

# **AUGUST 2012 MEETING**

## **FITTING HEARING AIDS THE CORRECT WAY-PART I**

### **REMINDERS**

#### **FORUM-SUBSCRIBE TO ALL POSTS**

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Hearing Solutions SIG

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#### **STAP VOUCHERS (\$178)**

When shopping for aids don't let you Provider sucker you into using you Texas state voucher on an inexpensive amplifier phone they carry in stock for sale just because it is "free". There are hundreds of terrific approved products to choose from. Information is all over the Hearing Solutions Portal (Meeting Notes-Web Resources-Forum) about the STAP program.

#### **STAP EQUIPMENT LIST**

<http://stap.puc.state.tx.us/stapc/EquipmentList.aspx>

Simply ask your provider to complete the certification part of the form they will have then do your own homework and make you own decision as to the product and supplier.

Contact the TEXAS STAP department directly for help or answers to questions.

## MEETING

### **Dr. Gerard Kupperman, Ph.D.**

A former Wisconsin University Professor, Chairman of the Wisconsin licensing board, retired 40 year practicing Audiologist and now a new Sun City resident and member of Hearing Solutions, presents a high interest but seldom addressed topic for hearing aid wearers and those considering a first purchase titled:

**“HOW YOUR HEARING AIDS SHOULD HAVE BEEN FIT TO YOU BUT PROBABLY WERE NOT”**

# Van Vliet - “In fittings, ‘good enough’ isn’t”

Hearing Journal, June 2008

- Do we leave out steps that might improve the fitting process?
- Less than half of all audiologists use probe microphone measures.
- Probe mic measures are not perfect
- Matching probe mic measures to theoretical targets does not ensure a happy patient, but the procedure is an essential first step.
- Making finite user-requested adjustments may still be necessary.
- But there is no other way to get in situ evidence of bandwidth, gain, output, compression, feedback, and microphone directionality, etc.
- Our goal should be an **optimum** outcome, and not an adequate outcome.
- Patients must be encouraged to play an active role in their fitting process and adjustment. They need to take **responsibility** for what they do.
- **So do we.**
- We must OBJECTIVELY PROVE that what we do, as audiologists, **works**, and has value to our patients and those who pay for hearing aids

# Demonstration of Canal Acoustics

Dr. Kupperman, by blowing over the top of bottles of different size and shapes varying sound pitches demonstrated your hearing in action

## ARE AUDIOLOGISTS EARNING THERE KEEP?

Not if they didn't use every available technique to assure the best hearing aid "fit" possible.

In fitting hearing aids doing a good job isn't good enough. Audiologists need to do a great job as close to perfection as you can possibly get. Do Audiologists leave out steps that might improve the hearing process? Yes. Probe Microphone Measurements is one of the steps that too often get left out.

### SOME INTERESTING FACTS

The right way to fit hearing aids is to use a technique called "Probe Microphone Measures"

- Less than half the audiologists use probe microphone measurements. I am guessing 5 to 10% of the hearing aid specialists use them.
- This is not guaranteed to fix your problem, but it is a critical first step.
- It is unlikely that your hearing aids were fit to you by using this technique.
- If you don't get your hearing aids fit this way – whoever fit the hearing aids to you was making ballpark guesses as to what you need.
- Probe Microphone Measure is not something new. It is probably 25-years old. This is what we taught Audiologists in graduate school.

## TWO QUESTIONS TO ASK YOUR PROVIDER BEFORE A FITTING

Do they use real ear measures in fitting hearing aids?

1. Ask how are they going to prove to you that you are going to get what you pay for. Some of them might say to you, Well, I am going to give you a questionnaire, and I want you to bring this questionnaire back to me the next time I see you. And the questionnaire goes through things like: how well did you do in this situation? Were sounds too quiet, sometimes too loud? That's not a crazy procedure, but it's a secondary procedure. That should occur after probe microphone measurements have been done. That's not allowed in my opinion. The only procedure to tune the hearing aids to. We are going to prove that.
2. How can they PROVE to you that you are getting all that you need and what you are paying for.

