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# HEAR LOSS TREATMENT 2

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## 1. DEFINING HEARING LOSS

### 1.1. HEARING OR AUDITORY SYSTEM

Hearing is one of our basic senses, an important function of the body that enables one to communicate properly. But before discussing hearing loss, it is important that you understand how hearing works and what intervenes with this function that leads to hearing loss.

Your ear is made up of three different sections: the outer, middle, and inner ear. The sound waves that penetrate your ear go through these different sections before they are processed and sent to your brain. The outer ear is responsible for picking up sound waves until they reach the ear drum. Once the eardrum starts to vibrate, the different bones in your ear help transport them into your inner ear.

Inside your ear, there are two more types of hair cells that are responsible for detecting the sound and relaying essential information to the brain. Once the sound is amplified, it sends information to the brain so you know where the sound is coming from.

### 1.2. WHAT IS HEARING LOSS?

Now that you are aware of the process of the hearing system, hearing loss or hearing impairment is a disorder that disables this function. Simply put, hearing loss is a condition wherein you become incapable of hearing sounds. There are other terms used to refer to this condition, which includes deafness or hard hearing.

Hearing loss is quite common as a birth defect. Statistics show that 3 out of 1,000 newborn babies develop it during birth. However, you can acquire this condition later in life due to malfunction in some of the components of your ear for a variety of reasons.

As one of the most important functions of the body, it is important that you take care of your ear as much as you would other parts of the body.

### 1.3. DEGREES OF HEARING LOSS

Like other types of medical conditions, there are varying degrees of hearing loss. Some patients have lost their entire hearing, while others have limited hearing capacity that makes it difficult to identify sounds. Here are some of the common degrees of hearing loss and up to what extent they affect your hearing system:

- Bilateral – As the prefix bi- means, both ears have lost the capacity to hear or detect sounds.
- Unilateral – Contrary to the bilateral type, only one of each ear malfunctions.

- Symmetrical – The degree of hearing loss in both ears are the same.
- Asymmetrical – The degree of hearing loss in each ear varies.
- Progressive – This degree of hearing loss condition worsens with time.
- Sudden – This one is characterized by a rapid onset and quickly exhibits itself, hence it requires immediate medical attention as well.
- Fluctuating – Hearing loss is unstable and highly unpredictable; oftentimes it becomes better, other times it becomes worse.
- Stable – The symptoms and degree of hearing loss remains consistent over a given period of time.

## 2. TYPES OF HEARING LOSS

Depending on the degree, causes, and configuration of hearing loss, it also has varying types. To recognize one from the other requires detection of cause and what part of your hearing system is affected. There are 3 general types of hearing loss: conductive, sensory, and neural. Each one is discussed thoroughly below:

### 2.1. CONDUCTIVE HEARING LOSS

In this type of hearing loss, the outer or middle ear is where the malfunction happens. When you have this condition though, you can expect to suffer from a mild case of hearing loss. Some of the affected parts are the ear canal, eardrum, or the tiny bones in the middle ear. This is also considered a temporary case of hearing loss, because the inner part of the ear is the most crucial part of the hearing process. Some of the symptoms of conductive hearing loss include reduced sound levels or inability to capture faint sounds.

### 2.2. SENSORY HEARING LOSS

Once the nerves in your inner ear are damaged, that is when you have sensory hearing loss. It can exhibit the same type of symptoms as conductive hearing loss but also lacks the ability to understand speech. It is a more serious case as it can lead to permanent loss of hearing. There are various reasons as to how one can develop this type of hearing loss but some of them come as symptoms to other diseases, taking drugs that are hazardous to your hearing system, or merely genetic. It can be corrected only through surgical or medical procedures.

### 2.3. NEURAL HEARING LOSS

This type of hearing loss occurs when there is a malfunction in the nerves that supposedly sends out the sound vibration or messages from the inner ear towards your brain. Therefore, it impairs your ability to translate or recognize sounds.

### 3. WHAT CAUSES HEARING LOSS?

The causes of hearing loss can be as varied as the different types and configuration of this condition. It is best to differentiate the symptoms of hearing loss in adults and children to better understand how it develops and is acquired by an individual.

#### 3.1. CAUSES OF HEARING LOSS IN ADULTS

Constant exposure to various elements in the environment and one's lifestyle choices all contribute to how one contracts hearing loss problems. The factors that can affect your auditory system and eventually lead to hearing loss are as varied as the symptoms themselves.

#### 3.2. OTHER DISEASES OR MEDICAL CONDITION

In most cases, hearing loss is tied to some other medical condition or disease that one person suffers from. However, there are two common diseases that are closely tied to hearing loss: otosclerosis and Meniere's disease.

Otosclerosis is a condition affecting the middle ear capsule. As you know, there are tiny bones located in your middle ear that are responsible for transporting sound waves into your inner ear. Stape is one of them and this is the specific bone that is targeted by otosclerosis.

Meniere's disease, meanwhile, affects the membranes in your inner ear. It exhibits similar symptoms as hearing loss such as vertigo and tinnitus.

These are both covered in depth in upcoming chapters.

#### 3.3. MEDICATIONS AND DRUGS

You might be unaware but certain medications or drugs that you take affect the auditory system. Therefore, you need to be careful about the types of medications you take for your other diseases as it could damage your hearing. Ototoxic are among those types of drugs known to be hazardous to your auditory system. Take note of the following drugs because they are recognized to contain ototoxic:

- aminoglycoside antibiotics – neomycin, streptomycin, kanamycin
- large dosage of salicylates such as aspirin

- loop diuretics – ethacrynic acid and lasix
- drugs for chemotherapy – carboplatin, nitrogen mustard, cisplatin

### 3.4. NOISE-INDUCED HEARING LOSS

Continued exposure to harmful noise levels can really damage your hearing system. This one does not discriminate and affects all people regardless of age. When your ears are subjected to too much noise, the cochlea is damaged and it can actually lead to permanent hearing loss. This cause of hearing loss is gradual and does not cause any pain; hence most are not even aware that they are already causing damage to their hearing system. The source of noise can be quite mundane such as playing loud music or being exposed to noisy equipment such as the sound of a lawn mower.

### 3.5. AGING PROCESS

Hearing loss that is related to aging is termed as presbycusis. As a person ages, the inner ear undergoes changes that affect the capacity to hear clearly. Aside from degeneration of your inner ear, it also targets some other components of your entire auditory system. Since this condition develops with age, it is a gradual process. Therefore, it is a common scenario for aging individuals, such as aged 55 to 65, to diminish their hearing capacity.

### 3.6. CAUSES OF HEARING LOSS IN CHILDREN

The case of hearing loss in children is different from that of adults because their auditory system is still undergoing development. Hence, they are more sensitive to changes in the environment and their hearing system is at greater risk for damage.

