

# Fitting and Dispensing Hearing Aids: Interview with Brian Taylor, AuD

Douglas L. Beck, AuD, speaks with Taylor about his new book, *Fitting and Dispensing Hearing Aids*, co-authored by H. Gustav Mueller.

Academy: Good Morning, Brian, thanks for your time today.

Taylor: Hey, Doug. Good to be with you.

Academy: Brian, I have to say, the new book, *Fitting and Dispensing Hearing Aids*, is topical, timely and a great guide for new practitioners and, frankly, serves as a great review for experienced professionals, too.

Taylor: Thanks, Doug. That's very kind.

Academy: You're certainly welcome. As we both know, there are many excellent books out there with regard to hearing aids and dispensing protocols and techniques. Unfortunately, many of them are very old. To me, with rare exception for truly "classic titles," once a text book is over four or five years old, it's just not very useful with regard to things that change as quickly as hearing aid technology.

Taylor: Yes, well that was one of the reasons Gus and I decided to embark on this project a couple of years ago. I believe you're right. I can't think of a new, simple, and comprehensive book for the professional starting to get involved with hearing aids. As you say, of course, the older texts don't address the new technologies and concepts—and those points are critically important for someone starting out in the profession. So, we felt there was a niche.

Academy: Absolutely. This is a refreshingly simple and clear and authoritative text. Brian, let's briefly discuss some of the topics you and Gus address in the book. Rather than going chapter by chapter, I'll just note that Chapters 1 through 5 are very important and they supply the essential background needed—but let's face it, anatomy and physiology, audiograms, decibels, acoustics, and the psychology related to managing hearing loss doesn't really change that much! However, the really important stuff (to me) is found in Chapters 6 through 12—The Hearing Aid Selection Process, All About Style; Hearing Aids and EarMolds; Hearing Aids—How They Work, Advanced Hearing Aid Features; Hearing Aid Fitting Procedures; Outcome Assessments and Post-Fitting Issues; and "Selling" Hearing Aids—It's Not a Bad Thing.

So for the sake of the new practitioner, let's start with addressing the "red flag" referral criteria. I know for most readers the red flags are a review, but for some it will be instructive and we want to make it easy to learn...so then, would you please review and comment on those?

Taylor: Sure. The red flags originated with the Food and Drug Administration (FDA) and they each mandate a referral to a physician, preferably an otolaryngologist. Click [here](#) to learn more.

The first red flag is a visible deformity of the outer ear that often indicates a genetic anomaly or perhaps ear trauma. The second red flag is significant cerumen accumulation and/or a foreign body

in the ear. Of course, in some states audiologists are licensed to perform cerumen removal, and so that varies state-by-state based on licensure, training, and available equipment.

Academy: I'd like to mention (for the benefit of new practitioners) cerumen in small amounts is very healthy for the ear canal and removing it "just because it's there" is silly and not necessary. Although some audiologists do remove cerumen in accordance with their training and license, it's easy to cause damage to the very sensitive tissues of the ear canal and tympanic membrane and it is of utmost importance to handle cerumen with due respect for, and knowledge of, [Universal Precautions](#).

It goes without saying that if you don't have the equipment to sterilize your instruments prior to each use, you need to use sterile pre-packaged disposable instruments. There's simply no excuse for cross-contamination or placing the patient at risk. Okay, climbing off my soap-box.

Taylor: Well...I have to agree. These red flags aren't optional and they were designed to assure patient safety and health. Another topical issue is that some states do not address cerumen removal in their dispensing or audiology licensure, and some practitioners may be told by colleagues that it's okay to remove cerumen because it's *not specifically prohibited*—but that's a slippery slope and one can easily get in trouble using that philosophy. I really recommend checking with your state licensure board if it's at all ambiguous.

Academy: I agree. After all, my audiology license doesn't *specifically* say I can't do heart transplants, but I'll bet it would be frowned upon!

Taylor: Good example. Okay, so moving on, if the patient has had drainage from either ear in the last 90 days, or if the patient has had "sudden hearing loss" in either ear in the last 90 days—refer!

Academy: Absolutely, and there's some evidence that medically driven pharmacologic treatments for patients with sudden sensorineural hearing loss appear to be useful for many patients. [See more](#) on this topic.

Taylor: Of course, any patient complaining that they've experienced acute or chronic dizziness should be referred, as should patients experiencing ear pain or discomfort. Lastly, patients who present with an air-bone gap greater than 15 dB at 500, 1000 and 2000 Hz need to be referred, too.

Academy: Thanks, Brian. Let's move on to verification and validation. I noticed you guys refer to quite a few of the "intake questionnaires." Why are they so important?

Taylor: Well, there are many excellent tools that allow the patient to think through his or her concerns and observations and desires—and, importantly, to write them down *before* they visit the office. This saves significant time in the office and it allows the practitioner to get a thorough history without using very much "face" time. And as you intimated in your question, these questionnaires serve to set the stage for verification and validation later—after the fitting.

Academy: For example, the COSI?

Taylor: Right. The client-oriented scale of improvement (COSI) allows the patient to document multiple listening situations they'd like to improve, and then these same situations can serve more or less as goals for the hearing aid fitting.

