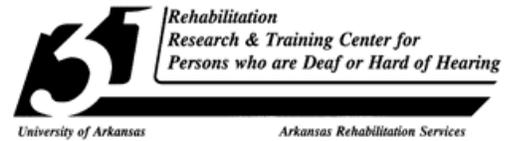




Selected Proceedings of ALDAcon 2005



NUCLEUS CI TECHNOLOGY

Presenter: ANGELA WIEKER

ANGELA WIEKER: I'm Angela Wieker. I have been with Cochlear Americas for almost six years. Probably of more interest is that I have had one cochlear implant for eight years and I just got a second cochlear implant. It only has been activated for two weeks. I'm going to talk a little bit about bilateral cochlear implantation later. I will speak more particularly for those who might be considering an implant.

I was one of those people who said, "I will never get a cochlear implant." I was born with normal hearing. In kindergarten I went with my whole class to have my hearing tested. Perfectly normal hearing. Went back one-year later in first grade and I had a mild hearing loss. To this day I have no idea where that came from or why. It's not in my family. I was never sick or anything like that. But nevertheless, that began the path of about a 15-year progressive hearing loss.

When I first learned about cochlear implants, I was still in high school. You may remember the 60-minute segment on Caitlin, the little girl? That was my first introduction to cochlear implants. I remember thinking "There's no way I'm having my head cut open to put this thing in and wearing that box and wire!" The hearing loss progressed; particularly right after I finished college, it took quite a dive. At that point I had to give up using the telephone. For a lot of you in here, you know what that's like. It was very frustrating. I felt isolated with friends and socially and at work. All those things. So I realized I needed to at least explore this opportunity. Fortunately my cochlear implant center in Denver set me up to meet someone who had an implant. That was my first experience ever of meeting someone else with hearing loss or deafness.

That's why I think groups like this are so wonderful and important. We're able to have that support from other people.

Anyway, I spent about an hour with this woman. It really gave me hope. I could see how well she was doing with it. She had had the surgery and was fine and enjoying life and I

could tell how much benefit she was getting from it. I thought I, at least, have to try. I can't sit here and do nothing.

It was the best decision I ever made. I know those of you with implants already can identify with that. It so far surpassed my highest expectations. I feel it has given me my life back. I feel blessed to be able to work for Cochlear Americas now and talk to other people who might be considering an implant for themselves.

I'm going to talk about what I want to cover today. First, just briefly I want to address the myths that surround cochlear implants. There are a lot of them out there. Second, what the difference is between a cochlear implant and a hearing aid. A little bit of how exactly it works, who can benefit and then, third, I want to talk about my favorite topic of the day: Nucleus Freedom! It was introduced in March. I will share that information with you and give you a little bit of the company's overview and where we have been and where we are going.

First of all, in traveling around the last five years for Cochlear Americas, I have repeatedly heard the same uninformed questions over and over and over. I finally compiled a list about these things that are untrue. You know, we can swim. We can be very active. We can do everything that anyone can do. We simply take the processor off in certain situations. One of the greatest things the cochlear implant has given me is confidence. But I will say that many times that confidence is dashed because people will come up to me and say, "You have a cochlear implant?" And they ask how long I have had it: "Five or six or seven years." And then they say, "Well, can you shower?" (Chuckles.) So apparently I appear as if I haven't showered in 5, 6 or 7 years!

We have kids playing sports, hockey, football, contact sports. We really want people to do all the things that anyone else can do. There's no hole in the head or anything like that.

Let me spend a minute on how natural hearing works. When normal hearing people hear sound, sound comes through the ear canal into the middle ear. It looks like this (shows picture); this is the cochlea, the snail shaped part of the ear. It has hair cells in it. The sound coming causes the cells to vibrate and that stimulates the auditory nerve, which sends a message to the brain that you've heard a sound.

For someone with a severe to profound sensory neural hearing loss, those hair cells are not doing what they are supposed to do. They are not causing enough of a vibration to stimulate the auditory nerve. With a cochlear implant, we put these electrodes down into the cochlea to replace the damaged part of the ear (hair cells). That's how a cochlear implant differs from a hearing aid. A hearing aid is simply an amplification tool. It does nothing for clarity. Sound still goes through a damaged part of the ear. That's why people who get cochlear implants get clarity and the ability to understand speech in most cases. It is like a prosthetic device that takes the place of the damaged part of the ear.