### 3.7. OTITIS MEDIA

Otitis Media happens when your middle ear suffers from inflammation that is typically accompanied by buildup of fluid in that area. This type of condition can have its varying degrees, types, and severity as well. It can be a painless condition but it does manage to deplete one's capacity for hearing. This condition is quite common between young children and infants. Children's eustachian tubes are narrower as compared to adults; therefore there is a higher possibility that infections or other damaging substances can be blocked.

### 3.8. CONGENITAL REASONS

Some children develop hearing loss problems at birth. It can be influenced by several factors before and during birth of the child. The mother might have acquired toxins and infections during pregnancy that may cause the child to develop this condition upon birth. A large percentage of children with hearing loss are caused by genetic factors.

### 3.9. ACQUIRED FACTORS

This type of hearing loss cause among children can be brought about by external sources such as the following:

- noise
- infections
- diseases
- injuries to the auditory system

## 4. HOW TO DIAGNOSE HEARING LOSS

Once you have recognized the symptoms and understood the cause of hearing loss, then you can take the most important step in your aim to treat hearing loss – diagnosis. This step is crucial because this is your opportunity to verify whether you actually have hearing loss or some other conditions. Because your sense of hearing is such an important bodily function, you cannot afford to risk losing your sense of hearing permanently.

### 4.1. PROFESSIONAL CONSULTATION

Once you have recognized the symptoms that are related to hearing loss, it is important to seek professional advice right away. Once you've seen your doctor, they will subject you to a series of tests and procedures to help them assess and evaluate your symptoms for proper diagnosis. This process aims to not only diagnose the extent of your hearing loss but also to determine which part of the ear is affected so proper treatment procedures can be identified.

### 4.2. TESTS FOR DIAGNOSIS

Screening tests are done to achieve both: to determine the severity of your hearing incapacity and to trace the source of your condition. Some tests are done without equipment while others require the use of specialized tools. The tests will provide your audiologist exact data in order to make proper diagnosis and recommend follow-up procedures.

Here are some of the most basic tests that are done to patients. Most of them are simple tests that can be completed between five minutes to half an hour.

### 4.3. PURE-TONE AUDIOMETRIC TEST

This is the most basic hearing test conducted on patients. Its primary purpose is to determine the type of hearing loss, whether conductive or sensory, and utilizes an audiometer. In this test, your doctor plays a series of tones of varying pitch and loudness while you are required to use a headphone. Whenever a tone is played, the patient is required to raise a hand or press a designated button.

#### 4.4. OTOACOUSTIC EMISSION (ALSO KNOWN AS OAE) TESTING

This type of hearing test is designed for newborn infants to see whether they have an existing hearing problem. The procedure involves placing a tiny microphone into the infant's ear canal where the sound will be transported through and into the ear. The microphone will then serve as a measuring device to see how the inner ear responds to the sound introduced into the system.

#### 4.5. ACOUSTIC IMMITTANCE

This hearing test is quite similar to the procedures of the OAE testing, only that it is done for adult patients. A tiny probe is placed into the outer portion of the ear, then a slight pressure is applied into the probe to determine the eardrum's mobility. After that, loud sound is introduced through the probe to see how well the middle and inner ear reacts to the sound.

#### 4.6. SPEECH RECEPTION AND WORD RECOGNITION TEST

This is a more specialized type of hearing test that measures your ability to not only hear but understand speech. Your audiologist will either play an audio CD or read out loud a series of words. Then, you have to repeat the dictated words to see how well you are able to hear and understand them.

#### 4.7. AUDITORY BRAINSTEM EVOKED POTENTIAL

This test involves the use of recording disks that are placed on the scalp and on each of the person's earlobes. Then, clicking noises are introduced via the headphones. The purpose of the disk is to measure and assess the hearing system's responses to the introduced noise, which is reflected by a graph.

#### 4.8. MEDICAL HISTORY

Aside from conducting on the spot hearing tests when you see your audiologist, your doctor will also try to gather as much information about your medical history. It will help them evaluate and understand various factors that might contribute to your condition. On top of diagnosis, it will also enable them to determine whether your case is permanent, and if not then what procedures can be done to revive your sense of hearing.

When hearing loss is confirmed, the objective of audiologists or an otolaryngologist is basically to measure how much it affects a person's capacity for communication such as understanding speech. Each of the tests performed by doctors serves different purposes. Therefore, you might find yourself undergoing more than one test when you

visit your doctor for diagnosis. Once you have recognized the symptoms and understood the cause of hearing loss, then you can take the most important step in your aim to treat hearing loss – diagnosis. This step is crucial because this is your opportunity to verify whether you actually have hearing loss or some other condition. Because your sense of hearing is an important bodily function, you cannot afford to risk losing your sense of hearing permanently.

## 5. WHO IS AT RISK FOR HEARING LOSS?

Hearing loss does not discriminate. It is a condition that can afflict anyone, regardless of age, gender, or race. However, there are certain factors that could trigger the possibility of acquiring it because despite the differences in lifestyle, the hearing system functions all the same.

### 5.1. HEARING LOSS STATISTICS

In the United States alone, hearing loss is one physical disorder that affects up to 28 million people. Of course, each individual included in this demographic have varying levels of hearing loss, ranging from mild to severe. Further records reveal that about 2 million people have lost their capacity to hear at all.

These numbers are really quite massive and so more individuals are pushing awareness and information campaigns to let more people know about the symptoms or causes of hearing loss. Most people who have mild cases of hearing loss are not even aware that they have it, and so risking not having to consult with an audiologist to determine the extent of their condition.

Government agencies are also pushing to produce more valid statistics that will put forth and record more of the hearing loss cases.

### 5.2. WHAT ARE THE RISK FACTORS?

Again, hearing loss is not targeted directly on specific individuals. Instead, there are certain risk factors that make certain people more prone to developing hearing loss and some other of its effects. Since your sense of hearing is a vital part of your ability to communicate effectively, it is therefore important to recognize what the factors are that affect your chances of losing your sense of hearing.

Age is one factor. As you grow old, your body goes through several biological processes that also see the degeneration of some of your body parts. Your auditory system is one of them and this is one of the reasons why older people have difficulty hearing even at close distance.

Infections are another risk factor and it typically happens in infants who acquire them from their mother either during pregnancy or after giving birth. Next in line are lifestyle factors. The nature of your work and the devices you use (such as mobile phones or digital music player) are also responsible for increasing your chances of impairing your auditory system.

### 5.3. BIRTH ACQUIRED INFECTION

Several health and medical research studies have shown that the infant has higher chances of hearing loss when the mother has congenital cytomegalovirus (or CMV) while pregnant with the baby. This risk is higher when the mother acquires the said infection during the earlier stages of her pregnancy.

CMV is a type of virus that is quite common. In fact, over half of the US population is infected with it. This type of virus does not pose any threat to adults with a healthy immune system though. However, it is critical when acquired by a pregnant mother, thus threatening the health of the infant she is about to deliver. Due to the common nature of the CMV virus, health experts are looking closely into this in the hopes of preventing the acquisition of the virus and exposing the fetus to hearing loss upon birth. As of now, researchers have posted a 22 percent likelihood that an infant can suffer from nerve damage and develop sensorineural hearing loss.

