Hard of Hearing Students in Postsecondary Settings:

A Guide for Service Providers

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Table of Contents

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List of Tables

List of Figures

Foreword

Several years ago, a student came into my office at a community college and said, "They told me to come here for help. I'm having trouble in some of my classes." After the student sat down, I learned that she had worn hearing aids since elementary school. During our meeting, we had the opportunity to discuss what kinds of situations were problematic and how the services offered through Disability Services might be of help to her. She considered using an assistive listening device, but eventually decided to sit close to the front of the room and use a volunteer notetaker. We agreed to meet again in a few weeks to review the situation. Over the course of several semesters, she learned how to determine what her needs would be for each class, and she requested support services prior to the start of each semester.

This student wasn't unusual. During the eight years I worked as a counselor in Disability Services, it wasn't uncommon for students who are hard of hearing *not* to request services until after classes had already started. Many students do not fully understand how different a postsecondary education program will be from what they experienced in high school; in that sense, hard of hearing students may be just like any other student. The pace of each class may be much quicker than those in high school. The classes may have many more students, and the professor's expectations may be different. In addition, accessing support services may be a new and different experience for an incoming student who is hard of hearing; the responsibility for requesting services shifts from the school to the student. Some students may decide to "make it on their own" while others realize that the available services are tools to help them compete with parity.

Experienced service providers realize that students who are hard of hearing face very real access issues. It's not as simple as just wearing a hearing aid to

make everything clear. With the advances in technology, students have many more choices than ever but individual differences still play an important role in how well the student understands the information presented. An accommodation that works well for a lecture may not be effective in a laboratory. Flexibility and creativity are essential components to providing an accessible environment.

It is with great pleasure that we offer this publication, *Hard of Hearing Students in Postsecondary Settings: A Guide for Service Providers*. Its purpose is to provide up-to-date information and resources about those factors that affect students who are hard of hearing as they plan for or participate in postsecondary education and training. Chapter 1 provides insight into who the population of students is and what it's like to experience hearing loss. Chapter 2 presents demographic information and the implications for service delivery. Preparing for the transition from secondary to postsecondary education is discussed in Chapter 3. The overview of vocational rehabilitation services in Chapter 4 provides other service providers, consumers, and parents with a better understanding of the services available to eligible consumers; in addition, it features several state agencies with specialized services for individuals who are hard of hearing. Chapter 5 offer the service providers a model with specific information about the kinds of services and support that can be offered by a postsecondary education or training program. Because students don't spend all of their time in the classroom, Chapter 6 emphasizes how access in other campus settings can be provided. Finally, Chapters 7 and 8 address technology that can play a significant role in communication access for students who are hard of hearing; these chapters discuss hearing loss and the use of hearing aids and assistive listening devices, and also describe other types of technology that can be used effectively in a variety of settings.

We hope that the use of this guide will not be limited to services providers at the postsecondary level. Information and resources included in it may be very helpful to students and parents as they discuss future plans. Teachers, transition specialists, and other related staff from secondary programs also may use this as a tool when working with students as they transition from secondary to postsecondary education and training programs.

We view transition as a collaborative effort among several groups of people who can provide resources and support. Students and their families may find it helpful to work closely with high school faculty and staff, transition specialists, vocational rehabilitation counselors, educational audiologists, and other related professionals. We strongly encourage students to visit colleges, universities, and vocational training programs to see where the best "fit" is

for them. Meeting with students or consumers at these institutions can provide additional information that can be valuable when making decisions about the future. Other online resources—many of which are included in this publication—can be very helpful throughout the process.

