

Hearing Better

*Understanding Your Hearing And
Ear Care Options*

by

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For those who find themselves
disadvantaged in a hearing world.

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Foreword

Through 99.9% of recorded history there were no safe or effective treatments for hearing loss. People who were born deaf stayed deaf. Those who developed hearing loss, did not get better. Infection in the ear did not only affect hearing, but was, at times, life threatening or fatal. The development of antibiotics began to change this. Ear infections could be treated or cured and associated hearing losses reduced or eliminated. The operative microscope came into use supplying illumination and magnification and allowed the surgeon to work with both hands. So, surgery for ear problems became a viable option due to the operating microscope and antibiotics. The operating microscope made delicate surgery on the small structures of the ear practical, while antibiotics lowered the risk of postoperative infection and complications.

Thirty-seven years ago, I began practicing medicine. It was an exciting time. Microscopic surgery was brand new, and it offered great promise for repairing the ravages of disease including some that cause hearing loss. One of these new surgical treatments (stapedectomy) was to become my specialty. In the years since, this procedure improved or restored hearing to millions of people worldwide who had the ear disease otosclerosis. Prior to the development of this procedure, these people would have been condemned to a life of hearing loss.

During my years of practice, numerous medical and surgical procedures have been developed for the treatment of hearing loss. Some hearing losses can be completely corrected. Others can be greatly reduced so they present less of a handicap. There are additionally people whose hearing loss cannot be corrected, but medical treatment is needed to minimize or prevent further loss. Unfortunately, not all hearing losses can be treated or corrected medically, but with

every year, more and more can. Today, even the totally deaf are not without help. They can have hearing restored through the surgical implantation of a device called a cochlear implant.

When people think about hearing loss, the first thing many think of is hearing aids. They are often unaware that there are medical and surgical treatments that can sometimes eliminate the need for hearing aids altogether. Continued improvements in hearing aids are making them more useful and comfortable than ever before. However, instead of hearing aids, people should first think about whether a hearing loss can be fixed or whether steps need to be taken to prevent their hearing from becoming worse.

I am thrilled to have had the opportunity to contribute to this book. This remains an exciting time for those of us involved in the treatment of hearing loss and ear problems. More can be done today than ever before. Very few of the hearing impaired cannot be helped to hear better with medical treatments, surgical procedures or through the use of hearing aids. *Hearing Better: Understanding Your Hearing And Ear Care Options* presents a balanced overview of the problems associated with hearing loss and the wide range of treatments available. It is informative and easy to read. It should be a valuable guide for those interested in preserving or improving their ability to hear.

William H. Lippy, M.D.

Introduction

Few quality of life and health concerns have received as little public attention as hearing. With the possible exception of a hearing screening in elementary or preschool, the entire concept of hearing and hearing loss is largely ignored in private and public schools. The situation is little better for those who had the opportunity for a university education. Students can count themselves among the more fortunate if they learned the basic structure and function of the ear in an anatomy or health class. The majority only learn the part they need for trivia games (the three smallest bones in the human body are located in the middle ear). We are not taught what we should hear, what might interfere with the things we are trying to hear, what is likely to damage our hearing, or a great number of other hearing related facts that might actually be of practical use. We certainly are not given a clue as to whom to contact if we suspect a hearing problem.

For the majority of us, our hearing related education comes courtesy of television, radio, magazines and newspapers. More specifically, the bulk of this information comes to us through the advertisements in these sources. Rather than the people most knowledgeable or best educated explaining what could or would be helpful for us to know, it is often the people with the largest marketing budget presenting what they want us to buy. The purpose of this book was to provide an alternate source for hearing related information. We wished to share our education and clinical experience with a wider audience than available in our practice alone.

Hearing Better: Understanding Your Hearing And Ear Care Options discusses the basics about ears and hearing as well as new medical and technological advances. It also includes a number of hearing related topics that we feel are

important, that are likely to be considered interesting, or are commonly misunderstood. Each topic is discussed in a manner and style similar to what might be said to a patient in our office. Topics are briefly explained, as well as why they are important and how they might affect an individual. Regardless of the topic, terminology is kept to a minimum.

