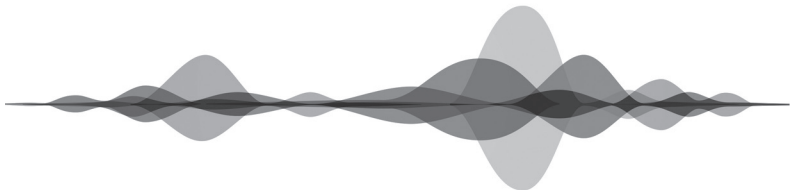
Hearing Aids for Speech-Language Pathologists

A Guide to Modern Rehabilitative Audiology



H. Gustav Mueller, PhD
Lindsey E. Jorgensen, AuD, PhD

Plural Publishing Inc.

PLURAL PUBLISHING
INC.

5521 Ruffin Road
San Diego, CA 92123

e-mail: information@pluralpublishing.com
Web site: https://www.pluralpublishing.com

Typeset in 10.5/13 Minion Pro by Achorn International
Printed in the United States of America by Integrated Books International

Library of Congress Cataloging-in-Publication Data
Names: Mueller, H. Gustav, author. | Jorgensen, Lindsey E., author.
Title: Hearing aids for speech-language pathologists : a guide to modern rehabilitative audiology / H. Gustav Mueller, Lindsey E. Jorgensen.
Description: San Diego : Plural Publishing, Inc., [2020] | Includes bibliographical references and index.
Identifiers: LCCN 2019035361 | ISBN 9781635502145 (paperback) | ISBN 1635502144 (paperback) | ISBN 9781635502152 (ebook)
Subjects: MESH: Hearing Aids | Correction of Hearing Impairment—instrumentation | Wireless Technology
Classification: LCC RF300 | NLM WV 274 | DDC 617.8/9—dc23
LC record available at https://lccn.loc.gov/2019035361

Contents

Preface

So . . . what do speech-language pathologists need to know about hearing aids and amplification devices? What do they *want* to know? While we had been told by many that a book such as this would be welcome in the speech-language community, carving out a plan of action required some careful thought. We of course consulted with our speech-language pathology colleagues who work with individuals wearing hearing aids; we reviewed publications and papers written on the topic; and we solicited the opinion of new grads in the profession, asking what information they wish they would have been provided during their training. We considered our own training from years ago in communication disorders, and one of us (HGM) even resorted to thinking back, albeit way back, to his days of working as a speech-language pathologist in the school system. And we even went the family route, with Gus seeking insights from his daughter Caitlin—a speech-language pathologist—while Lindsey went to her mother—a retired director of special education. So, did all this background research result in the production of the perfect book? Probably not, but we hope that we at least got close.

Whether you're a graduate student or a practicing speech-language pathologist, you will find this text provides you with the latest in concise and practical information in the areas of hearing aids, hearing assistive devices, and rehabilitative audiology. Hearing aid technology changes at a rapid pace. For speech-language pathologists who work with individuals with hearing loss, many of who use hearing instruments, keeping up with this new technology can be challenging, and sometimes even intimidating.

On any given day you might encounter a new hearing aid rechargeable system, a teenager asking for help setting up direct iPhone streaming, or an elderly patient trying to understand how to use his smartphone app to adjust directivity and noise reduction. This book is designed to remove the mystery and the confusing high-tech terms of the many new hearing aid algorithms and features by simply laying out the need-to-know aspects in an organized, easy-to-read, and easy-to-understand manner.

The core of this text focuses on how modern hearing aids work, both in function and in practicality, as well as the tests associated with the fitting of these instruments. Attention is given to both the school-age and adult hearing aid user. We recognize, however, that amplification is not just hearing aids, and therefore chapters have also been dedicated to implantable amplification strategies as well as FM and Bluetooth solutions.

Hearing aid fitting cannot be studied in isolation, but rather, how it fits into the complete treatment of the patient with hearing loss, including the audiologic rehabilitative process. For this reason, the beginning chapters of the text are devoted to a review of the basics of the modern audiologic evaluation and the associated auditory pathologies. In the final chapters of the book, we address hearing screening in the schools and

the audiologic rehabilitative process from identification to treatment to (re)habilitation. Our goal with this text is for it to be a resource for the speech-language pathologist who works with people with hearing loss.