In 1996, the U.S. Department of Education, Office of Special Education and Rehabilitative Services funded four regional postsecondary education centers across the United States to serve as a collaborative organization to provide technical assistance to post-secondary educational institutions that enroll individuals who are deaf and hard of hearing. This technical assistance comes in the form of workshops, written materials, conferences, informational guides, and consultations to help such institutions initiate or enhance the accessibility of their programs to students who are deaf and hard of hearing. PEPNet works closely with two-and four-year colleges, vocational training and rehabilitation programs, adult education programs, private and public community service agencies, secondary education programs, individuals who are deaf and hard of hearing, consumer and professional organizations, state and national organizations, and clearinghouses. Providing resources and training related to successful transition from transition from secondary to postsecondary education and training is an important goal of this project. Readers are encouraged to contact the nearest PEPNet regional center for assistance. Additional information about PEPNet and the four regional centers can be found at http://www.pepnet.org/.

We are proud of the effort that has gone into developing this guide. The contributors worked in a very creative and collaborative manner to provide as much information as possible. It is our hope that it will be a practical and helpful tool for you.

—Marcia Kolvitz

Acknowledgements

Finally, it is unlikely that this task force would have ever convened without the encouragement and support of Don Ashmore, who served as the Director of the Postsecondary Education Consortium (PEC) until his retirement in May 2005. Don recognized the paucity of resources and references for professionals to use when providing services to students who are hard of hearing. He was a driving force in the establishment of this task force, and we are very grateful to him for his efforts.

Douglas Watson
Marcia Kolvitz
March, 2007

Chapter One

Being Hard of Hearing or Late-Deafened in a "Hearing World"

John Schroedel

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Abstract

This chapter presents a series of vignettes, each of which profiles diverse attitudes and behaviors of hard of hearing or late-deafened college students, followed by an analysis of influential factors in each profile. Practical tips are suggested for campus and VR service professionals on how to best identify and reinforce students' strengths as well as detect and redirect weaknesses via tailored services. Key ideas are cited to document them. Significant issues are summarized. The chapter concludes with a discussion of comprehensive implications for actions by professionals and advocates related to the various vignettes.

According to federal surveys, hearing loss affects more Americans than any other disability (Benson & Marano, 1999). Among 300 million persons about one in every 11 or 30.6 million have some degree of inability to hear. More than 15 million are of working age (18–64), the primary group for vocational rehabilitation services. Within this group, 11.5 million are hard of hearing, 3 million became deaf before age 19, and 500,000 became deaf before age 19 (extrapolated from Reis, 1994). Because most persons experience loss of hearing during their working years vocational rehabilitation and college support service providers need to be prepared to assist these persons

(Schroedel & Watson, 2005). Many of these persons will be working and will come to the state VR agency seeking employment assistance, whereas others will return to higher education to gain new vocational skills. These individuals differ remarkably compared to persons deafened before age 19. Most of the latter lost their hearing before three years of age and received specialized education services (Holden-Pitt & Diaz, 1998). Subsequently, they learn sign language, acquire deaf peers and a developed self-identity, as well as their own unique lingual community and cultural values. *Psychologically, socially, and communicatively these deaf persons differ vastly from those who are hard of hearing or late-deafened.* This chapter describes in detail many of these differences evident among non-signing college-aged individuals in postsecondary training or served by VR programs. Chapter 2 explains how estimates of the number of Americans with a loss of hearing were determined and discusses ways and means for colleges and state VR agencies to better serve this "invisible population" of hard of hearing and adult-deafened college students.

Table 1-1. Number of Americans with Hearing Loss, 2006

Age Group	Deaf	Late-deafened	Hard of Hearing	Total
15–19	49,200	none	1,376,300	1,425,500
20–44	211,200	1,236,500	4,673,200	6,121,100
45–64	372,800	2,183,400	8,252,500	10,808,800
65–74	169,500	992,200	3,750,400	4,912,100
75 up	254,300	1,489,700	5,630,600	7,374,700
Total	1,057,300	5,901,800	23,683,000	30,642,200

Sources: Reis, 1994; Schroedel, Watson, & Ashmore (2005, May).