Academy: I like your recommended hearing test battery. You go beyond thresholds and loudness discomfort levels and you advocate speech-in-noise tests. Can you tell me a little about that?

Taylor: Speech-in-noise tests such as the QuickSIN or the HINT specifically address and quantify the most important and most common patient complaint—listening to speech in noise. So if we’re going to seriously improve the patient’s quality of life, we clearly need to evaluate and quantify his or her status and we need to measure and document the improvements we provide through hearing aid amplification.

Importantly, no one can look at an audiogram and predict how well or how poorly an individual is going to do in real world noisy situations. So it’s really important to measure these things and the tools are out there and they have very good face validity and they make a lot of sense to patients.

Academy: Very well said. Brian, I’ve been reading a lot about cochlear dead regions lately and I’ve read it’s hard to document dead regions and there’s not much agreement about [test-retest reliability](#) with respect to the TENS test. Cox et al (*Ear & Hearing*, 2011) noted in their study of 170 patients, about a third of the patients had a dead region, but two-thirds of those had a dead region in only one ear and the majority of those had a dead region at just one frequency.

They used the QuickSIN to assess speech recognition ability in noise and found out that people with dead regions actually performed *better* when high frequency cues from amplification were provided. So their study does not support limiting or reducing high frequency gain for people with cochlear dead regions. And, as you know, fitting hearing aids is 100 percent reversible—if it doesn’t work out, you can change the program or remove the hearing aid. . . but the lesson seems to be to fit the patient in accordance with standard fitting protocols and the opportunity for improvement is significant!

Taylor: I have to agree with that. I think we’re all interested in dead regions and they were all the rage a few years ago, but it hasn’t panned out as “clinically useful.” It’s important to know dead regions exist, and it’s important to know you may be addressing them in a given patient, but in general, as we said in the book, it’s not a major factor in the vast majority of all hearing aid fittings.

Academy: Brian, let’s talk a little about compression. Tell me everything!

Taylor: We’d probably be here a couple of days if I told you everything, but here are a couple of things to think about. Compression is a great topic and it’s so important to have a good grip on it. In the book we address linear versus compression circuits, and we talk about the basics of input/output functions and we try to make this as simple and intuitive as possible.

Academy: Okay, so then, what are some of the differences between input and output compression?

Taylor: One major issue is where the volume control is located within the circuit. For AGCi (automatic gain control—input) circuits, the volume wheel is located after the amplifier, and for AGCo (automatic gain control—output) it’s located before the amplifier.

So with AGCo, changes in the volume control affect the gain—but NOT the output. When using AGCi, as the volume wheel moves up and down, so too, does the gain and the output. So AGCi is used generally to restore loudness for soft, average and loud sounds. The most common AGCi circuit is the wide dynamic range compression circuit, also known as WDRC, and generally with WDRC, the compression ratios are lower, usually around 2:1 or 3:1. Output compression (AGCo) generally uses much higher kneepoints and higher compression ratios (perhaps up to 10:1).

Doug, as you know, one difficult concept for new practitioners is the fact that most modern hearing aids actually have both WDRC and AGC-O working at the same time. WDRC is there to repackage soft, average and loud sounds into the listener’s dynamic range and AGC-O is there to

protect the listener from loud sounds being uncomfortably loud. The clinician needs to understand how each type of compression is working, so the proper adjustments to the kneepoints and compression ratios can be made for each patient.

Academy: Excellent. And, of course, the book goes into directionality, polar plots, noise reduction, frequency compression, telecoils, frequency response, venting, multiple memories and channels, trainable hearing aids, Bluetooth, connectivity, and more...and we could clearly spend hours discussing these...but as we're already out of time, let's address one more issue...please tell me about hearing aid fitting procedures.

Taylor: For anyone fitting hearing aids, following one of the published fitting protocols is essential. We provide a good overview of the most popular published protocols in the book. We start with 2cc couplers and hearing aid test boxes and real ear measures and we make sense out of all that and then the book covers programming hearing aids, NAL and DSL and the benefits and dangers of using "first fit" protocols.

Academy: I know it's frustrating for the new practitioners—but the take home point relating to "first fits" is the software gives you a basic starting point, i.e., a "first fit" program, but it's our responsibility to give the patient the "best and final fit." In fact, there's plenty of evidence that first fit programs are often not the best fit for the particular patient. [Learn more](#) about first fittings.

Taylor: Yes, that's the same perspective we take in the book and we try to keep it simple and accurate because it's so important to measure our results. Again, we outline the core fitting protocols and we try to keep it straightforward and simple—and that gets us back to the importance of verifying and validating the hearing aid fitting—which we spoke about a few moments ago. It's really easy to validate and verify—if the protocol is in accordance with best practices and if it's been thought through so as to be relatively seamless, comprehensive and efficient.

Academy: Thanks for your time, Brian. I believe the book is a "must read" for new practitioners and again, for those of use who've been at it for a while now—it's an excellent review.

Taylor: Thanks, Doug.

*Brian Taylor, AuD, is a co-author, with H. Gustav Mueller, of Fitting and Dispensing Hearing Aids published by Plural Publishing.*

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