Some of them might say to you, Well, I am going to give you a questionnaire, and I want you to bring this questionnaire back to me the next time I see you. And the questionnaire goes through things like: how well did you do in this situation? Were sounds too quiet, sometimes too loud? That's not a crazy procedure, but it's a secondary procedure. That should occur after probe microphone measurements have been done. The Probe measure is the only procedure is the only way to prove it.

## A Few Comments About Licensing

When I was chairman of the licensing board of State of Wisconsin everybody, including audiologists, had to take the same practical examination. Only a few states in the country make the people that fit hearing aids sit down with a patient and do a hearing test with two people standing behind them to make sure they know what they are doing.

Question: Does Texas do that?

Answer: I don't know, because I don't know the Texas statute.

**NOTE:** [A Texas licensed dispenser](#) of hearing aids must be of majority age, have at least a high school diploma, pass a written and practical examination and perform continuing education of 20 hours/year. [An Audiologist](#) may dispense under an audiology license after registering with the state Board and comply with guidelines for fitting and dispensing hearing aids.

<http://www.asha.org/Advocacy/state/info/TX/Texas-Hearing-Aid-Dispensin>

The purpose of licensing is to protect the public. Not to insure the best-possible service.

# TODAY YOU ARE AN AUDIOLOGIST

What are we trying to accomplish when we fit hearing aids?

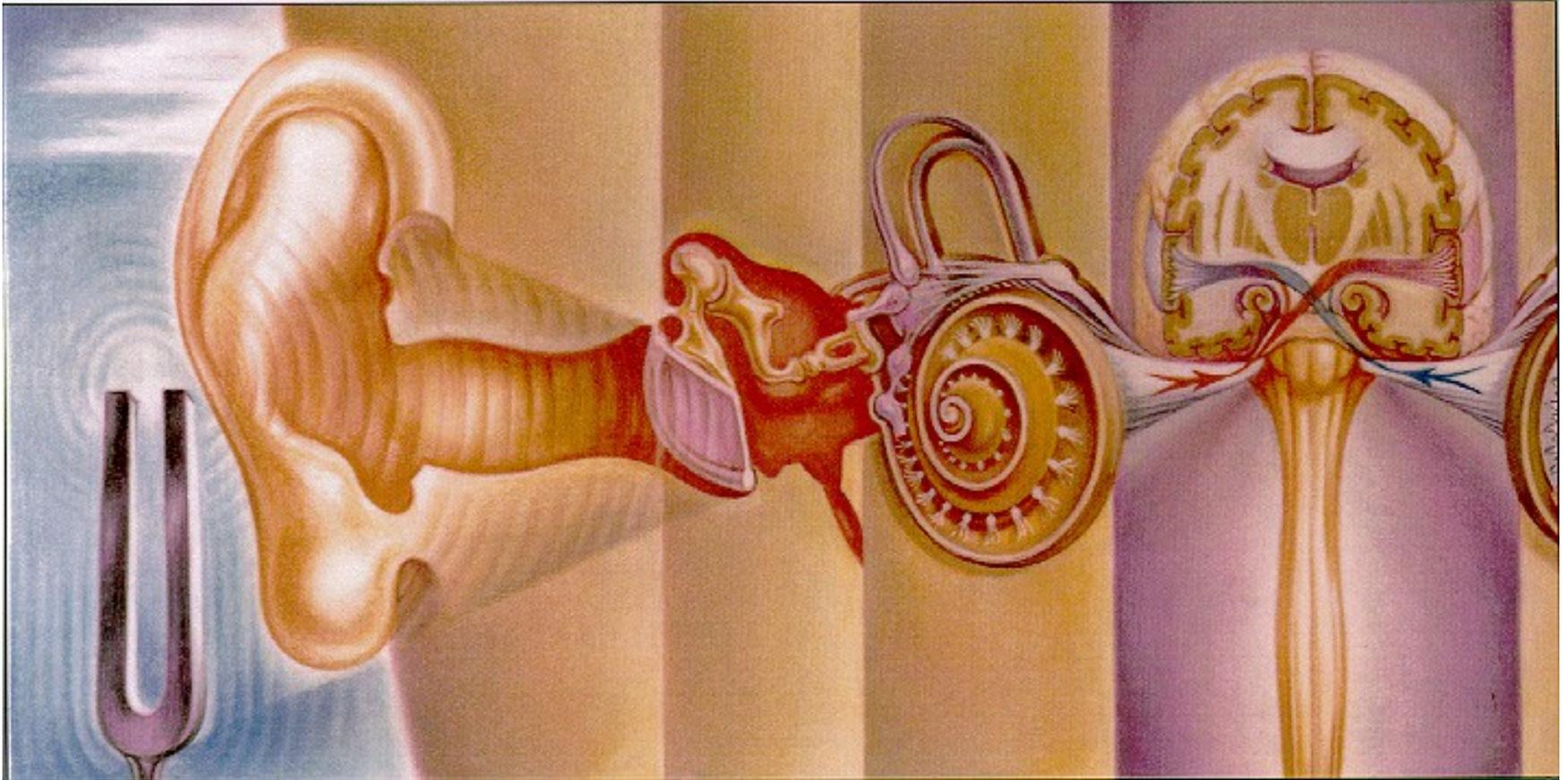
No, we do not expect to return your hearing to normal. It cannot be done.