The 16 million students enrolled in the nation's 4,200 institutions of higher education vary widely in their academic abilities, occupational aspirations, family backgrounds, and other attributes. Likewise, their 407,000 peers who are hard of hearing or late-deafened represent a distinct and heterogeneous group. Vocational rehabilitation counselors, campus service providers, audiologists, and other allied professionals are challenged to assist these students, most of whom do not know about nor seek VR and campus access services (Schroedel, Kelley, & Conway, 2002, 2003; Schroedel, *et al.,* 2005, May). It is known that the level of severity and age of onset of their hearing impairments ranges widely, most are enrolled part-time, they reside in all 50 states, and increasing numbers of them will attend college in the near future.

In addition, many will discover their hearing loss during the early or middle phases of their careers. The following student profiles, some adapted from known cases, depict a cross-section of these students.

Peter: Struggling With Transition

Peter graduated as the only known hard of hearing student in a class of 513 high school seniors. He was personally glad to forget some unhappy experiences and move on with his life. After working as a laborer for three years, he enrolled at nearby La Grande Community College. He felt college could help him set a vocational goal and lead to a better future. With a progressive hearing loss at 47 dB in both ears his problems started before college. Peter did not use hearing aids because he refused to reveal his hearing loss. He was perplexed when sometimes he could hear and at other times could not hear. One-to-one conversations in a quiet room were no problem, but he avoided large groups and outdoor chats. Oftentimes Peter was unconsciously bewildered by his "off and on" hearing ability. Unable to cope with the confusion, he could not perceive how these conditions were eroding his self-esteem and building an internal emotional turmoil. Psychologically lost, he lacked words to express his feelings.

Peter started five courses at LGCC. Unaccustomed to large classrooms with 150 students, he did not sit in a front seat or ask another student to assist him get lecture notes. It became evident Peter was lonely and not ready for college. Many of these difficulties were rooted in communication deficiencies. Unwilling to admit his hearing impairment, Peter was ill equipped to ask for help. A busy professor might give Peter five minutes of his or her time. Few students aided him with class work and he lacked real friends to benefit him socially and academically. His parents were not resourceful because they did not understand the consequences of their son's hearing impairment. After one semester with a 1.6 GPA Peter's quit college to search for a new job. He did not comprehend that his unresolved emotional, social, and communication difficulties would hinder him on the job. It would require significant changes to reverse this viscous cycle.

What were the causes of Peter's problems?

A key element for Peter was a succession of high school events buried in his mind. He often misunderstood the conversations of his normal hearing peers. He told them about his hearing loss and asked them to repeat what they said. Miscommunications created misunderstandings after which Peter's peers called him "stupid." Frustrated, he fought with his fists to defend himself

from name-calling and ridicule. The school counselor warned Peter that unless he stopped fighting he would be expelled. Sadly, this counselor lacked insights about the setbacks caused by Peter's hearing loss. Unfortunately, nationwide many professionals in general public education lack the specialized training to understand the communicative and psycho-social problems endured by hard of hearing youth. Research in Australia implies that this is a worldwide problem (Punch, Hyde, & Creed, 2006). Teenagers in New Zealand who disclosed their hearing impairment were found significantly more likely to be teased and bullied compared to peers who did not reveal problems hearing (Kent, 2003). More than three million K–12 American youth are victims of bullying which occurs less often during high school while verbal abuse continues unwavering (Cohn & Cantor, 2003). These researchers reported 66% of students believed school personnel ineffectually handled bullying,