Anyone planning to see an ear specialist for the first time should benefit from the information provided in the following pages. The different ear professionals are introduced, their qualifications and the services they render explained. Also provided is the background information necessary to help understand what these professionals may find. By being informed, it is possible for a person to become more of an active participant in the decision-making about their own health.

Those who have previously undergone a complete ear and hearing evaluation will also benefit from the information provided. In the era of HMOs and managed care, physicians and other health care professionals rarely have time to discuss all of the problems associated with hearing loss. This book fills in some of the gaps. Additionally, new advances in the treatment of hearing loss are constantly taking place. Some of the procedures and treatments discussed were not available just a few years ago. This new information lets people catch up on what is currently available.

Even people who are not experiencing any hearing difficulties, but are concerned about their hearing health can benefit from this book. They can discover the greatest dangers to their hearing and how to avoid them. They can also discover ways to make better use of their hearing, to augment it, or reach beyond what nature provided.

Hearing Better was arranged for easy reading. Some of the topics include the basics of hearing, common concerns, ear and hearing professionals and current methods of hearing care. These topics are intended to be read as a whole. Since the ability to hear is so delicately interwoven with so many

aspects of a person's life, it is important to understand an individual's hearing within a wide context. Reading the book as a whole provides this context. However, it is possible to skip over information on particular ear diseases or age groups that may not be of interest. A glossary of terms that might be encountered during a visit to an ear professional is included for reference.

Chapter One: The Basics

Anatomy Of The Ear (Abridged Version)

In order to talk about the ear, it is probably necessary to describe some of the parts and explain what they do. However, even for people interested in the ear, this can be less than exciting reading. The ear has many parts. They are given descriptive names from archaic languages leaving people with a collective response of “What?”. Fortunately, it is not necessary to memorize every part or landmark of the ear. This would be of little value for the majority. Additionally, describing every nook and cranny of the ear using the appropriate terminology could quite possibly weaken or take away the will to read further. We do not wish to do that here. We will therefore present the abridged version.

For anatomic purposes, the ear is divided into three parts. The outer ear is the first part. This includes the portion of the ear you can see and the ear canal. The middle ear is the second part. It includes the eardrum, ear bones and the cavity surrounding these structures. The third part of the ear is called the inner ear and contains the organs for both hearing and balance. There is also a nerve that carries sound from the inner ear to the brain, but it is not usually considered part of the ear.

The outer part of the ear needs little description. It may vary slightly in size, shape or color, but generally looks about the same from person to person. Despite someone having gone to the trouble to name the many curves, bumps and other landmarks of the outer ear, they serve little function with the possible exception of the earlobes. Women use these as a convenient place to store their jewelry (some men too). The ear canal which is additionally considered part of the outer ear also needs little description. This is the part of the ear into which we are supposed to stick nothing smaller than our elbow (yet often do, despite knowing better). Together,

the outer part of the ear and the ear canal serve to gather sound and to direct it deeper into the ear.

The parts of the middle ear are also familiar to most people. They include the eardrum and ear bones (malleus, incus and stapes or hammer, anvil and stirrup if you prefer). The middle ear itself is simply an air-filled space that allows movement of the eardrum and ear bones. The eardrum forms the outermost part of the middle ear. It is connected to the malleus bone which is connected to the incus bone which is connected to the stapes bone. This last bone fits into a small opening (window) between the middle ear and inner ear to transmit sound to the inner ear. The middle ear has to transfer the sound that normally travels through air to the fluids in the inner ear with a minimal loss of power. Simply putting your head under water can demonstrate how much sound can be lost as it passes from air to fluid. The middle ear overcomes this transfer by having the ear bones work in a lever action to transfer the power. The sound power is also preserved by taking all the sound hitting the eardrum and focusing it on the opening to the inner ear (a much smaller space). Once this transfer of sound is accomplished, the middle ear's job is done and it is time for the inner ear to do its thing.

The portion of the inner ear responsible for hearing is called the cochlea (pronounced “Coke” like the soft drink, then “lee” and “ah”). It is outwardly snail shaped and houses the hearing organ (organ of Corti) within its two and one-half turns. Contrary to the popular view, the inner ear does not have just one hearing nerve, but thousands of nerve (hair) cells. As the last little ear bone moves in and out of the window between the middle and inner ear, the fluid in the inner ear is set into motion. The fluid then moves the little hair cells which convert this mechanical energy into electrochemical signals that are sent to the brain. When a person is diagnosed with hearing loss due to nerve damage, the damage is usually in these small hair cells.