Sorry. Your ear is damaged, and we cannot undo the damage.

Ninety percent of you have hearing losses, wear hearing aids have damaged hearing nerve, and you cannot fix that. You can take what is left and stimulate it more. That's what a hearing aid does. Takes what's left of your hearing and puts more sound in to maximize what's left.

This is very important: The person with a hearing loss must be encouraged to play an active role and to schedule repeat visits to discuss problems and concerns. Don't allow the person with hearing loss to just say "I don't like it" or "It doesn't seem to help" or "I just can't hear good" You must help them to be specific, give examples, describe the situation or circumstances.

# What We Hear With



## A PICTURE OF YOUR EAR AND YOUR BRAIN

The critical parts are:

- The ear canal. There are 3 bones in your ear malleus, incus and hammer and stirrup.
- The sensory portion of your ear
- The neural portion of your ear
- The brain that does the work.

Would you think that your ear canal is the same as someone else's ear canal? It's not – I guarantee it's not.

Would you think the bones in your ear are the same as the bones in another's ear. They are not.

What do these differences do? They change the way a hearing aid works. And if you don't know what those changes are you can't fix it. And if you can't fix it – you're guessing. Probe microphone measurements show exactly what the differences are.



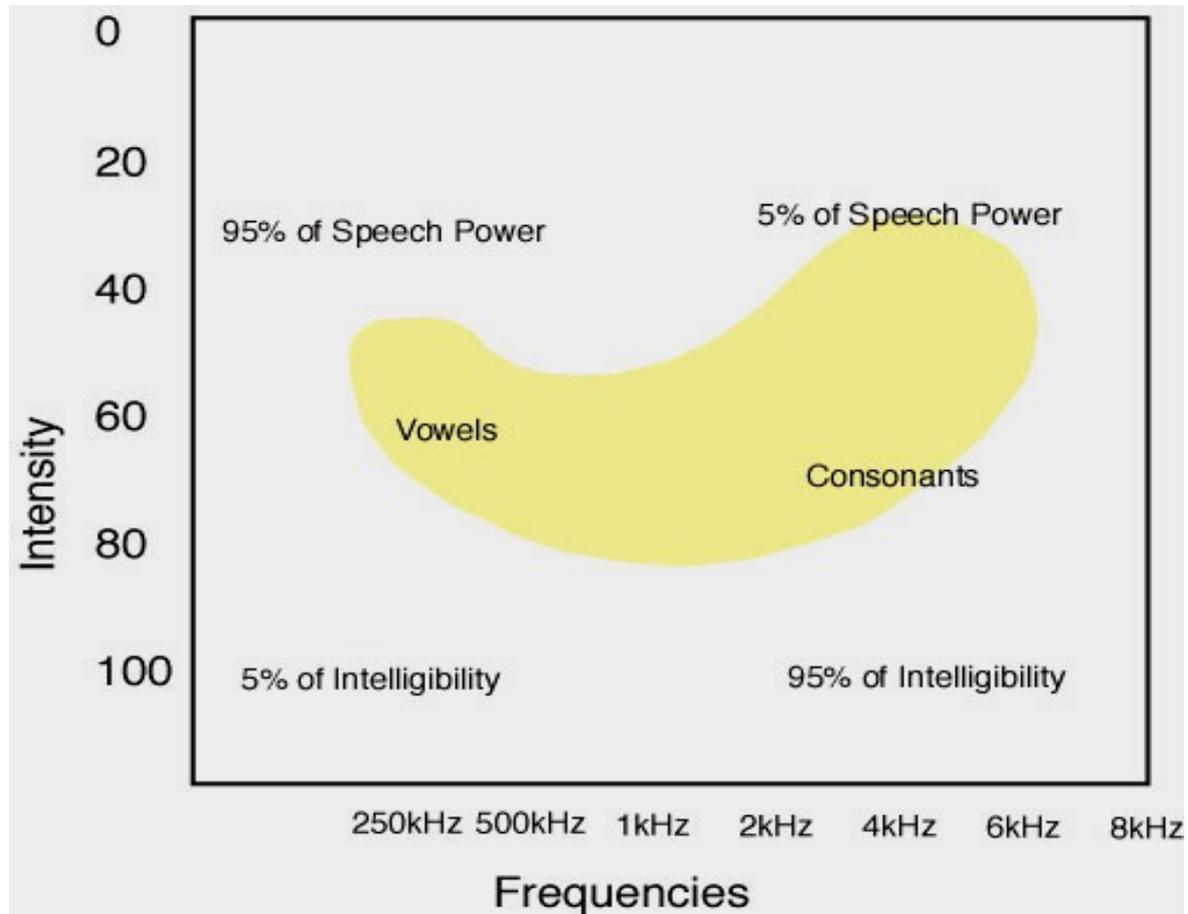
Look at this guy. Who is he going to hear best? The person in front of him or somebody on the side?