Lacking a career goal hindered Peter's persistence in college. Findings from research on career decision making by deaf youth are instructive – because the *general* results and effects are expected to be similarly applicable to hard of hearing students. Interviews with 200 deaf seniors in 16 special high schools and counselors' evaluations of the quality of each senior's career decision determined that those with good career plans were rated as more motivated about their careers and more likely to be ready for and complete postsecondary training than seniors with lower-rated career aims (Schroedel, 1991). Other key pillars in college retention include the student's academic abilities, student peers, and effective support services (Schroedel, 1991; Schroedel & Geyer, 2001; Schroedel, *et al.*, 2002, 2003; Stinson & Walter, 1992). Teacher expectations were the primary influence upon the occupational levels of career aspirations of deaf seniors in two special education programs (Walker, 1982). In addition, *involved* parents were ascertained to be instrumental in fostering the career development and enhancing readiness for post-high school education for their deaf offspring (Punch, *et al.*, 2006; Schroedel & Carnahan, 1991). The combination of knowing personal preferences and accepting a hearing loss strongly influence forming a realistic career choice. Awareness of means to overcome the social and communication consequences of impaired hearing expands a student's *self-efficacy* (Punch, *et al.*, 2006). All of these conditions nourish meaningful career decision-making. Clearly, effective personal, academic, and career counseling by knowledgeable professionals is essential. Stinson and Walter (1992) calculated that 75% of deaf students quit college before earning a degree.

What can service professionals do to make a difference?

It is important to note that Peter's story is presented to exemplify how his difficulties were not reduced by professional interventions. The next case profile provides some examples of how professionals can assist hard of hearing and late-deafened students experience success.

Jennifer: A Success Story

Both the severity and rate of rapidity of Jennifer's hearing loss were similar to Peter's. By contrast, however, she was among the 5% of college-aged persons with a hearing loss who wore hearing instruments (Kochkin, 2001). VR, college, and allied professionals made significant contributions to Jennifer's progress at Los Cruz University. Jennifer was familiar with LCU before she enrolled. Her VR counselor recommended LCU because it matched Jennifer's interests, competencies, and needs, including a reputable Student Access Center (SAC). Jennifer visited the campus during her senior high school year and loved the faculty, staff, and students she met.

Upon enrolling, this coed joined the freshmen orientation program which aided her college survival skills. Jennifer never learned sign language and instinctively knew deaf students differed. SAC staff helped her find niches in the campus chess club and computer labs. Sarah, another hard of hearing chess player, befriended her as a Big Sister, teaching her the ropes that made adjustment to campus life easier. SAC personnel introduced Jennifer to Sarah and the pair became inseparable. Sharing personal stories of experiencing hearing loss was mutually cathartic. Sarah was Jennifer's bridge to LCU's community of hard of hearing students who had weekly self-directed informal raps. A SAC specialist was on hand to facilitate and otherwise keep the conversation flowing by encouraging turn taking.

SAC staff advised Jennifer to meet each of her professors and explain her needs as a hard of hearing student in classes, laboratories, and one-on-one chats. Her professors were fully cooperative because each had attended disability awareness training workshops. One day Chelsea, the SAC specialist on students with hearing loss, showed Jennifer an assistive listening device, "Why not try this out in class and see how it works? We'll lend it to you from our ALD bank." Jennifer used it in her classes, ignoring taunting comments from some hearing students. Similar to other hard of hearing students and alumni who have reported hurtful incidents of teasing from their hearing peers (Schroedel, *et al.*, 2002, 2003). Jennifer experienced negative attitudes toward attributes of her hearing loss from some of her college classmates who hear (Blood, 1997; Casanova, Kathovsky, &

Hershberger, 1988). It is important to emphasize that *some* student peers possess these attitudes and behaviors.

Jennifer's career goal as a computer programmer was on track. Her Individual Employment Plan was based upon a comprehensive assessment of her hearing loss, real-life communication skills, career interests, and vocational aptitudes. With a laptop she emailed her VR counselor who was 300 miles away to regularly exchange news. It was arranged to have a district VR specialist periodically visit all LCU hard of hearing students who were VR consumers. This VR "circuit rider" toured four colleges where other hard of hearing students were enrolled. At each campus this counselor met with SAC staff so each could update the other on the progress and problems of various students.