The other part of the inner ear (the vestibular system) controls balance. Along with vision and feedback from the muscles in the legs, the inner ear helps us detect movement and orient ourselves in three dimensional space. The vestibular system looks something like a roller coaster. There is a main hub from which three canals loop out at differing angles. As in the hearing portion of the inner ear, the vestibular portion works by detecting the motion of fluid. Rather than sound moving the fluid, gravity and the motion of our bodies cause movement. If we go forward, the fluid tries to move back. If we go back, the fluid tries to move forward. Gravity tries to pull the fluid down if we are right side up or towards the top of the head if we are upside down. The vestibular system detects all of this.

Having omitted schematics, diagrams and lots of words derived from foreign languages, this was, of course, not the most detailed description of the ear. However, it should not have been too painful and will be sufficient for the discussions in this book.

Ear Lookers

The first step to examining an ear is to look into it. To do this, some form of ear looker is needed. The most basic of these is called an otoscope (ear scope). Aside from its high price, the otoscope is really just a glorified flashlight. Like a flashlight, it has batteries in the handle, a little light bulb, a glass lens and it lights up stuff. In this case, it lights up the ear canal and eardrum. Unlike a flashlight, the otoscope has a cone shaped portion that goes into the person's ear to straighten out the canal and help hold it open. Using an otoscope, an ear professional can visualize the ear canal, the eardrum, and if they are lucky, a little way through the eardrum. Oscopes are an indispensable tool for ear professionals.

A more impressive kind of ear looker is a video otoscope. Rather than being a glorified flashlight, the video otoscope is a glorified video camera. Like a regular otoscope it lights up the ear canal and eardrum. However, rather than looking through a tiny eyepiece (lens), an image of the ear is displayed on a television monitor. The view through a regular otoscope may be every bit as good, but people usually prefer the video otoscope because they too can see what the ear looks like inside. Video otoscopes can also take pictures of the eardrum for patient records or to send to other professionals when a referral is needed. Most people consider the video otoscope to be a very worthwhile advance over a conventional otoscope. Now they can see what may or may not be wrong without having to depend entirely on a physician's descriptions.

An operation or diagnosis microscope might be considered the ultimate ear looker. It could also be termed an ear looker plus, because it makes possible doing more than looking. As with an otoscope, the view is good. It can also be magnified to whatever extent needed. With a camera attachment, an operation and diagnosis microscope can additionally display the ear on television like a video otoscope. The advantage of the microscope is that it provides a good view while leaving a physician's hands free to perform medical procedures (remove wax, suctioning infection from an ear, patching an eardrum, etc.). Due to its higher cost, the operation and diagnosis microscope may not be as common as a video otoscope. However, when in-office treatment is needed, this is the looker of choice for most ear doctors.

Regardless of the ear looker used, two things have to be kept in mind. The first is that hearing loss as well as many ear diseases may not be visible. Looking in the ears can let a physician rule out a number of pathologies, but it is usually only the starting point for a more complete evaluation. The second thing to keep in mind is that from the standpoint of diagnosis and treatment, the education and experience of the

person behind the ear looker is almost always more important than the particular ear looker used.

How Did That Get In There?

It only stands to reason that if we are going to go to the trouble to look in people's ears, we should not be too surprised at what we might find. There are things that develop on their own and things that people purposely, and sometimes not so purposely, put into the ear. Whatever winds up in the ear, a hearing problem can result if the ear canal becomes completely blocked. For the ear to work properly, sound has to get to the eardrum.

Past some unspecified age, a little bit of hair is one of those things that can be found living happily in or at the entrance to the ear canal. It is more common in men, but can occasionally be seen in women. While failing to perform any profound task, the hair does serve very well to collect one of the other things that develop in the ear - earwax. The situation is much like getting gum stuck in your hair. It doesn't come out. The analogy is visually closer if we think of peanut butter instead of gum. Either way, it is a great big yuck.

