90 dBA (such as a hair-dryer or garbage disposal) can cause hearing damage in as little as two hours.<sup>13</sup>

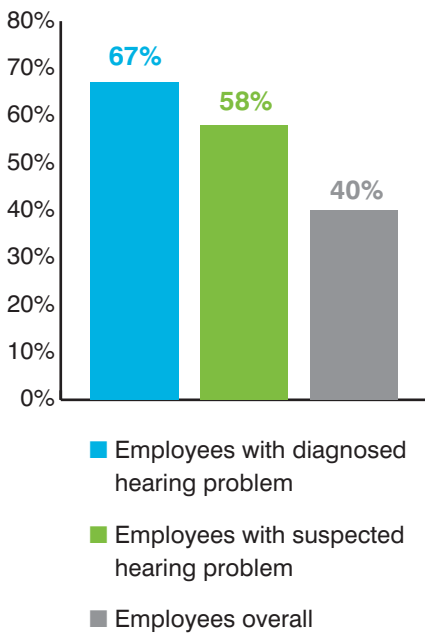


## DID YOU KNOW?

### The Smallest Bones

The three bones in the middle ear (sometimes called the hammer, anvil and stirrup) are the smallest in the body. All three together could fit on a penny!

**TABLE 4: Would you describe your workday as noisy?**  
('Yes' responses reflected below.)



According to the *Listen Hear!* survey, nearly 40 percent of employees describe their typical workday as noisy, and close to half (48 percent) say they believe the noise from their workplace could be damaging their hearing. The percentage of those who describe their workplace as noisy is higher among those with diagnosed and suspected hearing loss, reinforcing that noise on the job plays a role in hearing damage. Two-thirds (67 percent) of those who report a diagnosed hearing problem and 58 percent of those who report a suspected problem describe their typical workday as noisy. (See [TABLE 4.](#))

The issue with noise at work becomes more apparent when delving into details about an employee’s day. When employees are asked how many hours a day they believe their workplace is noisy (loud enough you would have to raise your voice to be heard), more than half (54 percent) say it is noisy for more than one hour a day, and more than one-third (36 percent) say it is noisy for more than three hours a day.

In contrast, employers view the workplace as far less noisy, with nearly 80 percent saying their place of employment is hardly ever noisy.<sup>2</sup> (See [TABLE 5.](#)) This suggests that employers may be underestimating the noise levels faced by employees, and that this threat to hearing loss – and its impact on productivity – could be greater than they realize. Consider that more than half (54 percent) say it is a relief to get a break from the noise of their workplace. **Employers and employees do not appear to be on the same page when it comes to noise in the workplace.**

**TABLE 5: How many hours a day do you believe your workplace is noisy**  
(loud enough you would have to raise your voice to be heard)?

Response	Employees Overall	Employers
Hardly ever	46%	79%
1 to 2 hours	19%	11.2%
3 to 4 hours	15%	6%
5 to 6 hours	9%	2%
7 to 8 hours	7%	0%
More than 8 hours	5%	0%



Employees spend time outside the office engaging in recreational activities that can also lead to hearing loss. Common activities well above the 85 dBA safety limit include attending rock concerts, using lawn mowers and chainsaws, riding motorcycles and enjoying personal listening devices (like MP3 players). The widespread use of earbuds for a range of personal devices is likely contributing to the steep increase in hearing loss across employees, and in particular among younger age groups, who have grown up with these conveniences as a part of their culture. A New York City Department of Health study found that 1 in 4 New York adults ages 18-44 reports hearing loss, and hearing problems are found in 23 percent of people who use headphones at a high volume at least five days a week for four hours a day.<sup>14</sup> This is not as excessive as it sounds, when you consider that many people listen to music while exercising.