The LCU SAC program was a resource center for 30 colleges and universities in the state. Its staff provided a listserv for the 160 professionals who were members of the state chapter of the Association on Disability and Higher Education (AHEAD). Twice LCU specialists provided in-service training workshops during the chapter's conferences. The state's Coordinator of VR services to consumers with hearing loss contracted LCU to conduct a train-the-trainer's workshop with a DVR specialist as co-trainer. This mutually benefited DVR and SAC personnel who learned more about the different "cultures" comprising policies, regulations, and procedures in each program. LCU, thus, was a Big Sister to statewide postsecondary and VR organizations.

Lynne: Overcoming Resistance

It was not until her grades declined as a sophomore at Fort Monroe College that Lynne's parents persuaded her to take a hearing test at the Speech and Hearing Clinic. On the day of her test the Clinic's receptionist, Mrs. Greene, adjusted her glasses then introduced Lynne to Dr. Sandusky. This gesture alerted the audiologist to expect a resistant student. Mrs. Greene was a veteran in recognizing such traits in arriving students: poor eye contact, an unsmiling face, along with expressions of sadness and anxiousness (Carmen, 2001). Shortly into their one-to-one conversation Dr. Sandusky realized Lynne's resistance to change, however, she was willing to have her hearing evaluated. The audiologist knew discussing the audiogram with Lynne would be futile and could dissuade her from trying hearing instruments.

What were the causes of Lynne's problems?

Lynne's hearing ability decreased from a mild loss to a severely moderate loss over most of her young life. In junior high school she first noticed mishearing her teachers and other students, yet she was totally reluctant to acknowledge any communication problems. Lynne had a knack for bluffing, pretending, deception, and avoidance in "passing" as a person who could hear. More specifically, she claimed problems due to her hearing loss were inconsequential, other individuals created difficulties such as mumbling at her, or she denied the inability to hear even when she spoke with a loud voice or withdrew from groups (Hetu, Riverin, Getty, Lalande, & St.-Cyr, 1990). Underlying Lynne's mythical life style was uncertainty about the unknown, profound discomfort, and depression. Her attitudes and behaviors exemplified another type of viscous cycle—Lynne's progressive hearing loss immobilized her from seeking help.

What can service professionals do to make a difference?

Counseling resisting persons requires compassion, gentle guidance, and total deference (Carmen, 2001). "Motivational interviewing" which encourages the consumer to express her or his own feelings rather than listen to the counselor's statements is particularly applicable (Harvey, 2004). The four stages of this approach with exemplary excerpts from the counseling session are listed below:

> 1. *Recognizing the problem*:
>
> Dr. Sandusky: "You mentioned some difficulties in improving your GPA. What other problems do you think may be related to your hearing loss?"
>
> Lynne: "This is personal. I do not know where to begin."
>
> Dr. Sandusky: "Lynne, every thing you say is confidential and only known to you and me."
>
> Lynne: "Well ... Billy broke up with me. He said we were not communicating well and was tired of having to repeat what he said to me."
>
> 2. *Specifying concerns:*
>
> Dr. Sandusky: "Gee, I'm sorry about that. Tell me more so I can understand. What happened?"
>
> Lynne: "I tried everything to make Billy happy. Can you imagine when Billy drove he had to keep his eyes on other cars I could not

see his face? Talking was impossible. It was so stressful he sometimes got angry and I felt bad. I really need someone who understands and cares for me."

Dr. Sandusky: "Other hard of hearing students have told me stories like yours. Do not blame yourself. Your feelings are normal. We all need close friends who listen to us."

3. *Inducing intentions to change:*

Dr. Sandusky: "Do you think hearing aids might make it easier for you?"

Lynne: "Not if they show. I don't want other people to notice them. Besides, I like to wear my hair up or as a pony tail."

Dr. Sandusky: "The completely-in-the canal aids are not strong enough to really help you. Behind- the-ear aids are exactly what you need. What's more important—your hair style or understanding others so you do better socially and academically?"

Lynne: "Good point. Things must get better."

4. *Expressing confidence in making changes*:

Dr. Sandusky: "Suppose you try these aids and see what happens? These are the best models for you."

Lynne: "After all my setbacks I have nothing to lose. I'm tired of trying to understand people."