I actually have a demo for you, the internal and external pieces. This is the external part. This is the BTE, the behind the ear processor. It picks up sound, and is programmed by a computer. Basically the outside part, or what that program does, is tell the internal part what to do. There's a magnet in the external part and in the internal part. They hold together like that. Basically, the "MAP" or "program" that you hear people talk about is the external sound processor telling the internal part/electrodes what to do, where to stimulate, how fast to stimulate. Everyone has different needs. It's like having a pair of glasses. Several people in the room wear glasses, but I bet every one has a different prescription. Same with a cochlear implant. The MAP is meeting your specific needs.

So who can benefit from this wonderful technology? We put together a little bit of a checklist for you to do at home. I want to point out that the candidacy criteria for cochlear implants has changed quite a bit in recent years. It used to be viewed as a last resort option. You had to be stone deaf to get a cochlear implant. That's not the case anymore. Some of the questions on the checklist are, do you ask people to repeat frequently, even in one-on-one conversations; are you only able to use the phone with close friends or family members? Those types of things. One of the biggest situations for me was avoiding social activities. As I said, I was just out of college, 22, and I just didn't want to go anywhere. I didn't want to talk to anyone. It was so frustrating. If I would see someone I knew in the next grocery store aisle, I would hide or avoid meeting them. I'd make sure they wouldn't see me because it was easier to do that than struggle through a conversation.

So, when you go for a cochlear implant evaluation, you will be tested on how well you can understand speech without lip reading. If a person scores 50 percent or less, on the ear that is going get the implant, that person is generally a candidate. Fifty percent is still quite a bit of hearing. The criteria has changed from earlier days.

I will show you my own audiogram. This audiogram is from before I got my first implant. You can see I still had some usable hearing in the low frequencies. However, 80 percent of speech understanding takes place in the high frequencies, where of course, I had next to nothing. So even though I had some good low frequency hearing, if you look over here at what I scored on understanding speech: 0 percent; 2 percent; 9 percent! No wonder I was frustrated, right?

Here you can see the same hearing test taken about one year post implantation. Where I had scored zero on, now, 78 percent, and from 9 percent to 92 percent after a year of use with the device. And I'm very thrilled to say that when I went back two months ago to evaluate the second side, I actually scored 100 percent on the hearing and noise test (HINT). Before the implant, I had at one time scored 2 percent.

We know that not everyone is going to perform at the same level. Not everyone will be able to use their cell phone. Not everyone will appreciate music in the same way. We do know something about what affects how well a person does.

The biggest influence is the duration of deafness. How long has someone not had any auditory stimulation in the ear that they hope to implant? The auditory nerve is like any other muscle in our body. If it doesn't get exercised or worked, it becomes weak. A person who has not heard in 30 or 40 years would be counseled in a different way from someone like myself who had usable hearing up to the time I got implanted.

AUDIENCE MEMBER: I got implanted on the right side. I lost hearing in that ear as a child because of ear infections. But they still decided to do that right side and kind of save what was left over here. But I kind of wonder, whether there's much difference in the auditory nerves from side to side.

ANGELA WIEKER: How long have you had the implant?

AUDIENCE MEMBER: It's been about two and a half years.

ANGELA WIEKER: Okay. What's happened is the nerve and the brain have been changing over time. Historically, because the benefits of cochlear implants weren't as well known as they are today, a lot of doctors and audiologists would counsel to implant the poorer side. There's less risk. You are not losing anything if you do the side with the poorer hearing. Now because of new studies, a lot of data supports that people do better with the side that has had more auditory stimulation. That's something that people need to discuss with their audiologist and surgeon.

I will say the only thing that is ever true for everybody with a cochlear implant is that everyone is different. That's the one constant in all of this because we're all different. Some people surprise us. I know some people, born deaf and didn't hear for 40 or 50 years of their lives. When they got a cochlear implant, they were able to understand speech without lipreading! That's not what we expect to see, but it happens.

AUDIENCE MEMBER: Just last week I saw an article about a just completed study that said it doesn't matter hardly at all which ear gets implanted because the brain integrates whatever comes from either ear.

ANGELA WEIKER: That's interesting. I would be curious to see that article. The data that we've seen in recent years is that if you have had more hearing, more auditory stimulation in one side, you will generally do better. But there's no certain way. Just from one side to the other, with similar hearing loss in both ears, one can get different performance. So we just don't know. There's a lot of variation.