If your hearing aids have microphones that point forward, as mine do, the person at either side is going to be quieter. That may, or may not, be good. That is why you have multi-channel hearing aids for different situations. If you are driving your car and your wife's in the passenger seat, and you want to hear what she's saying you need uni-directional microphones. If you are sitting at a table, and she's sitting at your side you need to be uni-directional. If you are in a restaurant with a bunch of friends you want to be uni-directional.

So you have hearing aids with a bunch of buttons on them. That's good, but you have to know when to push the button. You have to know what the button does for you.

With probe microphones you can actually see the hearing aids do what I just described. Because not only do you look at the hearing aid response, but you see how the ear canal works once you fix the problem.

# Capturing speech sound in the banana target



## AN AUDIOGRAM WITH A SPEECH BANANA

This banana is put together by shoving it in front of ten women, shoving it in front of ten men and saying, here read this paragraph. You shove it on the computer and you say to the computer, analyze this. How much is high pitch, how much is low pitch, how loud is the low pitch, how loud is the high pitch?

Quiet sounds at top – loud sounds at bottom. Low sound frequency at left, high frequency at right.

Notice one critical thing: 95% of the speech is in the lower pitches, 5% of the understandability of speech is in the lower pitches. So loud is not clear. Loud is loud, but it is not clear.

In high pitches you get just the reverse- 5% of the power of speech is in the high pitches-95% of the intelligibility of the speech is in the high pitches.

And where do we all have our hearing loss from age from noise exposure? In the high pitches. Someone says everyone mumbles at me. What he means is he hears the low pitches, but not the high pitches. The goal is to get as much of this back as possible. That's what the audiologist does every day.