We want to thank our fellow Plural book authors Todd Ricketts, Ruth Bentler, Brad Stach, Brian Taylor, and Jerry Northern for allowing us to borrow material from their excellent texts. We also would like to thank Elaine Keogh and Jessica Messersmith for their valuable and constructive suggestions and for providing insight into the practicality and usefulness of the text in daily practice. Assisting in many of the fine pieces of putting this book together were University of South Dakota Department of Audiology graduate students Emily Benson and Michelle Novak. And, of course, a thanks to our families for their support and encouragement.

Gus Mueller
Bismarck, ND

Lindsey Jorgensen
Vermillion, SD

1 Provision of Hearing Aids: Who, What, and Where

The selection and fitting of hearing aids has been associated with audiology since . . . before audiology was called audiology. In fact, it is probable that the extensive work with hearing aids and aural rehabilitation by several individuals during World War II is what led to the coining of the words *audiology* and *audiologist*. But, when we talk of the provision of hearing aids, it quickly becomes clear that audiologists are only a part of the big picture. In this chapter, we talk about the variety of entities involved in hearing aid provision, how these may work together, or—in some cases—how they may be in direct opposition. Additionally, we'll discuss many of the overriding principles, guidelines, regulations that impact this relationship, and where and how the speech-language pathologist fits in.

A Little History (Big Thanks to a Speech Pathologist!)

Regardless of who actually coined the word audiology, there is little question that the advancement of the use of the term was linked directly to the establishment of rehabilitation centers during World War II. These sites were established to handle the large number of returning veterans suffering from hearing loss. Four major military regional sites were established: Hoff General Hospital (Santa Barbara, CA), Borden General Hospital (Chickasha, OK), Philadelphia Naval Hospital (PA), and Deshon General Hospital (Butler, PA). Captain Raymond Carhart—a 1936 doctoral graduate of Northwestern University (**majoring in speech pathology**, experimental phonetics, and psychology)—was assigned to Deshon Hospital from 1944 to 1946, and his work there has had a lasting effect on the field of audiology and, specifically, the selection and fitting of hearing aids.

Following World War II, there were several additional military audiology facilities established at major hospitals—Walter Reed Army Medical Center in Washington, DC being the most notable. We also saw the emergence of several U.S. Department of Veterans Affairs (VA) audiology clinics. All of these facilities employed audiologists, both military and civilian, who conducted hearing aid evaluations and also dispensed hearing aids to veterans, active duty, and retired military personnel. Because of the ethical constraints placed on audiologists fitting hearing aids outside of the government—which we will discuss shortly—these military and VA hospital clinics became known as an excellent training site for audiology students wanting to obtain hands-on experience with the selection and fitting of hearing aids. It was also during this time that audiology training programs began to emerge. These early programs were in the Midwest at locations such as Northwestern University, the University of Iowa, and Purdue University. The first doctorate granted in audiology was from Northwestern in 1946.

Although audiologists at military facilities enjoyed the benefits of directly dispensing hearing aids to their patients, until the 1980s, in the civilian sector, nearly all hearing aids were dispensed by hearing aid dealers, not audiologists. Like today, there were many storefront hearing aid sales facilities, many of them franchises. Audiologists' clinical activities regarding hearing aid dispensing were influenced greatly by the American Speech-Language-Hearing Association (ASHA), the primary professional organization for audiologists during this time frame. For arguably good reasons, the ASHA had the belief that it could be challenging to professional ethics if an audiologist were to evaluate a patient for a hearing aid, recommend a hearing aid, and then turn around and sell the patient the hearing aid they had just recommended. Selling hearing aids, therefore, was a violation of the ASHA ethical standards.

So it was that during this time frame that audiologists had a somewhat unusual role in the selection and fitting of hearing aids. During this era, although the majority of hearing aids were dispensed by a *dispenser* without the patient first going to an audiologist, there were situations when an audiologist was involved. When this happened, the general fitting process would go something like the following:

- The patient would go to a university or hospital clinic to have his or her hearing tested and be evaluated for hearing aids.
- After some limited testing, the audiologist would recommend a specific brand of hearing aid and specific settings.
- The patient was then referred directly to a given hearing aid dealer (nonaudiologist) who sold that brand (most dealers only sold one or two brands).
- The protocol for most facilities was that after the patient purchased the new hearing aids, the patient would return to the audiology clinic for the audiologist to give the fitting his or her blessing.