Unfortunately, according to the *Listen Hear!* survey, noise is recognized as a risk factor for hearing loss by only around one half of employees and three-quarters of employers. This speaks to the importance of education, given that **one-third of permanent hearing loss is preventable with proper hearing loss prevention strategies.**



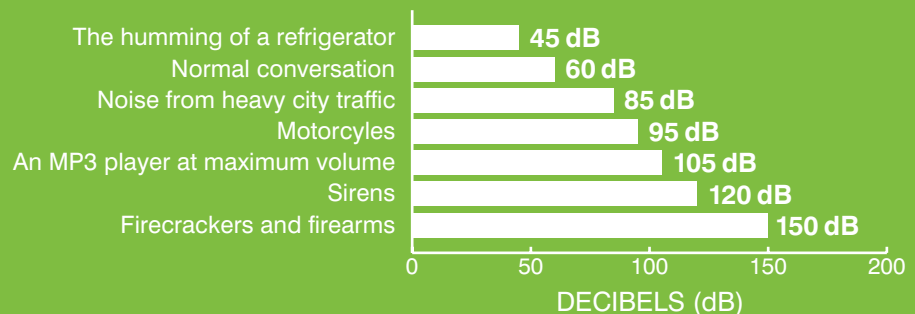
## DID YOU KNOW?

### Sporting Events Can Be Hazardous to Your Hearing

The crowd noise at NFL games currently averages between 80 and 90 dB, and cheering fans can push levels well into the hundreds. At these levels, it only takes between one and 15 minutes for the sound to damage your ears.<sup>15</sup>



## AVERAGE DECIBEL (dB) RATINGS FOR FAMILIAR THINGS



Hearing loss can result from long and/or cumulative exposure to sounds at or above 85 dB. Distance from the source and length of exposure can affect how quickly damage can occur.

Source: U.S. Department of Health & Human Services

## OCCUPATION

Closely tied to noise, occupation is a risk factor for hearing loss, since people in certain occupations tend to have greater exposure to noise than others. Those who work around loud machinery in industries such as agriculture, mining, construction, manufacturing and utilities tend to be at higher risk, as are those exposed to loud sounds such as gunshots or sirens, including law enforcement personnel and members of the military. However, those who work in environments with a heavy amount of background noise can also be at risk, such as office staff in crowded buildings.

The *Listen Hear!* survey looked specifically at two very different at-risk occupations to identify habits and attitudes related to hearing loss.

### TEACHERS

Teachers do not top the list of occupations most people imagine when thinking about higher hearing loss risk, but the reality is that their environment is a noisy one, and remains noisy for a large portion of the day.

A recent study by the Danish Centre of Educational Environment found that noisy indoor climates affect teachers' workdays and result in lower job satisfaction, increased fatigue and tiredness and a lack of energy and motivation among the teachers.<sup>16</sup> A large school district in Winnipeg announced in 2012 that its testing of about 400 teaching and non-teaching staff showed signs of hearing loss among teachers.<sup>17</sup> The school district found that gymnasiums were the noisiest environment, at more than 90 dB. High noise levels were also recorded in choir, music and band rooms, as well as industrial arts classrooms.

Male teachers appear to be at particular risk. In fact, one study found that tinnitus is almost twice as common among male teachers as among males in other professions.<sup>18</sup> One explanation is that male teachers tend to teach sports and other extracurricular activities, such as shop, that have high noise exposure. This is in-line with the results of the

*Listen Hear!* survey, which showed that 28 percent of male teachers reported a diagnosed hearing problem, contrasted with 16 percent of males in the general population. (See [TABLE 6.](#))



Interestingly, younger teachers also reported diagnosed hearing problems at a higher rate than younger employees in general. More than a quarter (26 percent) of teachers ages 18-44 reported a diagnosed hearing problem versus 17 percent of employees in this age group among the general employed population. This suggests that noise exposure from their occupation could be contributing to hearing loss at a younger age among teachers than their peers in other professions.

Teachers of all ages were more likely to describe their typical workday as noisy than the general employee population (47 percent of teachers versus 39 percent of all employees).<sup>2</sup> Teachers were also more likely to say it was a relief to get a break from the noise of their workplace. (62 percent of teachers said this versus 54 percent of the general population.)