There are some other things that affect how well someone does with a cochlear implant. If you get a cochlear implant, you need to be around sound. You need to be around speech constantly so that your brain begins to understand and accept language.

Let me clarify what I mean by that statement. It doesn't mean that if you get a cochlear implant, you can't sign. That's not at all what I'm saying. I personally feel, the more methods of communication you have, the better off you are. People with implants are going to benefit more from the implant by listening to speech. A lot of people get a cochlear implant and continue to sign. That's perfectly fine.

Let me continue about what happens when you go to get a cochlear implant. The initial evaluation needs to be by a cochlear implant audiologist. I can't stress that enough. Over the years, people come to me and say, "Well, my audiologist told me I'm not a candidate." If the audiologist is not a cochlear implant audiologist, s/he may not be aware of the latest changes in candidacy criteria. Many times people hold back from getting a cochlear implant when they were truly a candidate. It's important that you go to a cochlear implant audiologist because of the testing that needs to be done to determine if you're a candidate or not. If that goes well, the 50 percent or less of the speech understanding we talked about, they will do a surgical examination, C.T. scan or M.R.I. Sometimes they do a psychological evaluation. Then surgery is scheduled and performed. Activation takes place anywhere from two to six weeks after the surgery, depending on the surgeon.

AUDIENCE MEMBER: At what point in the process do they test your auditory nerve?

ANGELA WEIKER: During the audiological evaluation. They will do a test if your auditory nerve responds to sound. That gives them a good indication if there's going to be a response from the cochlear implant.

So if it's okay with everyone, I want to introduce what I think is the exciting part of the presentation: the Nucleus Freedom, which is the brand new cochlear implant system, both the internal and the new external component. It just became available in April of this year. The internal implant itself is made of titanium and silicon. It encompasses Freedom BTE, behind the ear processor and a body component and new programming software. Basically, we took our previous system, the Nucleus 3 system and combined what we had with our body processor. We took the best of both of those processors and combined them and came out with the Nucleus Freedom BTE processor.

AUDIENCE MEMBER: Is there a body processor anymore? Do you even have that now?

ANGELA WEIKER: I'm going to talk about that right now. So first, the BTE and body processors are the industry's first and only water resistant processors. They are truly water resistant. That means, if you have seen the cover of our pediatric brochure of a child running through the sprinkler, you can be out in the rain. You can get it splashed

with water. This water resistance gives people the freedom to participate in more environments than ever before with their processor on.

Smart Sound processing is another innovation. On the back of the processor there is an LCD screen with built-in help messages. You can see and adjust the microphone volume and sensitivity. It also has a built-in telecoil, which we had in the 3G. We also have four program locations. It's a modular concept, to answer your question about the body processor. (Demonstrating with hardware.) Basically here is the BTE. Just twist off the top. This is the body processor. They have the very same "brains" of the system. And the same maps for programs. Whether you are using the BTE or the body-worn processor, the sound will be exactly the same. You might change which one you want to use, depending on your activities. You might want to wear the BTE for normal every day things. If you do sports, you might want to wear the body processor, secure on the body.

Now, returning to what makes Freedom water resistant. There are actually seven components of the sound processor that are vulnerable to water and moisture. Our engineers first started working on a design concept to protect the components from sweat. If you work out heavily, perspiration could get into the microphone and damage it, for example. The engineers started down this track anyway but they over achieved. Great for the end user. They made it water resistant.

We actually achieved a rating called an international protection standard, IP, rating of 44. Anything in the world that claims to be water resistant, if it's a watch, a camera, whatever, has to have an IP rating.

I have a personal experience with that. I have a Nucleus 24 on this side, which means I have been wearing the 3G. In May of this year I was able to upgrade to a Freedom processor on that side. When I first got implanted, there was no such thing as water resistant, a built in telecoil, or Smart Sound. But the company keeps continuing that lifetime commitment to our recipients and brings everyone forward. Everyone has an opportunity to try the new technology.

So I was just fit with Freedom when a friend and I were headed to the national SHHH in Washington, D.C. We are both die-hard Yankee fans, so we planned to stop in Baltimore for a Yankee game. When we got there, it is pouring rain and the game is on rain delay. We are disappointed. I'm from Denver, she's from Chicago and we were going to get the chance to see the Yankees play. Then, I see the Yankee's dug out and we see the New York Yankees right there. Derek Jeter, Bernie Williams, A-Rod, all the players. We are out there for probably half an hour, 45 minutes, so excited, taking all these pictures in the pouring rain. We are soaking wet. We have been out there with these brand new processors on, which we knew we had the IP rating. We knew they were supposed to be water resistant, but we're nervous because we hadn't actually put them to the human test.