This was a situation rife with conflict; as in many cases, the patient had purchased a hearing aid different from what the audiologist had recommended. The audiologist and dispenser would disagree regarding what was best, and the patient was caught in the middle.

ASHA Caves: *Selling* Is Not a Bad Word (Anymore)

Regarding the ASHA code of ethics mentioned earlier, it is important to point out that in the 1960s and 1970s state licensure for audiology did not exist for most states. Clinical audiologists, therefore, valued their ASHA certification and did not want to jeopardize their standing as an ASHA member. And, for the most part, audiologists not belonging to the ASHA were considered outsiders. Moreover, most audiologists, especially those in academia, tended to believe that selling hearing aids had a certain sleaze factor associated with it. There of course were audiologists who tested the system, and their expulsion from the ASHA was publicized. As time went on, however, more and more audiologists saw the benefits of providing complete services for their patients, and in the early 1970s, we started to see audiologists going into a dispensing private practice—with or without approval from the ASHA.

The movement to remove the violation for selling hearing aids from the ASHA code of ethics gathered steam in 1977 when a group of ASHA members formed the Academy of Dispensing Audiology (ADA). The name of the organization obviously was selected to make the point that selling hearing aids should be part of the audiologists' scope of practice (the name has since been changed

to the Academy of Doctors of Audiology). Although you might think that this new organization was simply a handful of young maverick audiologists, it actually included several prominent members of the profession—most notably Leo Doerfler, PhD, who was not only the ADA's founding president, but also a former president of the ASHA.

While the internal pressure for change was resulting in many heated discussions at professional meetings, the event that probably triggered the change in ASHA policy was a 1978 U.S. Supreme Court ruling against the National Society of Professional Engineers, saying that their code of ethics could not be used to prohibit price interference for engineers' services. And so it was that selling hearing aids for profit became ethical. By the end of 1979, nearly 1,000 audiologists were selling hearing aids, and that number grew to 5,000 by the end of the 1980s (Harford, 2000).

Audiologists Selling Hearing Aids in the Workplace

Things have changed considerably since the days that audiologists only dispensed hearing aids in government facilities. Today, there are approximately 16,000 licensed audiologists in the United States, and 60% to 70% of these dispense hearing aids. (Note: by comparison, there are approximately 8,000 licensed hearing instrument specialists.) Audiologists dispense from a variety of settings ranging from their own private practice, to an otolaryngologist's practice, to a university or hospital clinic, to an office owned by a manufacturer, or—in more recent years—from chain department stores. Hearing aids are sold in university clinics as part of most AuD training programs. Shown in Figure 1–1 are the most recent data from the American Academy of Audiology (AAA) summarizing typical work