In the low pitches you have the z sound, the e sound , etc. In the high pitches you have In high pitches weak sounds that you don't hear because you hear because your hearing loss blocks it out. It also shows you environmental sounds: a baby crying is louder, a dog barking is more low pitch than high pitch, the telephone ringer might be high pitch. Telephones used to be horrible instruments of sound production. They ranged from 300 hertz to 3000 hertz. Now they are much better. Don't go spending money on an amplifier on your telephone that goes out to 20,000 hertz – you are not going to hear it. Also if you have the kind of hearing loss I am describing, go home and turn down the bass woofer on your speaker system, because it is providing you the low pitches, but not the clarity. Actually it is worse in clarity, making it harder to hear; so turn down your radios, your cell phones, etc.

I have had no noise exposure in my life. My loss is just genetics. I wear hearing aids only in noisy situations.

## PROBE MICROPHONE MEASUREMENT

It is impossible for somebody to fit hearing aids as well as they could possibly be done unless this technique is used.

Probe means a little tube. The probe is placed in your ear to confirm and measure the sound you are getting at the ear drum. Today there are formulas that say that if you have this much hearing loss you need that much sound. That's ridiculous. With Probe Microphone Measurements you know that you are getting it.

Question: They put a wire in your ear?

Answer: It is actually a skinny tube that is part of the fitting process after completion of the Audiogram.

When this measurement is not done and you wear a hearing aid for several weeks and don't like it you return it any try another one. Maybe you get lucky and like the second and you think one aid was better than another when that may have not been accurate. The extra time it takes to fit the hearing aid using the Probe Microphone Measurement is part of the amount you are charged for the hearing aid.

Roughly 20% of all hearing aids are returned (Audiologists around 15%-Hearing Aid Specialists around 25%). and eventually sold to someone else. My return rate was 4% mostly because I used this technique religiously. My business had 5 other audiologists all of whom had these machines at a cost of \$14,000 each which was considered a bargain. My 4% return rate was lower than any of the others.

Some will only use the machine when you complain so you may never know if you aids have the best possible fit.

**Before you get your hearing aid appointment ask: Do you fit hearing aids with Probe Measurements? If they say no find someone that does!**



## A CHART OF DIFFERENT SOUNDS

In the low pitches you have the z sound, the e sound , etc.

In the high pitches you have the f sound, etc.

In high pitches you don't hear weak sounds because your hearing loss blocks it out.

The chart also shows environmental sounds: a baby crying is louder, a dog barking is more low pitch than high pitch, the telephone ringer might be high pitch. Telephones used to be horrible instruments of sound production. They ranged from 300 hertz to 3000 hertz. Now they are much better.

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PROBE IN PLACE FOR MEASUREMENT



# 20 PROBES

Just little silicone tubes



# PROBE MEASUREMENT IN PROCESS



# PROBE MICROPHONE MEASUREMENT RESULTS



## QUESTIONS

Question: When you get an Audiogram it will tell you what your comfortable decibel level is. Will the probe measurement machine give you any comparative?

Answer: The machine will tell you 2 things: It will tell you the mathematical average for what somebody with your hearing loss likes to hear for quiet sounds, normal sounds, for loud sounds and for unacceptably loud sounds. When a quiet sound, a normal sound, a loud sound and very loud sound is put to your ear, it will recognize the differences and then those sounds can be programmed to be within your comfortable range. Takes 15 minutes per ear.

Question: When I have my hearing aids adjusted they put something in my ear. Is that the Probe?

Answer: No. What you described is dead hooking your hearing aids up to a manufacturer computer program usually called "Noah". They are using Noah to program your hearing aids. The Probe Microscope Measurement machine is entirely different.

Question: What about these new aids that say they pick up the sound that is out of the frequency spectrum that you hear and re-transmit it in a frequency you can hear?

Answer: That's a trans-positional hearing aid. It's very experimental. It is clearly not the standard of the community. I am not sure it will ever be.

Response to Answer: I have tried them, and I get an echo, but I guess you quit hearing the echo after you wear them for awhile?