The connection between the CMV virus and the vulnerabilities of a fetus' hearing capacity is determined in the ear's embryological development while in the mother's womb. Since this biological process takes place between the mother's third and fourth week of pregnancy, that also explains why acquiring the CMV virus during the first trimester makes the infant more vulnerable.

### 5.4. WORK-RELATED

If you work in a noisy environment, research claims that you are at greater risk for hearing loss. This risk is made even greater when you have to spend a significant amount of your time each day being exposed to the noise. In fact, researchers claim that the risk doubles if you spend at least five years in a job with a noisy working environment. Furthermore, research claims that this is a more likely occurrence with men than women since they are the ones more exposed to jobs of this nature.

There are several factors that come into play aside from the actual noise that is present in your workplace. When people communicate with each other, they tend to shout. The result of the prevailing studies even fails to factor in the level of noise that is present.

Tinnitus is also a common case with individuals working in a noisy environment. Some people who are introduced into a noisy job start to develop symptoms of hearing loss and tinnitus after only a year on the job. Therefore, most people working in this type of job are required to use hearing devices or earplugs to lessen the impact of noise to the auditory system.

### 5.5. MOBILE PHONES AND DIGITAL MUSIC PLAYERS

Another factor that can increase your risk for hearing loss is exposure to loud music or conversations over the phone. In a technology-driven society, mobile phones and MP3 players are common devices that people use.

Research has revealed that people average around 30 minutes of phone conversation and the risk of damaging your ear is more dominant on the one you used for making phone calls. Although it can certainly damage a person's auditory pathways and the capacity to hear clearly, researchers are still trying to find out about its long-term effects.

As for the cause of MP3 use, there are certain factors that contribute to greater risk for hearing loss: higher volume and duration of use. Researchers also state that even those who listen at a reasonable level can damage their hearing system when used over a long period of time.

## 6. CAN HEARING LOSS BE PREVENTED?

The human body works like a machine: when one part is not functioning, then the entire system suffers or fails altogether. This can also be said of your hearing system wherein if one component of your ear fails to work, then you can experience hearing loss of varying degrees depending on the extent of the damage.

### 6.1. WHY THE HEARING SYSTEM FAILS

The first step to preventing the possibility of hearing loss is to inform yourself on what causes your auditory system to fail. In order to hear normally, all of your auditory pathways must be in good working condition, from the outer ear to the inner ear. The specific problem area will also affect your capacity for hearing differently.

The causes that affect your hearing capacity greatly vary. Some of them are acquired, while others are uncontrollable variables. For the former, it can be due to the exposure to harmful elements in the environment that cause damage to your ear. For the latter, it can include genetic factors which are believed to be one of the biggest causes for most cases of hearing loss, especially in children. However, a significant percentage of hearing loss reveals that it was acquired during the later stages of an adult's life due to their lifestyle patterns and choices.

### 6.2. PROTECTING YOUR EARS

Several individuals who work at a noisy environment are not aware of the damage that the excessive amount of noise does to their hearing capabilities. But because of the increase in the cases of hearing loss for adults who are exposed to noisy jobs, several products are available on the market to give a substantial amount of protection against the harmful noise.

Arming yourself with the right tools or devices will help keep your ears healthy and free of hearing problems. Among the devices you can try are earmuffs whose design are similar to earphones and their purpose is to reduce loud sounds to an appropriate level when they reach your ear. There are also several varieties of earplugs available that effectively protect your ears from external noise.

### 6.3. RECREATIONAL ACTIVITIES

Music is one of the major sources of recreation for most people. Hence, digital music players such as MP3s or iPods are top selling gadgets because of its ability to produce portable music. The convenience of enjoying music while on the go does have its price though, and at the risk of your health.

Headsets or earphones are cable devices that are used to transport music directly into your ears. Therefore, researchers warn about the damage to your ear caused by overexposure to music via these devices. Even if you are not listening to loud music, spending substantial amount of time each day listening to music through your MP3s and iPod can still be damaging even at appropriate levels. If you can, try reducing the noise level of the music you are playing. Or better yet, reduce the amount of time you spend listening to music through these means.

#### 6.4. RESTING YOUR EARS

Even if you work at noise-free jobs, you are still subjected to various sources of noise from the environment. And like any other part of your body, you must also give your ears some time to rest. Hearing loss can occur not only due to the intensity of noise levels but also the duration of being exposed to all this noise. In fact, research claims that even lower volumes of sound that continue over an extended period of time can be more damaging than more intense noise that is fleeting.

Hence, take time each day to find a quiet place where you can rest your ears.

#### 6.5. REGULAR HEARING CHECK-UP

As much as dentists emphasize the need for a regular visit to maintain the health of your teeth, this is also good advice to take for your ears. A common mistake that people make is that they only visit their doctor once the hearing problem reaches the point wherein it is irreversible and that the ear is severely damaged.

Regular hearing checkups are recommended for people who are constantly exposed to a noisy environment, whether at school, home, or workplace. Doing so will benefit you in two ways: you are able to detect quickly whenever any component of your ear is damaged or needs repair, and you can maintain a healthy auditory system, which is your surest bet at preventing hearing loss.

### 7. WHAT IS TINNITUS?

#### 7.1. ABOUT TINNITUS

When you experience a ringing, buzzing, or noises without an explainable source in your head, then you probably have tinnitus. Therefore, the sound you hear within your ear is not from the outside, instead it is coming from within. Depending on the extent of the problem, this condition can either be a mere nuisance or serious.

Tinnitus is not a disease. It is a symptom for any other medical condition. This is a common disorder shared by about 36 million people and those who have tinnitus are the only ones capable of hearing the noise that is produced inside their ear.

## 7.2. WHAT CAUSES TINNITUS?

There are four sections of your auditory system: the outer ear, middle ear, inner ear, and brain. The problem could arise from any of the four sections. If you go to a soundproof area and all the outside noises are diminished, a person becomes more aware of these noises that are produced inside the brain or ears. It can be caused by a blockage of the passage of sounds, such as earwax, which enables one to become capable of hearing these inner sounds.

However, most cases of tinnitus are due to nerve damage in the inner ear. This is common amongst aging individuals as the hearing system begins to deteriorate, so that is when you develop tinnitus. Constant exposure to loud noises can also trigger tinnitus as it damages nerves inside your ear. Meanwhile, other health experts suggest that certain types of medications, especially when taken in high doses, can lead to tinnitus.

## 7.3. TYPES OF TINNITUS

The type of tinnitus varies according to the severity or intensity of the sounds produced within your ear. Here are a few common types of tinnitus and their indicators:

- Tonal Tinnitus – This is the most common type of tinnitus wherein you hear a “ringing” sound in your ear. It is characterized by a continuous sound that seems to repeat constantly over a given period of time.
- Pulsatile Tinnitus – As opposed to the continuous nature of tonal tinnitus, this one is intermittent. The rate of the sound is comparable to the frequency of a heartbeat.
- Others: Some types of tinnitus produce a hissing sound; others produce a beeping sound, while a few others produce a different combination of sounds.