I was panicked. We'd probably ruined these processors and the meeting starts tomorrow. But I'm very happy to report, between the two of us, my friend's two Freedom processors and my one; all three processors had no problems at all. Without the water resistance, we would have missed out on seeing the Yankees and connecting with all the other Yankee fans and enjoying ourselves despite the downpour.

I want to talk a little bit about Smart Sound, what Smart Sound is. It is encompassed in three different features. We have three options, Smart Sound Beam, Smart Sound ADRO and Smart Sound Whisper.

I was talking with someone this morning about all these different options the system has. She laughed and said, "I just put the processor on and wear it. I don't change programs. I don't do anything with it." Then I was laughing. Here we have all these wonderful options and people just put it on and wear it. That's the beauty of the Nucleus system. Put it on, wear it, never touch it, and never change your programs. Or you have the opportunity to take advantage of some of these other features that are designed to help optimize your hearing in different listening environments.

We have different needs if we are in a noisy environment than if we are in quiet. We have different needs for music than for speech. That's what Smart Sound is for. It encompasses all those different listening environments and adjusts better to our needs so we can further enhance it. First, I want to talk about Smart Sound beam. It works like a beam of light, kind of like a flashlight, if you envision that. It's designed for listening in crowds. If you go a noisy restaurant, in the convention area where everyone is talking at the same time, it can be very noisy. It's a challenging environment even for normal hearing people.

Beam has a microphone that faces forward to pick up the sound of the person directly in front of you and of filter out the sounds of the rest of the crowd around you. It will optimize your ability to understand speech in a noisy environment. This *(include picture)* will give you a visual of how that works. Imagine you have a family gathering. That's usually one of the most feared events for someone with hearing loss. You have all these different conversations going on at the same time. You are trying to keep up with what is happening. There could be noise coming from all directions. With beam on in the picture, the little boy is able to focus in directly on his father and better able to understand what the father is saying. It doesn't completely cut off the other sounds. If someone says something from another direction, you can still turn and understand. It dampens some of that background noise. It has been very helpful.

Smart Sound ADRO is really kind of an interesting concept. It works like an equalizer on a stereo. It takes into account all the sound coming in the environment and it dampens down the sounds that are loud. At the very same time it will boost the soft sounds.

Let's say that I'm standing out in the street having a conversation and a truck comes by or a motorcycle roars by. Usually in that situation the truck or motorcycle drowns out

the sound of the voice of the person I'm talking to, right? What ADRO would do is dampen the sound of the motorcycle and boost the speaker's voice enabling me to understand better in that environment.

One of the things that I most often use ADRO for is music. And I have always been fortunate to be a cochlear implant user who does have appreciation of music. I was very happy, when after some time with the implant, music started coming back and I could understand some lyrics. ADRO details or enunciates the sounds of music. The first week I got my Freedom processor, I went out with a friend to listen to a blues band. I went in with normal program on. I was enjoying it. It was good. Then I switched it to ADRO. That was even better. The different instruments were just more detailed. I really like using ADRO for music.

The third piece of the Smart Sound suite is called Smart Sound Whisper. What that does is boost soft sounds when there is not background noise. Not something you want to use in noise. When I first started working for Cochlear in the Human Resources department, people would come in to interview who were "soft talkers". In that case, Whisper boosts the speaker's voice 10- to 15-decibels to better enable me to hear the soft voice. Again, you get different options for different listening situations.

This is a visual of what whisper might do. Say you're taking a walk in nature and you see the bird in the tree. With the normal program on you probably would hear the bird. Whisper brings it much closer for you.

AUDIENCE MEMBER: I'm not sure, how do you control this? You have a remote or something that you program?

ANGELA WEIKER: You change the program settings. There are four program settings. You just change the programs. Right now I have on program one, just the normal every day program that I use. My second program is the noise program, so I have Beam in that program slot. The third one is Whisper. Fourth, I have ADRO. So I just simply switch back and forth between programs depending on the listening environment that I'm in. Also, the telecoil can be enabled on any one of those programs.