Children are by far the most likely to purposely put things into their ears (or the ears of other people who may not be watching them closely). Beads, crayons, rocks and dirt all find their way into children's ears. Assorted vegetables that they would rather not eat also end up in the ears. Parents rarely think to look there! Most of the time parents are unaware their child has anything in the ear unless they don't seem to hear, the ear becomes painful, starts to swell or whatever was planted there begins to grow.

A more distasteful category of things that wind up in the ear, are those that get there on their own power while looking for something good to eat or for a nice place to live. This can apply to a great number of creepy crawly things, but most

often applies to cockroaches. One of the little critters can crawl into the ear canal while a person sleeps and then it can't turn around to get out. It just pounds against the eardrum until the person does something about it. Almost too much fun for any one person to have.

Regardless of what got into the ear or how it got there, your doctor is the person to see to get it out. This may be a primary care physician, pediatrician or ear specialist. Whatever is in there, they have likely seen it before and removed worse. Don't be surprised, however, if they ask how it got there. Doctors like a good story.

Send In The Psychics

Some ear problems are physically pretty obvious. It does not take the world's leading diagnostician to recognize earwax. Similarly, if a person comes to the office with green drainage oozing from the ear and has a history of ear infections, they likely have an ear infection. Aside from ear infections, eardrum perforations and earwax, the majority of ear problems are not visible during a physical exam. The best ear looker in the world won't be enough. Tests are needed.

A hearing test is the simplest and most useful tool for figuring out what is going on with the ears. It has value beyond just indicating the amount of hearing loss. Most ear diseases affect the hearing in some way. A hearing loss caused by noise exposure will have a pattern that is different from a hearing loss caused by aging, infection or various other ear diseases. In this way, the test can give an indication of what is causing the problem. Further, the hearing test also shows where in the ear the problem lies. By finding the location of the problem, the hearing test serves as an important indicator of what can or cannot be done to correct the problem. When the cause of the problem is unclear from the history, physical exam and hearing test, this combination can usually suggest what other tests could be of value.

In our era of skepticism and investigative reporting, most people are concerned about “unnecessary charges.” Skepticism regarding the necessity of medical tests often runs rampant, even when a test is specifically requested by a physician. In the case of ear problems, this results in people stating that they do not want a hearing test even before they have described their problem. This leaves them wanting a psychic doctor. They are wishing their doctor to divine the problem without permitting the tools required. It is not necessarily that hearing health care professionals are any less psychic than anyone else. This is not what they are being paid to do. They are being paid to find out what is wrong, not to predict or guess.

The Hearing Test

For many, the thought of a hearing test brings back memories of the school nurse wanting you to raise your hand when there was a sound. For others, the test represents some kind of strange ritual involving a sound proof trailer that mysteriously appears once or twice a year outside of work. Employees are herded out to the trailer, respond to a few beeps and then it is back to work they go. However, for a great many of us, the thought of a hearing test conjures up no memories at all, because we have never had one.

What most people think of as a hearing test (listening to beeps though headphones) is only one part of a complete hearing evaluation. For this most familiar part of the hearing test, the task is to press a button, raise a hand, or respond in some other way whenever there is a beep: even if it sounds very quiet. This shows the lowest level at which a person can hear at a number of different pitches. In settings where the goal is simply to rule out hearing loss (schools, hearing screenings, etc.), this is frequently the only testing that is performed. It is also all that is generally done in industrial settings where the goal is to determine if the hearing is being

damaged over time due to noise exposure. The test is performed in a quiet sound proof room with no distractions. This provides a repeatable condition. It also allows the monitoring of changes in hearing over time. It is understood that this represents an ideal, rather than real world listening condition. However, it provides a concrete measure in at least one situation of how an individual hears in comparison to others. By itself, this part of the hearing test is often not medically helpful and is of limited value beyond the examples listed above. It only gives an indication of the softest sounds an individual says they can hear.

A second part of a complete hearing test is to determine how softly a person can hear a series of two syllable words. These words provide a double check to insure that the person responded accurately to the beeps. If a child keeps raising their hand even when they do not hear the beeps, they will not be able to repeat words presented at this same soft level. Similarly, some adults may want to give the appearance of good hearing to pass safety standards for a job or for other reasons. The comparison of hearing levels for tones and words pick up these individuals also. This comparison can additionally be used to detect people exaggerating or faking a hearing loss. Rarely do they get their volunteered thresholds for words and tones to match closely enough not to indicate a problem.