## 7.4. SYMPTOMS OF TINNITUS

Since tinnitus could be an indication of some other health conditions, the symptoms for tinnitus can accompany varied types of conditions as well. Aside from the usual “ringing” or “buzzing” sound that you hear in your head or ears, here are other conditions that accompany tinnitus:

- dizzying sensation
- pain in your ear/s

- feeling of fullness in both ears
- constant headache

Depending on the extent of your tinnitus, you can be subjected to varying types of sounds that are produced in your ear. The duration or frequency of the sounds varies as well.

### 7.5. WHO GETS TINNITUS?

Anyone regardless of age, lifestyle, gender, and racial background are prone to tinnitus. However, risks are higher with age. Moreover, individuals that have more tendencies for hardening arteries are more likely to get tinnitus than the rest of the population.

Other factors affecting the chances of developing tinnitus are the exposure to music or noisy environments.

### 7.6. PREVENTING TINNITUS

Tinnitus is a type of disorder that is reversible and can be prevented. Since it is associated with hearing loss, the best way for you to prevent this type of disorder is to take care of your ears. Here are a few suggestions as to how you can prevent yourself from acquiring tinnitus:

- Refrain from inserting objects into your ear and when using cotton swabs to clean your ear, be careful as this can lead to wax impaction on your eardrum.
- Be extra careful with the type of medications you use. Make sure that they are the ones recommended and approved by your doctor.
- If you work in a noisy environment such as construction sites or factory, make sure to use protective devices for your ears. This is encouraged by the Occupational Safety & Health Administration. Among the devices you can use include earmuffs or ear plugs.

### 7.7. TREATMENT FOR TINNITUS

One of the most effective ways to treat tinnitus is by recognizing its cause and what specific part of your auditory system is damaged. Only then can your specialist recommend a treatment that you can undergo. Tinnitus can simply go away after a certain period of time though without using any treatment. However, if you find it difficult to deal with the sound produced in your ear, then you can try using the following treatments or medications:

- Maskers produce white noises that, when used, masks the ringing sounds produced by tinnitus. This is one solution you can use to deal with the noises.

- Niacin is often recommended by otolaryngologists to treat tinnitus. However, it lacks enough scientific evidence that niacin contains elements that specifically target the treatment of tinnitus.
- Reduce salt intake.
- Get an ample amount of sleep.
- Prevention is the best cure. Therefore, you can have to work at taking care of your hearing system first and this can be your best way at preventing tinnitus.

## 8. WHAT IS MÉNIÈRE DISEASE?

### 8.1. ABOUT MENIERE'S DISEASE

Meniere's disease is a disorder named after French physician Prosper Ménière when he discovered this condition in 1861. It relates to the condition wherein your inner ear suffers from damage that creates a series of bodily responses such as tinnitus, feeling of pressure in your ear, vertigo, or intermittent hearing loss.

This type of disorder typically affects only one of the ears and scientists are still continuing their research to unearth more important information surrounding this condition. In terms of statistics, this is quite an uncommon disease since it affects less than one percent of the population.

### 8.2. CAUSE OF MENIERE'S DISEASE

The effort to pinpoint the cause of Meniere's disease has continued to baffle researchers and patients alike. The most basic explanation as to what could actually cause Meniere's disease is that it is caused by the fluctuation of the pressure from the fluid within your ear. The membranous labyrinth inside your ears contains a fluid known as endolymph. Once the pressure is increased, it can lead to the dilation of those membranes, which is called hydrops. This happens because of a blockage in the endolymphatic duct which is caused by various factors or can be acquired from birth.

Today, further studies reveal various possible causes for Meniere's disease. This came after studies revealed that not all patients diagnosed with Meniere's disease had hydrops. On the other hand, those who have been known to have hydrops did not exhibit any of the symptoms for Meniere's disease. But studies have pointed towards the possibility that immune diseases might play a vital role in one's capacity to develop Meniere's disease. Other causes pointed out were infection in the inner ear, genetics, allergies, or head injury.

### 8.3. WHAT IS AFFECTED BY MENIERE'S DISEASE?

Meniere's disease targets the ears. Those who suffer from acute attacks of Meniere's disease have also been known to exhibit death of their inner ear's hair cells. This effect though is gradual but typically leads to unilateral type of hearing loss.

The disease also produces mechanical alterations in your inner ear structure. Because of these changes, patients may also suffer from chronic unsteadiness and fuel a series of attacks relating to other inner ear disorder. Most of the attacks are due to the dilation and shrinkage of the utricle.

#### 8.4. DIAGNOSIS OF THE DISEASE

In order for your doctor to identify whether you have Meniere's disease or not, they gather together a set of symptoms that are common to the disease and exclude those that might be associated with other diseases. Some of the symptoms include hearing disturbances and intermittent dizziness. Once you exhibited some of those symptoms, your doctor will put you through a series of tests to confirm whether you really have Meniere's disease.

Some of the hearing tests that are performed on patients suspected to have Meniere's disease include audiometry, a series of blood tests, ENG test, MRI scan, and electrocochleography for more difficult cases.

#### 8.5. IS IT CURABLE?

As of today, health experts and professionals are still sorting out ways to find an effective cure for Meniere's disease. However, none is available yet. In this case, doctors would often suggest preventive ways to combat the possibility of acquiring the disease. Furthermore, there are also steps that you can perform in order to reduce the symptoms or eliminate them.

#### 8.6. APPROVED TREATMENTS FOR MENIERE'S DISEASE

Although there are no certain cure for Meniere's disease, doctors can suggest ways to effectively control the symptoms of the disease. They are categorized as follows:

- Non-invasive Pressure Pulse Generator (Meniett Device)
- Surgery
- Medications

The following medications recommended for Meniere's disease are best used for acute attacks:

- Meclizine

- Lorazepam
- Phenergan
- Compazine
- Dexamethasone

For medications that are required for intake between attacks:

- Diuretics
- Calcium Channel Blockers
- Vestibular Suppressants
- Immune Suppressants

## 8.7. DIET

As with any other conditions, your diet can also impact the effects of Meniere's disease. Follow the dietary guidelines below to prevent fluctuations on the inner ear fluid:

1. Even distribution of food and fluid intake throughout the day.
2. Reduce your salt intake.
3. Avoid food or fluid components that contain caffeine, such as coffee, tea, or chocolate.
4. Limit or reduce your alcohol intake to at least a glass per day.
5. Avoid food containing MSG.