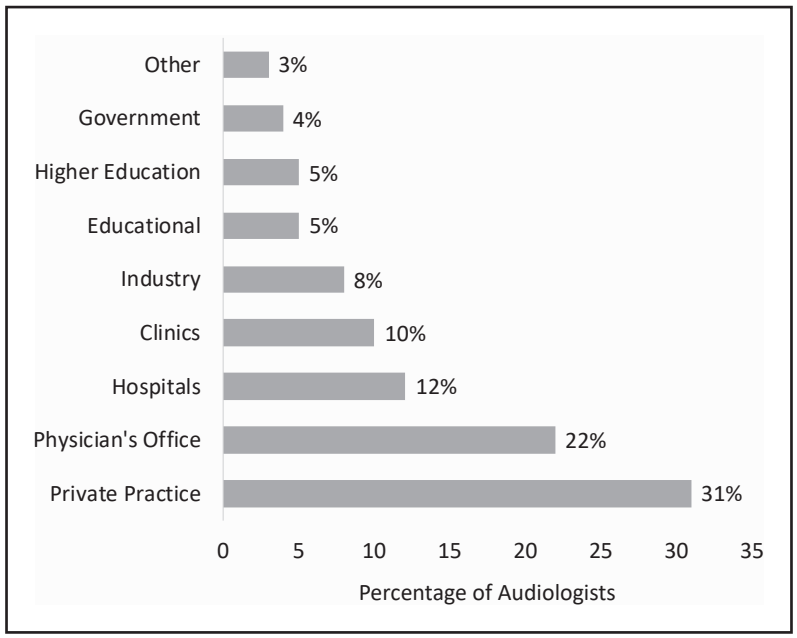


Figure 1–1. Workplace distribution for U.S. audiologists. *Source*: From *Essentials of Modern Hearing Aids: Selection, Fitting, and Verification* (p. 31), by T. A. Ricketts, R. Bentler, and H. G. Mueller, 2019, San Diego, CA: Plural Publishing. Reprinted with permission.

settings. Observe that the highest percent of audiologists are in privately owned audiology practices. Although this is the most common workplace, data from the ADA suggests that only 15% to 20% of audiology offices are owned and controlled by audiologists, much lower than other similar professions (e.g., optometry 75% and dentistry 93%). Private practice ownership among audiologists has been decreasing significantly in recent years, as offices are being purchased by manufacturers and other buying groups. Many of those not directly purchased by a hearing aid manufacturer, are financed by the manufacturer, and as a result, the practice more or less becomes a "company store," as hearing aid purchases from the company help repay the loan.

THINGS TO REMEMBER: Who Is Selling Hearing Aids?

While audiologists would like to think that they are the "gatekeepers" in the hearing aid delivery system, this is far from true. When you encounter a patient who owns hearing aids, there are several possibilities regarding the source. It is important to point out that regarding patient benefit, two factors are in play: the technology of the instrument itself and the programming of the instrument for the patient's individual needs (assuming the instrument is programmable). The best hearing aid in the world is of little or no benefit when programmed incorrectly, and on the other hand, a relatively inexpensive product might function quite well when programmed by a knowledgeable professional. With this is mind, logic would suggest that patient benefit is the highest when hearing aids are purchased from an audiologist—they sell top-end technology and have the most education and training regarding the fitting of hearing aids. Here is a review of the three most common purchase sources:

- **Audiologist.** In most states, audiologists must a have a dispensing license separate from their audiology license. This means that they have passed a written and practical exam. While for most states the audiology license requires a doctoral degree, this of course isn't true for the dispensing license. Dispensing audiologists may belong to the ASHA and hold the CCC-A, or belong to the AAA and hold board certification, but neither of these is required for the practice of audiology or the sale of hearing aids.
- **Hearing Instrument Specialist (HIS).** Most states have similar requirements for becoming a licensed hearing aid dispenser. A typical example reads: "Be 18 years of age or older. Have a high school diploma or its equivalent. Have not committed acts or crimes constituting grounds for denial of licensure (convicted felon). Have passed a written and practical test." There are many licensed dispensers who of course far exceed the education requirements. For example, in some states there are otolaryngologists who have a dispensing license. It's not uncommon for other professionals to adopt selling hearing aids as a part-time second career following retirement. HISs can

become certified with the National Board for Certification in Hearing Instrument Sciences (NBC-HIS), an organization affiliated with the International Hearing Society (IHS).

- **Internet/Mail Order.** A third source of hearing aid purchase is through the Internet or newspaper and direct mail advertising. A recent search of "hearing aids" on eBay provided 24,899 matches! These sales ads ranged from $9.99 products to a $9,000 Phonak product from India (free remote programming!). Now, we need to mention that these are not all "hearing aids" according to the strict definition, but the lines of this definition become more blurred each year (see our later definition of a personal sound amplifier product [PSAP]). And what about the licensure issue? Well, if it is truly a hearing aid, then whoever is selling it should be a licensed dispenser in the state in which the prospective owner lives. Until we have hearing aid sniffing dogs at UPS, FedEx, and the post office, enforcement of this simply isn't going to happen.