The first two parts of the hearing test are concerned with how soft people can hear. The third part of the test focuses on how clearly a person can hear. To measure this, the person is asked to repeat a series of words that are presented at a volume well above their hearing threshold (the softest level they can hear). The words used for this test are specially selected to represent an even mix of the different speech sounds used in the English language (there are special word lists for other languages also). If a person can repeat all or nearly all of the words, they have good clarity of hearing (also called understanding, discrimination, or word

recognition ability). If a person can make out few or none of the words they have very poor or no clarity. The clarity of hearing is in many ways, more important than how soft a person can hear. It is much better to have good word understanding than a good hearing level, because sounds can always be made louder. Sounds can not generally be made clearer. Consequently, reporting the lowest level at which a person can hear is largely useless without also reporting the clarity with which they hear.

Similar to the first part of the hearing test, the last part also uses beeps at a variety of pitches to see how soft a person can hear. The difference is in the headphone. For the first part of the hearing test a conventional headphone is used. The sound goes into the ear canal, moves the eardrum, the little ear bones, the parts of the inner ear and gets sent to the brain so the person can hear. For this last part of the hearing test, a special headphone called a bone vibrator is placed behind the ear. This headphone gently vibrates the skull. Rather than the eardrum, ear bones and other parts of the ear moving, they remain still while the rest of the head moves around them. The result is that the middle ear (ear bones and eardrum) is bypassed and a direct measure of how well the inner ear hears is obtained. If the results from this test and the first one are identical, then we know that no sound is being lost as it goes through the middle ear. If the person hears well on this test but poorly on the first test, we know that the hearing nerve works well but the sound is being blocked by the middle ear. In this last case the hearing loss would be in the middle ear and may be correctable by a physician.

While not high-tech, the four parts of the hearing test combined can be a very powerful tool. They show the amount of hearing loss, indicate where in the ear the hearing problem is, whether the hearing has changed and can often give an indication of the cause. The results can also determine whether a particular hearing loss can be corrected. Since testing equipment is set to a national standard and the same

word lists are used from hearing center to hearing center and from year to year, the tests are very repeatable between centers and comparable over time.

Decibels And Percentages

Once the hearing is tested, we have to be concerned with what the results mean. Is there a hearing loss, and if so, how much? How is it quantified?

If asked, many ear doctors, audiologists and hearing aid dealers will look at the test results and quote the amount of hearing loss as a percentage. Doing it this way is technically incorrect and to a certain extent misleading. All ear professionals know this, but sometimes choose to talk in percentages anyway. People understand percentages and are comfortable dealing with them. If hearing loss were explained in a way that was technically correct, more time would likely be spent discussing mathematical concepts than on the hearing loss itself. By expressing the amount of hearing loss as a percentage, the majority of time can be spent discussing the hearing loss and what can be done about it.

For those who want to be technically correct, hearing is measured in decibels (dB). The basic unit for reporting sound levels (the Bel) was named for Alexander Graham Bell. When measuring hearing, the decibel (1/10 Bel) is used. The range is 0 dB for the softest sounds people can hear, up to 140 dB for sounds that are so loud as to be very painful and potentially destructive. Contrary to expectations, a sound that is 140 dB is not 100 or 140 times greater than a sound that is 0 dB. It is 10,000,000 times greater. To make matters worse, decibels are not measured on a linear scale, they are measured on a logarithmic one. This means that the actual sound pressure level grows at a faster and faster rate as we move from 0 dB up the scale. The sound pressure level at 20 dB represents a 10 fold increase over the sound pressure level at 0 dB. The sound pressure level at 40 dB represents a 100 fold

increase over the sound pressure level at 0 dB. Sixty dB is a 1,000 fold increase, 80 dB a 10,000 fold increase, etc. All of this is then plotted on a graph called an audiogram. The graph shows how powerful (loud) different pitched sounds have to become before a person can hear them. This system makes perfect sense to ear professionals and to the few non-mathematicians who routinely think in logarithmic terms. It is less than intuitive for the rest of us. It would be nice if we could use a linear scale, but the ear does not work that way.