## 9. WHAT IS ACOUSTIC NEUROMA?

### 9.1. ABOUT ACOUSTIC NEUROMA

Acoustic Neuroma goes by different terms such as neurinoma or vestibular schwannoma. This condition involves the growth of a non-malignant or benign tumor on the 8th cranial nerve, which is made up of the vestibular and cochlear nerve. These two nerves serve their own separate purpose: the cochlear nerve for hearing, and the vestibular nerve for balance. Acoustic Neuroma typically arises from the Schwann cells that serve as covering for the inferior vestibular nerve.

Cases of acoustic neuroma are responsible for about 5 to 10 percent of intracranial neoplasms in adults. This type of condition affects anyone regardless of gender. In the United States, about 3,000 cases of acoustic neuroma are diagnosed each year. Worldwide, the ratio for the disease is 1 in 10,000.

## 9.2. CAUSES OF ACOUSTIC NEUROMA

There are two forms of acoustic neuroma: the sporadic form and forms exhibiting the inherited syndrome. However, the sporadic form is the more common one, attributing to 95 percent of all cases of acoustic neuroma. When it comes to determining the causes of the sporadic form of acoustic neuroma though, researchers have yet to identify them. However, quite a few research studies have recognized the effect of prolonged mobile phone use or overexposure to loud noises. And yet, these claims are still being verified as experts try to strengthen the supposed link of environmental factors and its impact on the acquisition of acoustic neuroma.

Although doctors cannot exactly pinpoint the causes of acoustic neuroma, they suggest certain risk factors that make one person more prone to developing this condition over another.

## 9.3. WHO IS AT RISK FOR ACOUSTIC NEUROMA?

There are two factors considered to increase a person's risk for developing acoustic neuroma: age and history of neurofibromatosis type 2. It is important to note, however, that they are not considered as causes for acoustic neuroma, but a substantial amount of people who had it exhibited the factors just cited.

## 9.4. AGE

The determined age range for people developing acoustic neuroma is between 30 and 60. On average, people diagnosed with acoustic neuroma are aged 50.

## 9.5. HISTORY OF NEUROFIBROMATOSIS TYPE 2

This disorder is inherited but a rare condition. It is often exhibited when both auditory nerves have suffered from acoustic neuroma. Hence, a malignant tumor will start to develop on the central nervous system. Most individuals who have neurofibromatosis have inherited this from their parents who also had the disease previously, although there are also some who developed it even when the family had no previous history of the disease. However, the chance of a child developing it is higher when their parent is affected.

## 9.6. SYMPTOMS OF ACOUSTIC NEUROMA

There are various symptoms that acoustic neuroma exhibits, but the most prominent of them are hearing loss and vertigo. As much as 90 percent of patients diagnosed with acoustic neuroma cited reduction in their hearing capacity in one of their ears. Cases of hearing loss were also accompanied by tinnitus, which produced a ringing sound on the ear.

As the tumor caused by acoustic neuroma targets the vestibular nerve responsible for balance, it is no wonder that patients have pointed out imbalance or a feeling of unsteadiness as one of the symptoms for this condition.

Other symptoms for acoustic neuroma include facial tingling caused by the growth of the tumor and the nerves pressing over one another. Also, the growth of the tumor can press the brainstem to a point wherein the patient suffers from headaches or other facial sensations.

## 9.7. HOW IS IT DIAGNOSED?

Several procedures or tests are conducted by doctors before one is diagnosed to have acoustic neuroma. These are some of the common test performed:

- Conventional audiometry – This is the most accurate diagnostic test performed to confirm acoustic neuroma. This type of auditory test is done in order to assess the extent of hearing loss and ability to understand speech. The purpose of the test is also to determine whether the acoustic nerve functions properly or not.
- CT Scan – This is done when the initial auditory test reveal some abnormalities. The CT Scan is a detailed imaging test that utilizes x-rays from varying angles so the doctor can have access to the structures inside the body. This test has been successful in locating acoustic neuroma, but most are not yet able to detect tumors when they are still small and are confined to the internal auditory canal.

## 9.8. TREATMENTS FOR ACOUSTIC NEUROMA

Once the patient is diagnosed with acoustic neuroma, doctors typically follow 3 procedures: observation, microsurgical removal, and stereotactic radiation therapy or radiosurgery.

In observation, doctors monitor the tumor over a given time to assess its growth rate. If the doctors have determined that the tumor requires no treatment, then they are typically avoided. This is especially true if treatment will only pose risks to the patient. However, if the tumor continues to grow, that is when doctors suggest you undergo treatment.

In microsurgical removal, doctors base their approach on 3 factors: location of the tumor, its size, and patient's hearing level. Most surgeries performed to remove tumor caused by acoustic neuroma are performed under general anesthesia.

Lastly, radiosurgery is a technique that sends high radiation doses to a specific area to kill the tumor. This procedure must be done only by skilled neurosurgeons or radiophysicist to ensure that no injury or further damage is created on the surrounding nerves and tissues.

## 10. ABOUT EUSTACHIAN TUBE PROBLEMS

### 10.1. WHAT IS THE EUSTACHIAN TUBE?

The Eustachian tube is a narrow channel that starts on the back of your nose and ends on the space in your middle ear. This tube is approximately one and a half inches long. The space in your middle ear is the part of your skull that houses your system's hearing apparatus. On one side of the middle ear space is where your eardrum is located.

About two-thirds of your Eustachian tube is supported by a cartilage that provides support for most of the tube, while the remaining part of the tube consists of bones. Inside the Eustachian tube is a tissue similar to the ones in your nasal cavity. Therefore, they respond the same whenever a stimulus is introduced into the system.

### 10.2. FUNCTIONS OF THE EUSTACHIAN TUBE

The basic function of the Eustachian tube is to equalize pressure on the valves of your middle ear, which are typically made up of air. Meaning, it is responsible for maintaining the level of pressure in the middle ear space. As part of this purpose, the Eustachian tube must also get rid of the accumulated secretions, debris, or infection that fills up the middle ear space.

If the Eustachian tube is in good condition, it opens up once in two to three minutes whenever a person yawns or swallows. Therefore, air gets into the middle ear space, replacing the ones that was lost or absorbed by the middle ear lining. This is basically how the routine function of the Eustachian tube works and anything that intervenes with the process results in symptoms of hearing loss or other conditions relating to the ear.

### 10.3. WHAT ARE THE EUSTACHIAN TUBE PROBLEMS?

Blockage is one of the main problems concerning the Eustachian tube. Due to the blockage, it creates a negative pressure in the middle ear space and results in your eardrum membrane being sucked in. Most people who suffer from this condition experience discomfort in their ear/s, feeling of pressure, tinnitus, or mild cases of hearing loss. In the children's case, symptoms might not show.

The longer the blockage stays in the Eustachian tube; it may cause fluid to come out of the mucous membrane that is located in your middle ear. It now leads to a condition called serous otitis media, which is common in children that produces an infection in the upper respiratory system and also closely associated with hearing loss.