**TABLE 6:** Which of the following describes your hearing?

Response	Employees Overall	Teachers Overall	Males Overall	Male Teachers	18-44 Overall	18-44 Teachers
I believe my hearing is healthy	58%	58%	50%	44%	53%	42%
I suspect I have a hearing problem, but I have not sought treatment	30%	27%	34%	29%	30%	32%
I have a diagnosed hearing problem and I am getting treatment (wearing a hearing aid, etc.)	12%	15%	16%	28%	17%	26%

## LAW ENFORCEMENT

Not surprisingly, law enforcement personnel are at higher risk for hearing loss. They are regularly exposed to high-intensity impulsive sounds, such as gunshots and blasting sirens. While most law enforcement agencies require the use of hearing protection on the range, unprotected exposure of officers to sirens and other high intensity sounds still exists.

Studies have confirmed that police officers suffer from hearing loss more frequently than the general population. One French study, for example, found that police officers were 1.4 times more likely to have a selective 4000 hertz hearing loss than civil servants.<sup>19</sup> The difference was even greater between motorcycle police officers and civil servants.

This is supported by the *Listen Hear!* survey, which shows that significantly more law enforcement personnel (61 percent) say their workplace is noisy than the general population (39 percent). Law enforcement personnel are also more likely to find it a relief to get a break from the



noise of their workplace at the end of the day (71 percent of law enforcement versus 54 percent of employees overall).

More than half (54 percent) of law enforcement personnel say they believe it is very likely that noise from their workplace could be damaging their hearing. This contrasts with only 20 percent of employees in general who feel this way.

Most recognize that hearing loss would have a direct impact on their ability to do their jobs, with more than three-fourths saying they believe that moderate hearing loss would impact their productivity on the job.

## TYPES OF HEARING LOSS

There are two primary types of hearing loss.

**Conductive hearing loss** involves the outer and middle ear. It can be caused by malformation of the ear structures (often present from birth), or can occur later in life due to complications from ear infections, fluid in the middle ear from colds and allergies, etc. Treatments depend on the underlying cause and range from surgical correction for congenital defects to treatment with medications for infection. Conductive hearing loss represents approximately **10 percent** of hearing loss and is often corrected by medicine or surgery. It is typically covered under major medical insurance.

**Sensorineural Hearing Loss (SNHL)** involves the cochlea and/or cochlear nerve of the inner ear. It can be caused by a range of factors, including exposure to loud noise, head trauma, disease, genetics and aging. Treatment depends on the cause. Hearing loss that comes on quickly from a source like acoustic trauma (exposure to excessively loud noise) can be treated with corticosteroids to reduce swelling, therefore improving healing and preserving hearing. Unfortunately, in many cases, hearing loss is permanent. This irreversible hearing loss (from several causes) is the most common kind and is typically managed with hearing aids. SNHL represents the vast majority of hearing loss (approximately **90 percent**) and is not usually covered by major medical insurance.

## OVERALL HEALTH

Obviously, the ear does not operate independently from the body. It is a part of the body, nurtured by blood flow from the body. Because of this, overall health can have a significant impact on hearing health. Health issues or lifestyle habits that impair blood flow or detract from overall health in another way tend to have a negative impact on hearing, whereas positive health factors, such as exercising to maintain a healthy weight and getting proper nutrition and adequate sleep, have positive impacts on hearing.

### OBESITY

Obesity is an epidemic of its own within the American workforce, with more than one-third of U.S. adults and 17 percent of youth classified as obese, according to the Centers for Disease Control and Prevention.<sup>20</sup> Obesity has been linked to hearing loss in several studies. For example, in a study published in the *American Journal of Medicine*, researchers tracked more than 68,000 women participating in the Harvard Nurses' Health Study. Those with a higher body-mass index (BMI) or larger waist circumference faced a higher risk for hearing problems compared with normal-weight women.<sup>21</sup> Women who were obese, with BMIs between 30 and 39, were 17-22 percent more likely to report hearing loss than women with BMIs less than 25. Women who fell into the category of extreme obesity (BMIs over 40) had the highest risk for hearing problems – about 25 percent higher than normal-weight women.

Obesity compromises blood flow by narrowing blood vessels. Researchers theorize that this could be damaging to the ear because it is highly metabolically active, meaning it is highly dependent on having adequate blood supply. People who are obese are also more likely to have **high blood pressure**, another condition that can hamper blood flow. Lack of blood flow could prevent the cochlea – the hearing chamber of the inner ear – from restoring itself after damage, gradually diminishing its function.