  In most cases, the hearing aid purchased through the Internet will need programming by an audiologist, not to mention that the patient will also need long-term follow-up rehabilitation care. How this is accomplished often becomes a sticky issue for dispensing audiologists. How are these patients handled when they show up for an appointment carrying their newly purchased hearing aids with them? Some Internet hearing aid sales sites have attempted to partner with dispensing audiologists—that is, the patient brings in the Internet-purchased hearing aids and the audiologist conducts the programming. In general, audiologists have not been receptive to this arrangement. However, Internet sales are not going to go away, so we expect that some type of arrangement will evolve so that this group of patients can receive effective benefit from their instruments.
- **Over-The-Counter (OTC).** This delivery system will be with us starting in 2020. At this writing, we do not know the details, but we expect that this category of hearing aids will be available for purchase at major retail outlets. Audiologists and HISs may elect to also offer OTCs in their clinics and offices. A developing situation.

Hearing Aid Distribution Channels

Indirectly and sometimes directly related to the workplace where we find audiologists dispensing hearing aids is the overall hearing aid distribution system. Where does the audiologist buy their hearing aids to sell? Where do they buy products that are "sort of" hearing aids?

Hearing Aid Manufacturers

Regarding major hearing aid manufacturers, we have what is referred to as the *Big Five*, composed of Demant (primary brand

Oticon), WS Audiology (primary brands Widex and Signia), Starkey, GN Store Nord (primary brand ReSound), and Sonova (primary brands Phonak and Unitron). Between them, these companies own or manage 15 to 20 other brands of hearing aids. In addition, there are probably another 25 to 30 lesser-known hearing aid manufacturing companies. Today, most audiologists have one or two favorite companies and buy directly from these manufacturers, with more than 90% of total hearing aid sales from the Big Five.

Buying Groups

Some audiologists find it advantageous to work with a buying group. That is, because of the increased volume, the groups can demand discounts from the manufacturers and pass these savings on to members of the group. There are several different groups and different types of groups to choose from. Examples are Audigy, AUDNET Hearing Group, Elite, EarQ, and Consult YHN. Many of the groups offer a range of practice assistance other than just hearing aid purchases. Some of the buying groups, however, more or less work exclusively with the brands of one or two manufacturers.

Retail Outlets

All of the Big Five have retail outlets, which may consist of established stores such as Beltone (owned by GN), companies with multicenter clinical sites such as Newport Audiology (Sonova) or HearUSA (WS Audiology), or the manufacturer may be more subtly involved through corporate-owned, independent practices. Many practices that appear to be owned and operated by audiologists have been financed by a major hearing aid company, and the audiologist is more or less obligated to dispense the hearing aids of that company. In addition to the Big Five, retail offices also are operated by Amplifon (Miracle Ear), Costco, and Sam's Club (and probably several more since the writing of this book). All the retail outlets employ audiologists, although the audiologist or hearing instrument specialist mix varies considerably among sites.

Internet Sales

We talked about this briefly in the previous "Things to Remember" box. An Internet purchase is possible by simply going to eBay or to Internet sites specializing in Internet sales. Although, most—if not all—manufacturers have issued a statement saying that they will not sell hearing aids to retailers who do not conduct an in-person fitting, this is difficult to control. For example, if a regular customer of a hearing aid manufacturer purchases 10 BTE hearing aids, how does the company know how and when they were sold? Internet sales also may be illegal in some states, but again, enforcement is difficult.

OTCs, PSAPs, and Hearables

We recognize that these are products and not distribution channels, but we explain the connection soon. When is a product a personal sound amplifier product (PSAP) and when is it a hearing aid? The distinction becomes more blurred each year. In March 2009, the Food and Drug Administration (FDA) issued guidance describing how hearing aids and PSAPs differ. This guidance

KEY CONCEPT: To Bundle or Not?

Surveys indicate that 80% to 85% of audiologists who sell hearing aids use a *bundled* approach. That is, a single, inclusive price that includes the audiologist's cost for the product, fitting fees, counseling, and follow-up visits (either throughout the life of the hearing aid, or, in some cases, only during the warranty period). The patient is not informed what percent of the total cost is for the product or what costs are for services, although our experiences suggest that the average patient believes the bulk of the cost is the product (which usually isn't true).