#### 10.4. CAUSES OF EUSTACHIAN TUBE PROBLEMS

There are several reasons that could cause obstructions in one's Eustachian tube, which includes the following:

- A cold or upper respiratory infection is one of the leading causes for Eustachian tube blockage. The causes of the cold itself are due to bacterial or viral infections. It targets various parts of your respiratory system, such as the throat, sinuses, larynx, nasopharynx, bronchi, and trachea.
- Allergies can also produce obstructions in your Eustachian tube due to the swelling of the tissues. This reinforces the idea that your nose is closely linked to the function of your ears.
- The narrow tubes in children make them more prone to developing Eustachian tube problems. This is because the tubes are not only narrower but employs a horizontal orientation.
- Enlarged adenoid is another possible cause for Eustachian tube blockage. In this case, only the removal of your adenoid is the possible cure. This is also common amongst children who are suffering from chronic ear infection.
- The presence of tumors on the nasopharynx or skull base can lead to obstructions in your Eustachian tube. This is a rare case, however.

#### 10.5. FACTORS AFFECTING EUSTACHIAN TUBE PROBLEMS

A change in altitude is one of the triggers to Eustachian tube problems. If your Eustachian tube functions properly, then changes in altitude or air pressure should not pose any problem. However, a blockage on your Eustachian tube makes it incapable to equalize the amount of air pressure in your middle ear space. Therefore, those with Eustachian tube problems can experience pain, pressure on the ear, or faint hearing when boarding a plane, climbing mountains, or anything that increases altitude.

#### 10.6. TREATMENT OF EUSTACHIAN TUBE BLOCKAGE

The aim for treatment of Eustachian tube blockage is to relieve the patient of any discomfort or symptoms that is associated with the condition. Therefore, you can perform the following:

- You can perform simple activities such as swallowing, drinking, or chewing gum. Such activities will help activate the muscles located at the back of your throat until it eventually opens up the Eustachian tube.

- Yawning is a potent muscle activator that can free up the blockage on your Eustachian tube.
- If you experience fullness in your ear, force a deep breath or pinching your nostrils while your mouth is closed. When the Eustachian tube successfully opens, you will hear a pop. If this does not work, then you can try seeking medical assistance especially when you become dizzy performing this procedure.

## 11. TEMPOROMANDIBULAR JOINT DISORDER AND HOW IT AFFECTS HEARING

### 11.1. WHAT IS TEMPOROMANDIBULAR JOINT DISORDER?

Temporomandibular disorder, or more commonly known with the acronym TMJ, is a condition affecting the temporomandibular joint that is associated with your hinge jaw joint, skull's temporal bone, and the muscles surrounding your jaw. This part of your facial features is responsible for chewing, biting, and performing any type of jaw movement.

When a person suffers from TMJ disorder, it basically reduces the flexibility of your jaw and might even cause pain when you perform the usual functions of that part of your face. Therefore, patients suffering from TMJ disorder can suffer from a great deal of pain, depending on its severity.

### 11.2. CAUSES OF TEMPOROMANDIBULAR JOINT DISORDER

There are a wide variety of TMJ disorder types that are also caused by multiple reasons. This has often been depicted as related to psycho-stress, although some would contend that it is merely biological. One common cause of TMJ disorder is when you suffer from bite problems that impact the joints. When there is some form of interference on the structure of the teeth, it also causes the lower jaws to become misaligned. Hence, the muscles around your jaw cause a misalignment of the joints in order to fit together your upper and lower teeth.

There are also other anatomical reasons for the interference of your TMJ functions such as the presence of scar tissue. In other rare cases of TMJ disorder, they are caused by injury to either head or face. Interference on your jaw functions can also happen due to tooth grinding or any activity that cause uneven teeth surfaces.

Other known causes for TMJ disorder includes certain dental procedures, hormones, low-level infections, genetics, auto-immune diseases, overstretching your jaws, among others.

### 11.3. SYMPTOMS OF TEMPOROMANDIBULAR JOINT DISORDER

Pain is the most typical indicator that you have TMJ disorder. The dull pain often takes place in the jaw and surrounding areas, even including your ears. The pain could either be intermittent or constant, as it varies for every individual and depending on the severity of the disorder. There are a few others too who did not feel any form of pain as a symptom to TMJ disorder but suffered some jaw problems.

Despite the absence of pain, the following might be reliable indicators that one has TMJ disorder:

- Inability to open mouth freely and comfortably
- Jaw joints produce varying type of sounds
- When your jaws lock as you attempt to open your mouth
- Constant or intermittent headaches
- Pain in the neck, shoulder, or back
- A feeling or actual swelling on either side of the face
- Dizziness
- Hearing loss or reduced hearing
- Ringing in the ears

Those who experience some level of discomfort in their jaw joints or area must not readily assume they have TMJ disorder though since it is quite a common occurrence. Most cases of TMJ disorder however often goes without treatment after a few weeks or months, so there is nothing to worry about.

#### 11.4. DIAGNOSIS FOR TEMPOROMANDIBULAR JOINT DISORDER

Diagnosis for TMJ disorder typically begins when the initial symptoms begin to show. However, the symptoms to TMJ disorder are quite common themselves that diagnosing an individual with TMJ disorder requires further analysis of any other symptoms to exclude the possibility of some other problems.

As of today, there is not one particular test done specifically to identify TMJ conditions. If tests were to be conducted, it is often for the purpose of excluding some other medical conditions. Once your doctor has eliminated any other conditions, only then can they diagnose you with a TMJ disorder. Most diagnostic procedures typically consist of a thorough evaluation of symptoms including the patient's medical history and a physical examination of the patient. All information gathered from the tests is utilized to make proper diagnosis.

#### 11.5. TEMPOROMANDIBULAR JOINT DISORDER AND HEARING LOSS

The misalignment of your jaw when you have TMJ disorder is one of the less recognized conditions that cause hearing loss. Because your jaw area is closely associated with some other facial features such as your neck and ears, it is hard to identify whether hearing loss is a cause or effect of TMJ disorder.

However, it is clear as to why these conditions are correlated. Your ears and jaw are connected to each other since they are at the same embryological place. Therefore, when your jaw joint undergoes pain it results to the contraction of the tiny muscles inside your ear. When your inner ear muscles are subjected to spasm and continued contraction, it leads to hearing loss.

Once the muscles in your jaw area are relieved, then that is the only time that the muscles within your ear can be relaxed as well; therefore, when the first sign of TMJ disorder shows up, you need to consult with a health expert as soon as possible to prevent affecting your ears in the process.

## 12. TREATMENTS FOR HEARING LOSS

Reversing the effects of the loss of hearing can be done in multiple ways. The treatment needed for hearing loss varies according to the severity of the damage to your auditory system, its configuration, and the cause.

Here are some of the common treatments for leading causes of hearing loss.

### 12.1. REMOVAL OF WAX

Most mild cases of hearing loss are due to the buildup of earwax that blocks the passage and travel of sound waves. Most cases of hearing loss due to earwax blockage experience only mild symptoms such as inability to hear clearly. However, this is not a permanent condition and can therefore be reversed by loosening, scooping or suctioning the wax off your ear.