The correlation between obesity and hearing loss in adolescents has also been documented. Being obese as a teenager makes people almost twice as likely to develop a low-frequency hearing loss, according to a study from Columbia University Medical Center.<sup>22</sup> While obesity is clearly correlated with risk for hearing loss, actions to avoid obesity, including a healthy diet and physical exercise, may lower the risk of hearing loss.

Women who were most physically active in one study had a 17 percent lower risk of hearing loss, compared with women who were least physically active.<sup>23</sup> Walking two hours per week or more was associated with a 15 percent lower risk of hearing loss.



### SMOKING

Smoking can harm multiple organs throughout the body by disrupting the flow of blood. It is theorized that smoking may harm hearing by creating a lack of oxygen and a failure to remove toxic waste from the ear.<sup>24</sup>

One epidemiological study published in the June 1998 *Journal of the American Medical Association* found that smokers were 70 percent more likely than non-smokers to have hearing loss, and that non-smokers living with a smoker were twice as likely to develop hearing loss as those who were not exposed at all.<sup>25</sup> Another large European study in 2008 found that hearing loss is proportional to how much people smoke, and starts getting worse once the person has smoked regularly for more than one year.<sup>26</sup> Teens appear to be at high risk as well. Researchers from the New York University School of Medicine found that teens exposed to cigarette smoke have nearly twice the risk of hearing loss.<sup>27</sup>

Unfortunately, only 14 percent of employees and 17 percent of employers recognize that smoking can place you at greater risk for permanent hearing loss, according to the *Listen Hear!* survey.

## DIABETES

Diabetes is another growing epidemic within the American workforce, making it a top health concern among employers. Unfortunately, employers have yet another reason to be concerned, according to a recent study funded by the National Institutes of Health.<sup>28</sup> The study concluded that hearing loss is twice as common in people with diabetes as it is in those who do not have the disease. In addition, of the 79 million American adults with prediabetes, the rate of hearing loss is 30 percent higher than in those with normal blood glucose. Researchers theorize that diabetes may lead to hearing loss by damaging the nerves and blood vessels of the inner ear. Autopsy studies of people with diabetes have shown evidence of this type of damage.

People with prediabetes can often prevent or delay diabetes if they lose a modest amount of weight by cutting calories and increasing physical activity. People with diabetes also benefit from diet and exercise as well as medications that control blood glucose, blood pressure and cholesterol. Adopting such health habits may reduce the increased risk of hearing loss from diabetes.

Unfortunately, less than one quarter of employees (22 percent) recognize diabetes as a risk factor for hearing loss according to the *Listen Hear!* survey, and employers are not much better informed (26 percent). With employers consistently rating diabetes as a top health concern for employees, it is important for them to recognize that hearing is part of the diabetic health equation.



## MEDICATIONS

Certain medications, both prescription and over-the-counter, can have negative consequences for hearing health and place employees at increased risk for hearing loss.

Medications that can damage the ear – resulting in hearing loss, ringing in the ear or balance disorders – are considered ototoxic. There are more than 200 known ototoxic medications (prescription and over-the-counter) on the market today, according to the American Speech-Language-Hearing Association.<sup>29</sup> For example, some antibiotics administered intravenously such as gentamicin may be ototoxic and cause hearing loss.

Public awareness is fairly low regarding the risk. Only 21 percent of employees and 37 percent of employers believe that use of certain prescription medications can place you at greater risk for permanent hearing loss, according to the *Listen Hear!* survey. Even fewer (15 percent of employees and 21 percent of employers) recognize the risks of certain over-the-counter medications, like specific pain relievers. Yet, the evidence is strong and was widely publicized following a 2012 study at Brigham and Women's Hospital showing that women who took ibuprofen or acetaminophen two or more days per week had increased risk of hearing loss.<sup>30</sup>

# IMPACT ON THE JOB

Similarly to how vision problems can be corrected with the right eyewear, and subsequently are not considered a disability, most hearing problems can be corrected with the right hearing amplification, and should not be viewed as a shortcoming. Today’s hearing aids have advanced significantly so that people with mild to moderate, and even severe, hearing loss can function as well as the general population. As such, when it comes to concern about the impact of hearing loss on the job, it is not treated hearing loss that should be the focus, but rather *untreated*. Unfortunately, far too many employees do not seek the hearing loss treatment they need. Consider this scary finding from the *Listen Hear!* survey: a full **30 percent of employees suspect that they have a hearing problem, but have not sought treatment**.