The great thing with the telecoil, you can have it set one of two ways. You can have it set for 100 percent telecoil so everything else in the environment is blocked out, which is great for me because I travel a lot. If I'm in the middle of an airport I can put on it the telecoil and it blocks out everything else. Or I can have telecoil mixing, which cuts out 75 percent of the background sound but still enough so if someone came up and said something to me on the phone, I would be able to understand them.

The other options are set in a program location.

I'm going to talk a little bit now about some of the accessories available from Cochlear. One of the new assistive listening devices we added to the product line is called HATIS. We didn't create it. The company is called HATIS and they created the system. It's a

silhouette and it goes between your head and the cochlear implant. When you activate the telecoil, you get an electromagnetic system from the HATIS to the telecoil. You get enhanced sound.

HATIS also allows for a hands-free operation of my cell phone. It plugs right into the bottom of the cell phone and goes behind your ear. Then you have a microphone right here. You have a hands free device. If I'm driving in the car or walking through the airport, I don't have to be holding the phone up to my ear.

It also can be used for music sources like a CD player or an iPod. I plug it into my Ipod, and it works the same way. You have to have a telecoil to use it. The one that we sell is just for one side. But HATIS makes one that is a bilateral option. I can put it on both sides and listen to the phone from both sides or listen to the music from both sides a question.

AUDIENCE MEMBER: What the kind of batteries does the Freedom uses compared to some of the other cochlear implants.

ANGELA WEIKER: The Freedom system is run off of 675 disposable batteries. We are also working on a rechargeable battery for Freedom.

AUDIENCE MEMBER: What is the battery life on the disposables?

ANGELA WEIKER: Average is about 56 hours, but it depends on the rate of stimulation you have. I use ACE at a fast rate. My battery life is 40 hours. I had coworker who got 160-something hours out of his batteries. It depends on the rate of stimulation as well as the types of environments you're in. This again is another area of flexibility with the Nucleus system. We have three different speech coding strategies; whatever works the best for each individual. You have the opportunity to try different speech coding strategies, which is basically the way the device is programmed. Not everyone does well with the one we call ACE. We have a CIS strategy and we have Speak.

I want to talk a little bit about rehab materials and support that we have for people to optimize their experience with their cochlear implant following implantation. We've got a lot of different tools for adults. We have "Start Listening." We've got "Nucleus Here We Go" which is designed for teens. We've got "Sound and Beyond", a more comprehensive interactive computer software designed for adults.

"Start Listening" has just some tips for when a person first gets implanted, or if a person wants to continue with speech therapy on their own. The rehab video talks about general expectations. It's always good to have appropriate expectations. We don't want someone coming in with sky-high expectations and being disappointed. It is better to be pleasantly surprised. There are some communication tips for friends and family. Getting an implant changes your relationships. Diane was commenting this morning, before she got her cochlear implant, she would type her husband's business letters. She used to look at him and type and look at him and type. After she got her cochlear implant, she

didn't need to look at him. She would just type, and he thought she was ignoring him, that she was not paying attention. We have some communication tips for cochlear implant users and some listening exercises that you can do at home on your own.

AUDIENCE MEMBER: I thought a new user started out with ACE. I thought as you wore it, you increased the frequency, such as starting at nine and progressing to 1200, then to 1800. But I was told that's not necessarily true. Some people hear better at nine than they'll ever hear at 1800. Did you find that?

ANGELA WEIKER: Absolutely. I'm the unusual one who uses 1800 on this side. That's the rate of stimulation or how fast the electrodes are stimulating the auditory nerve. We find that the majority of our recipients perform better at a more moderate rate or slower rate of stimulation, more around the 900 or 1200 rate. It all depends on each individual, but you don't progress up from 900 to 1200 to 1800. You could start at 900 and stay there if that's where you are performing the best. You have all these options to try to find what works best for you.

"Sound and Beyond" is an interactive CD. You can chart your progress on consonants, vowels, music appreciation, or whatever you want to work on. The CD actually charts your progress. After you use this for six months or a year, you will be able to go back and see how much you have improved.

I now want to spend a little bit of time on lifetime commitment from Cochlear. Professor Graeme Clark was the creator of the multi-channel cochlear implant system. His father was deaf and ran a pharmacy. As a child, Graeme saw his father struggling to communicate with his customers and decided as a child to devote his life to figuring out a way that deaf people can better communicate with the hearing world. Amazingly, he did just that.