Dr. Sandusky: "Tell me later if you feel less worn out and anxious. OK? Also will you tell me if your studies are improving and you are more involved with others on campus? That will help me know how to help you even more."

Lynne: "Great. It would be terrific to communicate more easily with teachers and students. You can count on me to see you again."

Follow-up via aural rehabilitation sessions and informal raps with "significant other persons" are essential. Fitting a consumer with an aid is only the first step in the long process of learning new ways of living. It is vital that professionals in the hearing aid business collaborate with VR and SAC service providers. Cross-disciplinary dialogues create viable teamwork benefiting college students with hearing loss. Audiologists and other hearing instrument dispensers can be key allies of these service providers by offering the audiometric documentation these students need to obtain campus services and referring them to Student Access Centers.

Joe: A Mid-Career Hearing Loss

Joe was in a daze. He was a competent foreman of commercial airplane mechanics, and then his severe hearing loss caused several adverse job actions. First, he was demoted to a non-supervisory position and within a year he was asked to retire at 42. He thought: some airline; to heck with their bankruptcy problems. Even though Joe felt his predicament happened overnight, he had unconsciously ignored the gradual erosion of his ability to hear. The roar of jet engines had taken their toll. Not only was he facing unemployment, but his marriage was on the rocks and his relations with the kids were unmanageable. The tumble from success to failure hurt him deeply. His hard work to be a good employee, husband, and father was ruined for reasons he could not understand. He became irritable, suspicious, nervous, and depressed. He did not realize these feelings contributed to and stemmed from his career and interpersonal difficulties, which is another kind of social-psychological viscous cycle.

What were the causes of Joe's problems?

More male Americans than females are hearing impaired largely because disproportionately more men than women work in jobs inducing occupational hearing loss (Daniell, Fulter-Kehoe, Smith-Weller, & Franklin, 1998; Hetu & Getty, 1993; Ries, 1994; Schroedel & Watson, 2005; Wallhagen, Strawbridge, Cohen, & Kaplan, 1997). Research on workers with acquired hearing loss report these employees not only had difficulties doing their jobs and getting along with workplace colleagues, but also experienced communication deprivation, distress, poor interactions with those who hear, and restricted opportunities on and off the job (Kerr & Cowrie, 1997; Kyle & Wood, 1985; Thomas, Lamont, & Harris, 1982). Adverse interactions included normal hearing persons ignoring, underestimating, and misunderstanding them in work and family settings (Kerr & Cowrie, 1997). Joe noticed an increase in snide and heckling comments from hearing co-workers. This ridicule relates to ignorance of and stigmatizing attitudes toward hearing loss (Hetu & Getty, 1993; Schroedel & Jacobsen, 1978; Schroedel, Kelley, & Conway, 2002, 2003). Moreover, about one-third of late-deafened employees reported lower earnings after discovery of their hearing impairment (Glass & Elliott, 1993). Kerr and Cowrie (1997) noted that *individual perceptions of the severity of the hearing loss were more influential than the hearing impairment itself. This observation is associated with the potent emotional reactions to discovering the hearing loss and the diverse human capacities to cope with those emotions.*

What can service professionals do to make a difference?

After a friend told Joe about the local VR office, he made an appointment to see a counselor. Joe was fortunate because more than 70% of hard of hearing workers did not know about their state's DVR agency (Schroedel & Watson, 2005; Stika, 2002, June). It was not by luck that Joe met a specialized counselor, Harriet Goodman, knowledgeable about such workers. Assessments of his vocational interests and aptitudes revealed that with additional training he could become an aviation engineering technician. With appropriate on-the-job accommodations Joe could thrive in this line of work.

Harriet wisely understood that Joe needed to resolve his personal problems before commencing job training. She referred him to a therapist who invited his wife, Crystal, to joint sessions, then encouraged them to meet other couples with similar experiences (Hetu & Getty, 1993). Crystal used insights gained from counseling to patiently aid her husband in untangling his web of negative perceptions formed from multiple setbacks. Eventually counseling helped the couple dissolve many harmful notions about the effects of hearing loss and enhance their interpersonal skills to cope better with life. The bottom line: a marriage was saved.