Even more alarming is that **95 percent of this group reported that they believe this untreated hearing loss impacts them on the job in at least one way.**<sup>2</sup> (See **TABLE 7.**) According to the survey, the most common hearing-related complaint is having to ask people to repeat what they said, followed by straining to understand a conversation when there is background noise or other people are talking at the same time. Additionally, 42 percent say they often misunderstand what is being said, and 40 percent admit they sometimes pretend to hear when they cannot. Also significant, given how common communication through the phone and on conference calls has become to most businesses, 37 percent of employees report trouble hearing over the phone.

**TABLE 7: Do any of the following describe how your hearing loss impacts you on the job?**

(Multiple responses allowed.)

Response (Asked among those who suspected they have hearing problems but have not sought treatment)	Employees Overall	Teachers	Law Enforcement
I often ask people to repeat what they have said	61%	51%	67%
I strain to understand a conversation when there is background noise or other people are talking at the same time	57%	49%	56%
I often misunderstand what is being said	42%	33%	61%
I sometimes pretend to hear when I can't	40%	44%	61%
I have a hard time hearing over the phone	37%	44%	44%
I frequently feel stressed or tired after having to talk or listen for extended periods	22%	24%	28%
None of these	5%	2%	11%
Any (net)	95%	98%	89%

All of these impacts of untreated hearing loss are likely taking a serious toll on employee productivity, given lost time repeating information due to poor communication between co-workers and the potential for more costly errors or missed opportunities when key information is missed.

Cost to the individual employee is significant as well, and worsens with the severity of hearing loss. A report from the Better Hearing Institute shows that individuals lose approximately \$1,000 in annual household income for every 10 percent increase in hearing loss. The same report concludes that the total cost in lost earnings in the U.S. due to untreated hearing loss is \$122 billion.<sup>31</sup>

Strain from untreated hearing loss can not only negatively influence an employee's work product by leading to poor communication, but it can take a further toll on the employee's health and well-being by causing excessive anxiety and stress, even contributing to depression.

According to the Better Hearing Institute, studies have linked untreated hearing loss to:<sup>32</sup>

- Irritability, negativism and anger
- Fatigue, tension, stress and depression
- Avoidance or withdrawal from social situations
- Social rejection and loneliness
- Reduced alertness and increased risk to personal safety
- Impaired memory and ability to learn new tasks
- Diminished psychological and overall health

According to the *Listen Hear!* survey, more than 1 in 5 employees with untreated signs of hearing loss say they frequently feel stressed or tired after having to talk or listen for an extended period.

Beyond stress, failure to treat hearing loss can have serious long-term consequences for mental function. Several studies have linked hearing loss to cognitive decline, which does not bode well for employee health, nor productivity. According to Johns Hopkins researchers, older adults with hearing loss have a rate of cognitive decline that is up to 40 percent faster than the rate in those with normal hearing.<sup>33</sup> Another recent study confirmed that people with hearing loss have brains that are shrinking faster, losing an additional cubic centimeter of brain matter, than people with normal hearing.<sup>34</sup> Through review of MRI scans of people with and without hearing loss over many years, researchers found increased shrinkage in areas of the brain associated with

auditory processing. One problem is that these areas are responsible for more than just sorting out sounds and language – they also play roles in memory and sensory integration, involved in early stages of mild cognitive impairment and Alzheimer's disease.