The way this story goes, he was doing a lot of research and had the concept in mind, but his struggle was how to get that electrode into the cochlea? He was feeling frustrated and decided to take a walk on his favorite beach to clear his head. He was religious and was praying a lot, too. He was sitting on the beach deep in thought and he had in his hand a Conch shell, which interestingly enough is the shape of a cochlea. He also had a blade of grass in the other hand and somehow... (Audience Chuckles) the blade of grass went into the cochlea and the idea came to him. That is how it can be done. That's how he created the concept of getting that electrode in there to take the place of the damaged part of the ear.

But it wasn't an easy thing. When some people found out what he intended to do, they lobbied the Australian government to have the research shut down. They said the procedure was barbaric, and the government shouldn't allow him to do that. He was working out of the University of Melbourne. They cut his funding. A lot of people would have quit but he didn't. This was a clipping that was in a newspaper in Melbourne in

1974. There he is with a tin cup on a street corner collecting money for his research. That's how much this man believed in what he was trying to do.

Another thing I love to show people when they say, "Wow, that speech processor looks pretty big!" From 1967, this was the world's first speech processor. Freedom is looking pretty darn good right now, don't you think? The first couple of surgeries they did, a person couldn't hear unless he came to Professor Clark's office and was hooked to a machine. Imagine someone saying to you, "We are going to cut your head open and put this in. We have no proof that it works. The only time you will be able to hear is when you come to my office and I hook you to this wall of machines." How does that sound to you? Would anybody in here volunteer for that? I wouldn't have! But people did it. People did it because they were so desperate to hear again, that's what they agreed to.

Cochlear today is committed to continuing Professor Clark's legacy and creating the most advanced technology available today and continuing to provide ongoing benefit for our current users. We have over 69,000 Nucleus recipients in the world now. We still have quite a way to go, as there are still so many people out there who could benefit from this technology.

I will talk a little bit about what the future holds. We have in experimental trials something called a hybrid device. It combines in one ear electric, which is the cochlear implant, and acoustic, which is natural hearing, through a hearing aid. It's for people who would not be a candidate for a traditional cochlear implant. They have too much good low frequency hearing, called the "ski slope" loss. They have usable hearing in the low frequencies. They can benefit from a hearing aid. But English speech recognition is in the high frequency area. The hybrid device has 11 electrodes that will stimulate the high frequency information from the implant and low frequency information from the hearing aid in the same ear.

Something else that we are working on is called ultra fine timing or asynchronous stimulation. Because we have people doing so well right now with their ability to understand speech, the scientific community feels that the future is going to be in asynchronous stimulation. That is, when normal hearing people hear sound, the auditory nerve is stimulated at different rates. Right now, all cochlear implants stimulate at a fixed rate. The electrode is working at a fixed rate. It could be very, very fast, but there is still the same interval in pulses. Asynchronous stimulation will take into account the sound in the environment and it could change. So it's not going to be a fixed rate. Depending on the sound in the environment, stimulation could be very, very fast or very slow in the same program.

Now, I want to talk a little bit about bilateral implantation. That's a hot topic. I remember asking the people in Cochlear's clinical studies department "why would anyone do that?!?" I was doing so well with one that I thought that's all I needed. But we wanted to look into it any way and see if there is a benefit. Cochlear conducted two different

studies in adults at the same time. One where implantation was simultaneous, meaning that a person got two implants at the same time. My co-worker, Mark, was one of the first people in the U.S. to get two cochlear implants at the same time. We also conducted a sequential study, meaning, receiving one and then a second one later on. Like me. The study investigated whether it made a difference getting them at the same time or at a different time? What we learned is that it really doesn't matter if a person gets bilateral cochlear implants at the same time or gets them one at a time, all bilateral users showed a significant improvement when testing with both CI's over how they did with just one CI.

That is, improved understanding in noise, improved understanding in quiet, which actually surprised us because everyone does pretty well with one cochlear implant in quiet. Also the ability to localize sound improved.

I should have Mark tell you the way they did the experiment. There were eight speakers set up very close together in a semicircle about a foot apart in front of the participant. The participant had to tell what speaker was making the sound. Was it there or was it here? That's pretty hard. The participant listened with just one side, then listened with just the other side. They then put both implants together and participants showed a significant improvement in localizing sound when using both implants were together. There really is something to having those two ears. We have two ears for a reason.