Answer to Response: Oh, you mean you'll get used to it? We know we can't restore your hearing to normal. Very few people today have a hearing loss from a mechanical problem where the bones of your ear drum are broken or stent. Very few people have that. Almost all of us have sensory nerve hearing loss. The sensory part is the part of your nerve that takes the light measurement and turns it into electricity.

Question: Is the probe microphone a mike behind your hearing aid?

Answer: No, it is a little tube that gets put in your ear. Looks like a little half-millimeter tube in diameter, and it is 35 millimeters long of which 25 millimeters goes in your ear. The human ear drum is approximately 30 millimeters inside your canal. The end of the tube is 5 millimeters from your ear drum. It is absolutely painless-maybe tickles. The Probe measurement does not guarantee a happy result but it is an essential first step.

## More Questions

Question: My hearing aids are 5 years old. Do I need new ones?

Answer: Don't buy that story. If your hearing aids are working fine – your hearing aids are working fine even if they are 7, 8, 9 or 10 years old. If you are told because your hearing aids are 5 years old the manufacturers won't repair them any more – that may not be true. Call the manufacturer and ask if they will repair them? You will get an answer. When I retired every manufacturer repaired hearing aids 10 years old. They jacked up the cost of the repair, just to influence you to get a new hearing aid, but it was still repairable. Further there are several companies out there called All Make Repair Labs. They buy left over parts from the manufacturer. For \$250 to \$300 you get the hearing aid repaired by All Make Repair Lab.

Question: Is there any danger of this damaging your ear drum with the probe? I just don't think there are some people I want to service something in my ear. I've had both my ear drums burst, and it's just horrible. Just how far does this go down your ear canal?

Answer: It goes about  $\frac{3}{4}$  the way down your ear canal which is about 25 millimeters into the canal and the canal is about 30 millimeters long.

Question: I'm a nurse and before giving our first injections we would practiced on someone. Is that a process you need to learn before inserting the Probe in the ear? Do you practice on dummies or someone?

Answer: No. Inserting the Probe is very simple, not dangerous and not painful. Worst case is a slight tickling when inserting. Once the Probe is in you don't know its there. It's very similar to the tubing on your hearing aid. Just imagine an extension of that tubing an inch in your ear. Don't let that part spook you. It's nothing. But the person doing it needs to look at your ear first to make certain you don't have an ear full of wax. Somewhere I came across the idea that in Texas hearing aid specialists are allowed to remove ear wax. I don't know what training they have to do that. I know what training the audiologists have. I was terrified taking wax out of patient's ear, and I did it 5 times a day. How many were on Coumadin? How many were on aspirin or other type of blood thinner, and I worked with an ENT. There were many times a patient would come to him with their ear's all plugged up. They would sometimes leave with blood was coming out the ear. I wouldn't let a hearing aid specialist do that. There are some liquids you can put in your ear to loosen the wax. The human ear is actually "self cleaning".

## QUESTIONS CONTINUE

Question: How do you handle noise in your ears?

Answer: Condensed ringing in your ears is not something everyone has. Only about 1 in 7.

Response to Answer: I have had it and it gets worse and worse, and now my hearing is terrible. I can hardly hear now. Now all of a sudden I get another noise. Sounds like a wave – sounds like crickets. Now I have both of them, and I'm nearly deaf, and given the ear phones that go with it make it terrible. I can hardly hear what people are saying.

Question Directed to Responder: Do your hearing aids suppress the noise?

Responder Answer: Well, I don't wear my hearing aids very often.

Response to Responder: Another satisfied customer.

Question: What's the chance of buying one of those Probe Machines?

Answer: Pretty good if you have \$8k to \$12k.

In the next meeting we will cover Part II which will be a review of the critical spots and demonstrate how easy it is to fix problems and explain why audiologists don't do it.

**Homework assignment for next meeting:**

Most of us wear eyeglasses. Eyeglasses work well. Most of us wear hearing aids. They don't work that well. Why?

Why do vision aids work so much better than hearing aids?