The full costs to employers of untreated hearing loss are difficult to calculate when considering the cascade of emotional and social health consequences. However, several studies have attempted to document the impact of untreated hearing loss on hard costs such as employee absenteeism. One Dutch study found that hearing-impaired employees were five times more likely than their co-workers with normal hearing to experience stress so severe that they must take sick days.<sup>35</sup>

Hearing loss is also a safety concern. A National Institutes for Health study found that people with mild hearing loss (25-dB loss) were nearly three times more likely to have a history of falling.<sup>36</sup> Every additional 10 dB of hearing loss increased the chances of falling by 1.4 fold. Researchers theorized that people who can't hear well might not have good awareness of their overall environment, making tripping and falling more likely. Another reason hearing loss might increase the risk of falls is that the brain can become "overwhelmed" with demands on its limited resources – a concept called cognitive load. People with hearing loss have to compensate for this challenge, making it harder to have the resources available for managing areas such as gait and balance, which are very cognitively demanding.





## BARRIERS TO CARE

Despite the growing number of employees suffering from hearing loss, far too few are seeking the hearing health care they need. Less than one-fourth of employees have had their hearing checked in the past two years.<sup>2</sup> Additionally, only 1 in 5 people who could benefit from a hearing aid actually wears one.<sup>7</sup>

There are several reasons why employees may be resistant to seeking out the care they need.

### STIGMA

Many employees, especially older employees, still view hearing loss negatively and may resist treatment (wearing hearing aids) as a sign of aging. For example, employees in the *Listen Hear!* survey ages 44-65 were the most likely to believe their hearing was healthy, whereas younger employees (ages 18-44) were more likely to admit they had a diagnosed hearing problem and were getting treatment. It is possible that people within the baby boomer age group prefer not to admit to having a hearing loss issue, thus, may be more likely to be **in denial** about their hearing problems.<sup>2</sup> (See [TABLE 8](#).)

**TABLE 8:** Which of the following describes your hearing?

Response	Employees Overall	18-44	45-64	65+
I believe my hearing is healthy	58%	53%	66%	57%
I suspect I have a hearing problem, but I have not sought treatment	30%	30%	30%	31%
I have a diagnosed hearing problem and I am getting treatment (wearing a hearing aid, etc.)	12%	17%	5%	12%

Younger employees, despite being more likely to report a diagnosed hearing problem, are also the group most concerned about their employers suspecting or knowing they have hearing loss. More than half (52 percent) of younger employees reported this in the *Listen Hear!* survey, contrasted with 44 percent of employees overall. Still, **concern over employer perception** was a consistent barrier across age groups.

*“At work, sometimes all I hear is muffled nonsense, but I pretend I can hear. I would die if my boss knew I couldn’t.”*

– Anonymous female worker for investment management firm  
Age 64



Certain professions seem to have greater stigma concerns. Law enforcement personnel are particularly sensitive to employer perceptions of hearing loss, with 66 percent saying they would be concerned if their employer suspected or knew that they had hearing loss, versus only 44 percent of the general employee population, according to the *Listen Hear!* survey. The concern is not unwarranted. There has been some history of discrimination against police officers who have hearing loss. The New York Times reported in 2001 that the New York City Police Department banned the use of hearing aids on the job, and allegedly forced two officers to retire because they did wear them.<sup>37</sup>

Employers overall appear to be in tune with trying to alleviate employee concerns about stigma. In fact, “to demonstrate my support of employees seeking treatment for hearing loss” was the top response when asked why employers would offer hearing insurance to employees. (See **TABLE 9**.)

**TABLE 9:** (Asked of employers) **For which of the following reasons would you offer hearing insurance to your employees?** (Select all that apply.)

Option	Response
To demonstrate my support of employees seeking treatment for hearing loss	28%
To help my employees get discounts on hearing aids	27%
To make sure my employees get their hearing checked regularly	23%
To differentiate my benefit offering	13%
Not sure; I don't know very much about hearing insurance	40%

Contributing to the “stigma issue” is concern that hearing aids are physically unattractive and that by being visible, they serve to marginalize the employee. According to the *Listen Hear!* survey, approximately one-fourth of employees believe that hearing aids are unattractive, though nearly half agree that hearing aids have come a long way.