Now, I didn't go just off the data. I was interested in talking to people who had one implant and were doing well with one and were happy with one and then got another one. Was it different? Was it better? I have had the opportunity to meet probably 50 people with bilateral implants who got them sequentially. They all said the same thing: "You can't believe how much better it is!" Two weeks ago I had the opportunity to find out for myself and I will say it's true. As I said, I was doing great with one. I would have been happy the rest of my life with just one. It would have been wonderful and I never would have known otherwise. But knowing now, I was still missing out. It's just been incredible. One hour after activation I had an improvement in noise. I went right from activation to a really noisy restaurant. There's no head shadow. Usually in a noisy situation, if the implant is on one side, and someone is talking to me from the other side, I won't understand because my head is in the way of the implant microphones.

What I noticed was a better ability to understand speech at a further distance. Outside my office are a lot of cubicles. I could always hear people talking out there, but I didn't always understand what they were saying. The next day after the activation, I could understand what they were all saying! I was teasing my co-workers saying, "Just to warn you, I'm liable to start eavesdropping on conversations just to see if I could hear. That will be my listening therapy." They thought that was kind of funny. But it was really . just amazing.

I just couldn't believe it after this short a time. I'm definitely further along now. It takes time when you first get activated. Your brain needs time to adapt to hearing in this

manner. It does take time. It sounds strange at first, but every day is better than the previous day. What is fun about that is that you will hear sounds that you didn't hear yesterday. I think when I got the first one; it was the same experience with the second one. I walked around grinning like an idiot. "I can hear the blinker on the car! Oh, I can hear the rain on the building. I can hear the printer beeping when it's out of paper. Which I thought was just the coolest thing in the world. With the second one, it has been a much faster process. Even after a few days I was able to understand some speech.

AUDIENCE MEMBER: What are the insurance companies saying about two now? Shall I call them up and say, "Hey, one worked fine, thanks. But now I want a second one." What can I expect from my insurance company.

ANGELA WEIKER: You can expect a "no" at first! What we are finding, even when people are trying to get their cochlear implant for the first time, insurance companies usually turn them down. That's the nature of insurance companies. They are not going to offer to pay for this. Usually, you can appeal. A few weeks ago, I read in *USA Today* that 80 percent of medical denials are overturned on appeal. The people who really want this are going to fight. Several people that I know in Denver have gotten bilaterals recently. Insurance approved two of them right away, no problems. They had the surgery. Someone else got a denial and just got it overturned, so he'll get the second implant on the 21st.

AUDIENCE MEMBER: I have an HMO, like Kaiser Permanente in California and Arizona. They tell us they will start paying for a second CI implant when other insurance companies do so. I want to know which ones.

ANGELA WEIKER: It differs so much. He and I can have the same insurance company. We can both have Blue Cross, Blue Shield, but our plans can be different.

AUDIENCE MEMBER: Are any insurance companies paying for a second cochlear implant?

ANGELA WEIKER: Absolutely, absolutely. Many different ones, Aetna, Cigna, United Healthcare, but it is not an assured thing. Because you happen to have one of those, it affects your company or your employment's plan or whatever. Every company has a different plan. That's what affects it. I mean, all the big carriers, United Health Care have covered bilaterals. That doesn't mean they will every time.

AUDIENCE MEMBER: When you got your second implant, you lost your last smidgen of natural hearing? Did you have any?

ANGELA WEIKER: You saw my audiogram at the beginning. I had usable low frequency hearing. They were pretty much equal at the time of the first implant eight years ago. During that time, that one continued to drop.

AUDIENCE MEMBER: Has the new one improved the possibility for getting an M.R.I.?

ANGELA WEIKER: We are working on that. Our device has approval to get an M.R.I. up to 1.2 tesla strength. Tesla refers to the resolution of the image, the higher the tesla, the clearer the image that the doctor is trying to find. It's important to have a higher resolution image. Cochlear is working on increasing that level.

I appreciate your time. If you have any more questions, I'm happy to answer them and we will be downstairs at the booth the rest of today and tomorrow. So thank you for your time.

(Applause.)

Angela Wieker was born with normal hearing, and developed a mild hearing loss at age 7. Following a 15-year progressive loss, Angela received her Nucleus 24 cochlear implant in 1997. During Angela's 5 years with Cochlear, she has worked in various positions within the company and in her current role as Marketing Manager, she assists potential CI candidates and hearing health professionals in learning about the unique, innovative technology offered in Nucleus cochlear implant systems.