So, when ear doctors, audiologists and hearing aid dealers talk about the percentage of hearing loss, what are they talking about? Usually, it is how loud sounds have to become before they are heard (30 dB, 40 dB, 50 dB etc.). They take the decibel level and call it a percentage. This works fairly well because most people do not care about the physics of sound and because people who cannot hear sounds at 100 dB (i.e. a 100% loss) appear pretty much deaf anyway. Hearing professionals may additionally classify a hearing loss as mild (hearing thresholds in the 20-40 dB range), moderate (40-60 dB), moderately-severe (60-80 dB), severe (80-100 dB) or profound (>100 dB). There are more exotic percentage calculations used to judge disability, liability or hearing handicap, but these are also just simplifications for those who do not like to live in a logarithmic world.

Adventures In Word Misunderstanding

As previously mentioned, some hearing losses may cause the ears to garble or distort words. No matter how clearly or how loudly the words are spoken, the ears will mess up some of them. Given an unclear signal, the brain compensates by filling in what was misunderstood. Sometimes this works well, sometimes not. This is why it is important to look at the clarity of hearing in addition to the level of hearing.

At times the ears mess up words so badly that there is no doubt they were misunderstood. Try as it might, the brain can

only respond with a resounding “huh?”. Although annoying, an individual knows they missed what was said and can always ask the person to repeat. More problematic are the times when an individual does not realize that they misunderstood what was said. One way or another, the brain fills in the gaps often changing the direction of a conversation from the mundane into high adventure.

Everyone occasionally misunderstands what is said. The results of this are sometimes humorous and at other times embarrassing. People with certain hearing losses can have this happen on a regular basis. They either misunderstand what was said, making them think the person speaking is nuts, or respond inappropriately, making other people think they are nuts. Most of us have a friend or relative that to one degree or another lives this adventure. Many of these people do well by accepting their difficulties with a little humor. Others may dwell on the problem or deny it entirely by placing the blame on others.

One of my more memorable adventures with word misunderstanding involved a hearing impaired nun. She did not think she had much of a hearing problem, but came in for a routine evaluation anyway. As part of the evaluation, she had to repeat a number of tape recorded words in order to determine how good or bad her word understanding might be. The tape contained a nationally standardized list of unremarkable one syllable words such as ran, toy, shoe and ear. When she repeated the first word as “damn” instead of “ran”, I suspected that an adventure might be beginning. After repeating (or trying to repeat) the full 50 words, she chastised me at length for forcing her to repeat all those dirty words. Having missed the actual words, she must have concluded that I would be just the sort to have dirty word tapes. Afterwards, I explained that the tapes had ordinary (not dirty) words and that she had misunderstood. However, I think she just figured that it would be in character for

anyone who would make a nun repeat lists of dirty words, to also lie about it.

Sounds That Are Not So Sweet

When people lose hearing, sometimes more is lost than the ability to hear soft sounds or clearly understand words. Quite often, they lose some of their ability to distinguish one pitch from another. This is different from someone who is considered “tone deaf” because they cannot sing or hum a particular tone. A person with hearing loss may not be able to hear the difference between tones.

Almost anyone who develops a hearing loss may have difficulty appreciating or enjoying music the way they used to. Sounds can seem discordant or monotone. A person with normal hearing can discriminate almost an infinite number of pitch differences. Musical subtleties are not lost on them. People with hearing loss may discriminate fewer pitches often reducing the depth and beauty of the sound. It is like taking the eighty-eight keys on a piano keyboard and gluing them together in pairs so there are effectively only forty-four keys. It would not sound too good. With a really bad hearing loss, more keys would be glued together making things sound even more discordant.

Even worse, problems with hearing pitch can also affect the ability to understand speech and to distinguish who is speaking. Different speech sounds may not sound different. This can be especially true when people are speaking fast or with a foreign accent. In a group, problems discriminating between different pitches can make it more difficult to focus on just one person. Other people may not sound distinctly different from the person one is trying to hear. When answering the phone, it may be more difficult to immediately recognize who is calling. People start to sound alike. It may become necessary to focus on what is being said, rather than

on the voice of the person saying it, to determine who is speaking.