### 12.2. LOOSENING WAX

For added safety, you can ask your doctor to perform this procedure instead of doing it yourself at home. If not, then you can ask someone's assistance to complete this treatment. You will need an eyedropper and any type of oil such as baby oil, mineral oil, or glycerin. Then, place a few drops of the oil into the dropper to apply into your ear. The presence of oil will loosen the wax and then you can use a bulb syringe to squirt a tiny amount of warm water into your ear. Once you've done that, tilt your ear to let the water out. The wax will not be taken out in one procedure, so you have to repeat this until the wax disappears.

### 12.3. SCOOPING AND SUCTIONING THE WAX

This will serve as a follow-up procedure to loosening your earwax. Your doctor can either scoop out the wax from your ear or use a suction device to pull it out.

## 12.4. OTHER TREATMENTS FOR REVERSIBLE HEARING LOSS

Permanent and reversible cases of hearing loss are different. Therefore, you also need to utilize varying treatments to address the causes and problems that bring about you're the loss. Here are some of the most effective treatments to reverse the effects of temporary hearing loss:

## 12.5. STOPPING INTAKE OF OTOTOXIC MEDICINES

Observations reveal that after stopping the intake of ototoxic medicines such as aspirin or ibuprofen, one's hearing capacity greatly improved. These types of medicines cause damage to the ear and some other vital components of the auditory system that leads to hearing loss. This is a more common occurrence among adults who regularly take this medicine and at high doses.

## 12.6. CURING EAR INFECTION

This is one of the causes of hearing loss that occurs when the infection causes a blockage in the passage from the middle to your inner ear. Therefore, most patients who suffer from ear infection can hear but the sound produced is muffled. There are home treatments to get rid of ear infection but antibiotics are often effective. For best treatments on ear infection, consult your doctor.

## 12.7. PERMANENT HEARING LOSS TREATMENT

If you have tried any of the treatments above and still experience difficulty in hearing, then you might have a more serious case of hearing loss. You must then consult professional advice to determine what best method of treatment to use for your condition. You will be subjected to hearing tests to assess your hearing capability and how much hearing assistance you need to get by. You can read more about those treatments in a previous chapter.

## 12.8. HEARING AIDS

Hearing aids are devices that do nothing to reverse the effects and symptoms of hearing loss but improve one's capacity for hearing instead. To use a hearing aid, you will need a microphone that will pick up the sound, an amplifier to increase the sound for you to hear, an ear piece that will transport the sound into your ear, and a battery to keep the device running.

Using hearing aids for the first time might seem awkward but you will get used to them in time. Today, hearing aids come in various sizes, styles, and shapes to suit the user's preference or to make the device discreet.

## 12.9. COCHLEAR IMPLANTS

This type of treatment is recommended for severe cases of hearing loss, often for those caused by a damaged inner ear. An electronic device known as cochlear implant to aid in hearing is placed in your ear. What the device does is amplify the sound picked up and directs that into your ear, wherein the ear's components have failed to function.

## 13. CAUSES OF TEMPORARY HEARING LOSS

### 13.1. WHAT IS TEMPORARY HEARING LOSS?

While there is a varying degree of hearing loss conditions, there are also various reasons that would make the condition temporary or permanent. The duration of hearing loss is often determined by the cause, but temporary hearing loss is far more common as compared to permanent cases.

The main difference between temporary and permanent hearing loss is that the former is reversible and capable of being treated while the latter is not. When symptoms begin to show that you have temporary hearing loss, doctors or specialists often recommend you to follow medical procedures to reduce the effects of your condition and to restore your hearing ability. In the case of permanent hearing loss, doctors merely provide hearing aids or assistance devices but they cannot restore the normal state of your auditory system to regain your hearing capacity.

### 13.2. WHAT CAUSES TEMPORARY HEARING LOSS?

There are several reasons that could result to an individual developing temporary hearing loss. However, most of these causes are reversible or can be prevented. It is therefore important to recognize them so you can be aware of what factors can cause damage your ears or reduce your hearing capacity.

### 13.3. EXPOSURE TO NOISE

This is one of the most common reasons to temporary hearing loss, also known as noise-induced hearing loss. The structures of your inner ear are sensitive and when they are exposed to prolonged noise, they are also prone to damage. Because your ear is the main tool that the human body utilizes for hearing, once it attains damage, it also depletes the capacity for hearing. Although it can cause temporary hearing loss, recognizing the hazards of continued exposure to loud noises can further damage your auditory system to the point that it would be irreversible.

### 13.4. EAR BLOCKAGE

Ear blockage or the buildup of earwax can also lead to temporary hearing loss.

### 13.5. MIDDLE EAR INFECTIONS

The development of an infection in your middle ear could possibly be a result of earwax buildup. Otitis media is another condition closely associated with hearing loss. This happens whenever your eardrum is ruptured or torn, resulting to it being punctured. In some cases, this is also accompanied by blood or painful drainage in your ear.

### 13.6. DAMAGE OF SENSORY STRUCTURES

Your inner ear is composed of hair cells which, when damaged, can result in temporary hearing loss. The same goes for your auditory nerve pathway that sends messages into the brain. There are various reasons that could damage these sensory structures, which include tumors, drugs, or infections.

### 13.7. INTAKE OF OTOXIC MEDICINES

Otoxic medicines like ibuprofen or aspirin can cause damage to your hearing system when taken over a long period of time and in high doses. Individuals who have experienced temporary hearing loss due to the intake of ototoxic medicines have experienced relief from the condition once they have stopped taking the medicines though.

## 14. MORE ABOUT HEARING AIDS

People diagnosed with permanent hearing loss are often required to wear a small electronic device called hearing aids that must be worn either in your ear or behind it. These devices amplify the sounds captured from external sources so that a person can hear clearly despite of reduced auditory capacity. This device is useful in both noisy and quiet environments because it increases their sensitivity to sounds.

### 14.1. WHEN DO YOU NEED A HEARING AID?

The use of hearing aids is often recommended by your physician after you have consulted with your problems in hearing. Your otolaryngologist or audiologist will assess and study the cause of your hearing loss and its extent. If they deem that your case of hearing loss is irreversible, then hearing aids are often suggested to cope with the lack of optimal hearing capacity.

### 14.2. FEATURES OF A HEARING AID

Despite differences in the specific features or styles of hearing aids available on the market, all of them must have 4 basic components in order to function properly. These components are responsible for carrying sound from the environment and delivering them to your ear for better hearing capabilities.

- Microphone – This is responsible for picking up sounds.
- Amplifier – This helps in increasing the volume of the sound.

- Speaker – It transports the sound into your ear so that you will recognize it.
- Battery – It is important to keep the device running and functioning.