*“I have partial hearing loss in one ear due to a childhood disease, so, yes, I’m concerned about further hearing loss later in life, but I wouldn’t want my employer to know that.”*

– Anonymous male worker for top 10 bank  
Age 37



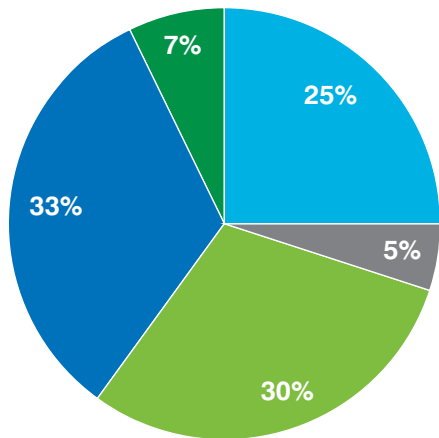
## FINANCIAL HARDSHIP

There is a wide range in the price of hearing aids, but hearing loss treatment is significantly more expensive than most people realize. According to the Center for Hearing and Communication, hearing aids cost on average between \$900 and \$3,500 per ear.<sup>38</sup> When asked their attitudes toward hearing aids through the *Listen Hear!* survey, nearly half of employees said they were expensive, one of the highest responses. (See [TABLE 10](#).)

**TABLE 10:** Which of the following describes how you feel about hearing aids? (Multiple responses allowed.)

Response	Employee
Hearing aids are expensive	48%
Hearing aids have come a long way	48%
The look of the hearing aid doesn't matter to me as much as how well it works	28%
Hearing aids are unattractive	24%
Hearing aids do not adjust well to background noise	20%
Hearing aids do not work well on cell phones	13%
Hearing aids don't work very well	11%

## HEARING LOSS IN AMERICA



- 25% Currently Use Hearing Aids
- 5% Medical or Surgical Treatment Required
- 30% Can't Afford Hearing Aids
- 33% Deny or Hide Hearing Loss
- 7% Unaware of Hearing Loss

**Source:** National Center on Hearing Assessment and Management

The high cost of hearing aids serves as a significant barrier to seeking hearing loss treatment. According to the National Center on Hearing Assessment and Management, of the people in America with hearing loss, only 1 in 4 use hearing aids. A larger number of employees (one-third) deny or hide hearing loss – the stigma issue discussed earlier – while 30 percent say they cannot afford them.<sup>39</sup>

Many employees are ill-prepared when faced with the high cost of hearing aids. A large portion (28 percent) is under the false impression that these products are covered under most medical plans, and many more (42 percent) admit they just don't know.<sup>2</sup> (See [TABLE 11](#).)

**TABLE 11: Which of the following is/are true about the cost of hearing aids? (Multiple responses allowed.)**

Response	Employees Overall
They are covered under most medical plans (NOT TRUE)	28%
They are covered under Medicare (NOT TRUE)	25%
They are eligible expenses for FSAs and HSAs (TRUE)	21%
Coverage is mandated under the Affordable Care Act (Obamacare) (NOT TRUE)	18%
None of the above	7%
I don't know	42%

Less than 20 percent of employees have heard of hearing insurance, but 76 percent agree it will become more important as the workforce gets older. At approximately \$1.50 per paycheck, two-thirds agree it is one of the most affordable benefits available for its value.

## LACK OF URGENCY

In addition to putting off hearing check-ups due to concerns over stigma, many employees are simply poorly informed of the importance of regular hearing assessments and early intervention/treatment. The truth is that when hearing loss is caught earlier, treatment is more likely to minimize further damage and avoid disengagement. When people do not treat hearing loss, they tend to alter their environment to compensate for their hearing, such as by turning up the television, which inadvertently worsens the problem by causing further hearing loss. Difficulty with communication can also lead to social isolation and disengagement, conditions which may predispose people to avoid seeking treatment. Early intervention – by fitting people with the right hearing aids to restore hearing before lifestyles are significantly altered – can stop this slippery slope of decline.

Some employees are more in-tune with the need for regular hearing check-ups than others. When asked why they would enroll in hearing insurance through the *Listen Hear!* survey, it was encouraging that 40 percent of employees said they would do so to make sure they got their hearing checked regularly (which shows they want to be proactive with their hearing health). At the same time, many admitted that they would only enroll if they suspected they had hearing loss (31 percent), or if hearing loss were interfering with their life (28 percent).<sup>2</sup> (See **TABLE 12.**) This implies a lack of understanding of the importance of regular check-ups for prevention and early treatment.