Using a hearing aid can often highlight the problems caused by the inability to differentiate one pitch from another. The hearing aid makes sounds loud enough for the person to hear, but they may not seem clear or natural. Most people's first instinct is to blame the hearing aid for not amplifying the sound clearly. Unfortunately, more often than not, the hearing aid is working fine and it is the person's ear that is not processing the sounds clearly or naturally. Prior to hearing aid use, they did not hear enough of the sound to be aware that the ear was blurring the pitches together. Consequently, a hearing aid may still be useful, but it may not sound perfectly natural since there are fewer keys on the ear's keyboard.

What You Should Hear

All of the testing aside, a person with normal hearing should be able to hear the things that other people hear. Someone with a hearing loss does less well. If a person does only slightly worse, this may be a normal variation from person to person. But, if they do much worse, it is likely a hearing loss. If the rest of the audience at a theater or movie can hear and understand the actors, then you should too if your hearing is normal. If your family can hear and understand Aunt Jane, then you should also. There are an infinite number of sounds. Some of these will be heard, others will not. A hearing problem is only indicated when others consistently hear the things that you do not.

Over the years, many people have been tested to determine what normal hearing is. The majority of tests determine either how soft or how clearly a person can hear. As with other human abilities, there is a range of hearing that is considered normal. Some people will naturally hear a little better or a little worse than others, but overall, people hear about the

same. Surprisingly, what may appear or sound natural to an individual is often of little value in assessing hearing ability. It is often more a reflection of what a person is used to, rather than an indication of what the human ear should hear.

What a person should be able to hear will vary depending on the setting. It will be much easier to hear in a quiet room with good acoustics than in a noisy room with poor acoustics. Hearing and understanding a friend in a library will be easier than in an auto plant with the assembly line running. Similarly, hearing in a restaurant will be more difficult when it is busy than in the off-hours. What others can hear in each setting remains an individual's standard of what they should be able to hear in these settings.

While focusing on the places where people are known to have difficulty hearing may be an excellent marketing tool for hearing aids, it does not necessarily help determine whether or not a person has a hearing loss. Since everyone has more difficulty hearing in a background of noise, it does little good to ask a person if they have difficulty hearing in noise. What needs to be asked is whether family or friends hear things in these situations better than you do.

Many will be disappointed that there is no overall list of things a person should or should not be able to hear. What a person should be able to hear at any particular time varies by a such frighteningly complex set of variables that any overall list would likely be wrong most of the time. The measure that remains is how an individual hears in each of these situations in relation to their peers. It may not be as satisfying as a concrete list, but it will more often be a better guide.

Minimal Hearing Loss

Bridging the gap between normal hearing and a noticeable hearing loss is a gray area we might call a minimal hearing loss. This could be defined as hearing that is near-normal, but

not quite perfect. Hearing can range from borderline normal up to about a 25% or 30% hearing loss. Minimal hearing loss could also be defined as a hearing loss that is measurable, but has limited or no perceived impact upon a person's activities or lifestyle. However, some would say that no hearing loss is minimal, regardless of how small or whether it was perceived or considered a problem by the person. They might even object to the term "minimal" as trivializing hearing loss.

Ear doctors in hospitals or private practice spend their days seeing people with severe hearing losses, dead (non-hearing) ears, acute infections and all kinds of other nasty ear problems. People come to an ear doctor because they are having problems. The worse the problem, the more likely they are to see a doctor. Those with minimal hearing losses are often the better off people in this setting.

Audiologists and speech pathologists working in schools are much more likely to consider children with minimal hearing losses as the worse off in their settings. The majority of the kids they see are normal. When they find a child with even a small hearing loss, they can seem to stick out like a sore thumb. These few children are viewed as the unlucky ones.

Some people consider their minimal hearing loss to be a non-issue. They may know from testing that a small loss exists or constantly be reminded by friends or relatives that they might have a problem. However, they feel they hear OK in most situations and want to leave well enough alone. Other people may see their minimal hearing loss as a big issue. They can no longer hear everything they need or want to hear and it is having an impact on their lifestyle or relationships. Not only does this small hearing loss bother them, it motivates them to do something about it. They do not care that others might classify their hearing loss as being no big deal, they want it fixed.

One's peer group also serves to determine how a minimal hearing loss will be viewed. A 95 year old person with a 30%