Audiologists who use an *unbundled* approach, sometimes called "fee-for-service," break out the cost of the product, accessories, fitting fees, consulting, and follow-up services. This has the advantage of clearly showing the value of the fitting and counseling that goes along with dispensing hearing aids. Additionally, it eliminates the patient's concern that the audiologist is upselling when he or she recommends more features, as the fitting fee would likely stay the same (e.g., it does not require more time or counseling to fit a 20-channel product than a 4-channel product). Some audiologists, however, shy away from the unbundled approach because they believe that when the patient sees the true cost of the hearing aid, they will consider the audiologist's fees to be unreasonable. Also, audiologists fear that the patient may not return for the necessary follow-up visits because of the cost involved, and the end result will be dissatisfaction with amplification. Because of this, some audiologists use a partly unbundled approach. All of this will become a much greater business concern when over-the-counter (OTC) hearing aids and more sophisticated PSAPs occupy a larger market share.

defines a hearing aid as a sound-amplifying device intended to compensate for impaired hearing. PSAPs, the guidance states, are not intended to make up for impaired hearing. Instead, they are intended for non-hearing-impaired consumers to amplify sounds in the environment for a number of reasons, such as for recreational activities. You maybe have seen advertisements for such devices as "Game Ear" or "Hunter's Ear." Some PSAPs are more or less novelty items, but today, we also have advanced PSAPs advertised as having 14 bands and channels, digital noise reduction, feedback reduction, and a volume control wheel. Sounds a lot like a hearing aid to us, but such products are being sold over-the-counter at retail outlets.

A category of PSAPs, or what some might consider a category of hearing aids, are what are called "hearables." The exact definition is somewhat fluid, but in general, a hearable is an earpiece that uses wireless communication to enhance a listening experience. Hearing aid companies are using hearing aids to do more than simply amplify sound (monitor movement, detect falls, translate a foreign language, etc.).

Commercial electronic companies also see the advantage of using earbuds to measure biometrics, and are designing products of this type that also have the ability to amplify sound. Starting to sound like a hearing aid? Or, a converging of products?

And then we have OTC products. In the past, we have referred to many PSAPs as OTC hearing aids, as in function they were. In 2017, we had the FDA Reauthorization Act, which stated that there will be a new official class of hearing aids, authorized by the FDA, which will be sold over-the-counter. The FDA is expected to publish proposed regulations for the new category of hearing aids by August 18, 2020—so depending on when you are reading this, these products may be on the market. The general guidelines say that these OTC products will have the same fundamental scientific technology as current hearing aids, but will be available over-the-counter, without the supervision, prescription, or other order, involvement, or intervention of a licensed person—to consumers through in-person transactions, by mail, or online. They will be for adults (18 and older), and will be designed to provide adequate amplification for mild-to-moderate hearing losses. They may include self-assessment tests, and the user will be able to control their OTC hearing aids and customize them as they see fit (probably via a smartphone app).

The impact that the new OTC category will have on hearing aid distribution is unknown. Will this attract a new group of hearing aid users who would have never gone through traditional distribution channels? Will new users try these, like the results, and then purchase traditional hearing aids? Or, will the current hearing aid patients of audiologists abandon them for this low-cost option? And who will be the major manufacturers? Our current Big Five? Or companies like Bose, Samsung and Apple? Stay tuned.

Laws, Regulations, Rules, and Guidelines Related to the Fitting of Hearing Aids

There are many rules and regulations that go along with the practice of dispensing hearing aids. While it's unlikely that you will be selling hearing aids, it's very possible that you could have a patient who uses hearing aids, and knowledge of some of these regulations may come in handy.

Scope of Practice

A good starting point for this section is the scope of practice for audiology. Although we do not usually think of these as regulations or rules, they do serve as a foundation for the development of other documents. All major audiology organizations have a published scope of practice. For example, the AAA's scope of practice (last updated January 2004) states as part of its purpose:

> This document outlines those activities that are within the expertise of members of the profession. This Scope of Practice statement is intended for use by audiologists, allied professionals, consumers of audiologic services, and the general public. It serves as a reference for issues of service delivery, third-party reimbursement, legislation, consumer education, regulatory action, state and professional licensure, and inter-professional relations.