**TABLE 12: For which of the following reasons would you enroll in hearing insurance?**

Response	Employees Overall
To make sure I get my hearing checked regularly	40%
I would only enroll if I suspected I had hearing loss	31%
To get discounts on hearing aids	30%
I would only enroll if my hearing loss were interfering with my life	28%
None – I am not interested in hearing insurance	24%

# WHAT EMPLOYERS CAN DO

Employers have become important stewards of their employees' health. Employees spend the majority of their waking hours at work, making their employers largely responsible for the safety of their work environments. As such, the first step in promoting hearing health care is for employers to take any steps possible to **avoid preventable hearing loss** most commonly due to noise exposure. In addition to complying with OSHA regulations regarding sound exposure, employers can make a fresh assessment of their work environments, recognizing that danger from noise extends well beyond traditionally recognized sources. Some surprising contributors to noisy environments include:



- Bustling office buildings
- Copiers
- Road noise (transportation workers)
- Day care and school settings
- Restaurant acoustics
- Call centers

While it is not always practical to have employees wear ear protection, unless in a trade setting where such protection is already required by OSHA standards, employers can help minimize employee risk for noise-induced hearing loss by:

- Installing carpeting or other floor and wall coverings that absorb noise
- Providing opportunities for breaks from noisy environments
- Monitoring noise levels in the workplace
- Educating employees about the risk factors, signs and treatment of noise-induced hearing loss

Even in environments with minimized noise exposure, employees can be at risk for hearing loss due to non-environmental factors, such as age, genetics and overall health issues, among others. The aging population and rise in overall health issues that are detrimental to hearing are all warning signs pointing to a hearing loss epidemic on the horizon, even if noise exposure at work and at home were limited. As such, employers need to be prepared to encourage regular hearing check-ups and early treatment for hearing loss as needed among all employees. With both stigma and cost of treatment as primary barriers to care, employers have a unique opportunity to show their support for hearing health care by providing **access to care and education**.

Financial support can take multiple forms. If an employer's **medical plan** offers coverage of hearing check-ups and/or discounts on hearing aids, employers should communicate this during open enrollment and throughout the year, so employees are well informed. Since many medical plans do not cover hearing health care, employers can also consider offering hearing insurance as a specialty or **ancillary benefit**. These plans can offer access to national networks of hearing professionals, substantial savings on hearing aids, and added protection for the employee, including extended warranties, guaranteed trial periods for hearing aids, and more. Finally, hearing aids are **eligible expenses** for health savings accounts (HSAs) and flexible savings accounts (FSAs). If employers are offering these benefits to employees, they can use hearing aids as an eligible expense example during enrollment presentations, helping to bring further attention to this type of financial assistance.

Beyond providing access to financial support for hearing loss treatment, employers can promote healthy hearing by **integrating education on the importance of hearing health care into existing health education efforts**, such as wellness newsletters and health fairs. Content for education, including videos, story copy and more, is available free of charge through the *Listen Hear!* initiative at [EPIChearing.com/ListenHear](https://EPIChearing.com/ListenHear). Employers can also reach out to local audiologists who may be willing to visit worksites to offer complimentary hearing screenings and deliver educational presentations in health fair settings. While cholesterol and even vision screenings are common in work settings, hearing has not traditionally been given as much attention, and having an on-site focus sends a powerful message that this area of health care is important for employees.

When presented with the facts, employers and employees alike agree there is little question about the importance of healthy hearing to promote health and well-being, and most view it as integral to their job performance as well. Employers can make a positive difference by showing their understanding and support, providing the tools and encouragement to help employees get the care they need. As the need for hearing health care continues to increase, forward-thinking employers can be ahead of the curve by providing benefits packages that offer comprehensive coverage and education that helps employees minimize risk and maximize their opportunities to hear life to its fullest.

## SPECIAL THANKS TO THE DISTINGUISHED REVIEW PANEL FOR THIS WHITE PAPER

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Tamara Volkert, Employee Benefits, Hunt Insurance Group LLC

# ENDNOTES

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