### 14.3. DIFFERENT HEARING AID STYLES

There are 5 basic styles of hearing aids to choose from. Although they all work the same when it comes to aiding in your hearing capacity, there are several reasons why one chooses a specific hearing aid style over the other. Some like others because they can be used discreetly and no one will be able to tell if you're using a hearing aid or not. However, be careful with your choice because the smaller types of hearing aids have less power and have shorter battery life.

1. Completely in the canal (CIC) hearing aids. This type of hearing aid is designed to fit into your ear's canal and is suited for mild to moderate hearing loss conditions. They are also the most invisible out of all hearing aid types. They do have their disadvantage though because there is less room for other options such as volume control and microphones. Moreover, they are also more expensive as compared to other types.
2. In the canal (ITC) hearing aids. As with CIC, this is also good for mild to moderate hearing loss conditions. It is designed to fit partly but not as deeply into the ear canal. Still, this type is small enough not to allow more extensive features.
3. In the ear (ITE) hearing aids. These fit in the outside ear and are often used for mild to severe cases of hearing loss. Most ITE hearing aids consist of additional features such as a telecoil so that sound can also be absorbed through the aid's circuit and not just solely through the microphone. This also increases your capacity to hear sounds or conversations more effectively.
4. Behind the ear (BTE) hearing aids. Some of the components of this hearing aid fit behind the ear wherein most of the electronic parts are contained. This type of hearing aid is suitable for all levels of hearing loss and ages of users. Among all types of hearing aids, these are the most visible and largest in size. However, they are also the most powerful hearing aids with several adjustable possibilities.
5. Open fit hearing aids. This is a good hearing aid to use for people suffering from earwax buildup. They are also located behind the ear and are rather small. Sound is transported into your ear through a tiny tube and into the speaker. The open-fit hearing aid is ideal for mild to moderate cases of hearing loss.

### 14.4. BUYING TIPS

In the search for hearing aids, there are certain procedures that you need to undertake first to ensure that you get the most benefit out of using a hearing aid.

You have to consult with your doctor first before buying a hearing aid. They will be able to determine whether the cause of your hearing loss can be reversed or if your hearing is impaired to the point that you need hearing assistance devices such as hearing aid. If your doctor has determined you need one, they'd be able to advise what specific type of hearing aid to use that would suit best your needs.

Opt for hearing aid sellers who offer a free trial period. This will give you the opportunity to test whether the device is actually useful without spending any amount upfront. If not, then you can easily switch into another type of hearing aid.

When buying, make sure to verify if there is a warranty along with your purchase. If there is any, make sure it covers both the labor and parts of the hearing aid.

#### 14.5. ADJUSTING TO HEARING AIDS

If you're new to using hearing aids, you might need some time in order to get used to it. However, once you have been accustomed to using the device, then you should notice a major improvement in your hearing capacity.

What every hearing aid user needs to realize though is that hearing aids are merely tools to improve your hearing capacity but they are not capable of restoring your normal hearing system. You can begin exposing your use of hearing aids to normal levels of noise until you move on to louder environments. Once you are adjusted to the use of hearing aids, you will find it easy to pick up sounds or conversations even in loud environments.

### 15. WHEN DEAFNESS IS INEVITABLE - LEARNING SIGN LANGUAGE AND LIP READING

#### 15.1. DEAFNESS COMMUNICATION TOOLS

For people who lack hearing abilities, communicating properly can be a difficult task. Without the capacity for hearing, one cannot acquire or send out the specific information one needs to properly communicate. Aside from that, you have lost the ability to recognize various types of sounds in the environment.

That is when sign language and lip reading have been recognized as important communication tools for individuals who have lost their sense of hearing totally with no hope for using hearing aids. And, with a growing number of people suffering from hearing disability, it has become an important coping mechanism that they use for effective communication.

#### 15.2. BASICS OF SIGN LANGUAGE

Sign language is a form of communication that involves the use of your certain body parts such as hands and face. Sign languages work the same as other types of languages, which in itself is complex. Therefore, learning the basics is important to overcome the hurdles of communicating properly using this tool or system. Like the language most

people are familiar with, it has standard grammar and sentence structures to follow so that everyone can understand each other.

Instead of using sound patterns, it utilizes a combination of lip patterns, non-verbal communication, and body language to convey messages. The grammar employed in spoken languages has a striking difference from the complex and spatial grammar rules of sign languages. For instance, a single hand movement pattern can convey a complete sentence. Therefore, it is important that one acquires the basic rules behind the system in order to communicate properly using this method.

### 15.3. WHAT IS LIP READING?

Lip reading is done by interpreting the movement of the lips, tongue, and face in order to understand speech. However, meaning is also influenced by some other factors including language, context, and any residual hearing capacity. Although this is not a suitable alternative for oral communication because majority of speech is not visible, lip reading is now recognized as one of the best ways to understand and communicate despite a hearing disability.

Lip reading can be a natural skill or is taught mainly for the purpose of communicating despite hearing disability. The trick to lip reading is by recognizing the different speech sounds, as well as facial and mouth position that corresponds for each sound. However, the discrepancy that points to the capacity of lip reading as an efficient communication tool starts with sounds that are articulated inside the mouth, which only means they are not capable of detection.

A few environmental cues and knowledge of the conversation's context can help boost one's capacity to understand the meaning of an existing conversation. However, there are certain limitations to that as well, such as unclear view of the speaker's lips and having multiple speakers.

### 15.4. TIPS FOR MORE EFFECTIVE LIP READING

Lip reading isn't easy but it is nevertheless important. Therefore, you have to be considerate when communicating with people who have hearing disability to increase their ability to lip read and understand each other better.

- Speak clearly and never exaggerate movement of mouth during speech. Doing otherwise will make it more difficult to read lips and understand the 'message' being relayed.
- Avoid mumbling or speaking too fast. This will give the hearing impaired individual enough time to detect the movement of lips and other non-verbal gestures.
- Provide enough visual cues so the person with a hearing disability you are talking to will have proper context of the conversation.

- When conversing with a deaf person, opt for a well-lighted place so they can clearly see your lips when you speak.

## 15.5. LIP READING, SIGN LANGUAGE AND DEAFNESS

About 7 percent of the population is known to have a case of hearing loss in varying degrees. Most of those who have experienced hearing loss developed the condition in later life instead of being born with it. Therefore, a great percentage of individuals who suffer from hearing loss had access to spoken language at some point in their lives.

Here are some of the benefits that individuals with hearing loss problem can experience from learning sign language and lip reading:

- It improves memory. The focus on visual input during speech stimulates one's capacity to develop intellect and also boost their information retention ability.
- Sign language and lip reading utilize visual-spatial aspect of communication that is vital to improve a person's reading and writing skills.
- It enables a hearing impaired individual to overcome the barriers of communication despite lack of hearing abilities. The presence of oral communication barriers can lead to frustration and reduced level of self-confidence. Once the system and techniques utilized for sign language and lip reading are mastered, communication becomes more natural.
- The ability to bridge any existing gap in one's communication ability results in an emotionally secure individual.