Reinvigorated by a positive self-concept he enrolled at Simpson County Technical Institute, not to seek a new degree, but take specific courses leading to state certification in his aspired career. The SAC Coordinator at SCTI knew Harriet well. They agreed Joe was psychologically ready to adapt to new communication technologies, including hearing aids and an ALD. Support from these professionals and Crystal combined with Joe's maturity and self-acceptance enabled him to complete his two-year career training and become employed.

Harry: A Deadly Silence

The last thing Harry remembered was a loud explosion from a Taliban grenade that brightened the dark cavern. A total stillness followed. Five years previously Harry graduated from the Citadel then completed Ranger and paratroop training with distinction. He commanded Special Forces teams fighting Al Qaeda-linked terrorists in North Africa then Afghanistan. Early in 2002 the grenade blast knocked him unconscious with a wounded leg and hearing loss. The latter injury stunned him.

What were the causes of Harry's problems?

Returned to the States, Harry's leg slowly healed and he was placed in aural rehabilitation, which he hated. Listening to the vets in the program trading

war stories was not particularly therapeutic. Worse, by praising gains from the hearing instruments and not reaching his feelings, Harry felt the audiologist was treating him like a pair of ears to be fixed, not as a person. The Army now has 25 audiologists compared to 73 in 1990 (Schulz, T.Y, 2004). Fortunately, good counseling let Harry release some war horrors from his mind. His Army counselor, well aware of the trigger points during combat which cause mental stress, was able to encourage Harry to release his emotional scars caused by experiencing fighting, but was unable to penetrate Harry's silence about his ability to hear. .

Hearing stories of increased spousal abuse and divorces among returnees, Harry personally pledged to be good to Veronica and the children. More seriously, no one understood Harry's anger. He was angry that his hearing loss made him feel helpless and dependent upon others. A man of action, he was too impatient to cope with his frustrations. These emotions are common among those experiencing loss of hearing (Gemayal, L., *Kingport Times-News*, 2006, January 12).

What can service professionals do to make a difference?

Veronica witnessed diminishing communication within the family and her husband enduring an emotional upheaval. During a quiet evening at home, she gently discussed these problems and vowed to save their marriage. Slowly, Harry let out long held-back feelings. Veronica later located a therapist qualified to assist them. After three months of weekly sessions Harry accepted his hearing loss and hearing instruments. A support group comprising military families sharing similar experiences augmented the counseling treatment (Hetu & Getty, 1991). The counseling and support group helped the coupled restore their healthy marriage. Harry became employed as a DIA senior military intelligence analyst. His physical and emotional wounds were healed. Two counselors and Veronica performed pivotal roles in Harry's comeback.

Combat trauma creates a heavy toll, including loss of hearing. Service professionals face an array of barriers to effectively assisting these veterans. Among the 600,000 military personnel who fought in the 1991 Persian Gulf War, Iraq, and Afghanistan, an estimated 58,300 have or will acquire a hearing loss (extrapolated from Schroedel, *et al.,* 2005, May). Early reports estimated that as many as one-fourth of U.S. soldiers in Iraq had loss of hearing (Whittle, R., *The Dallas Morning News*, 2006, March 8). Fighters discarded ear plugs so that they could hear battle commands and enemy gunfire. A clinical comparison between 800 returnees from Iraq diagnosed with noise-induced hearing loss (NIHL) and soldiers not sent to Iraq found

that combat veterans were 50 times more likely to have NIHL than those not exposed to combat (Helfer, Jordan, & Lee, 2006; Seeman, B.T., *Newhouse News Service*, 2006, April 12). This study is considered to lead to underestimating the prevalence of combat-related hearing loss because most returnees do not have their hearing tested by military audiologists. Relevantly, only one in every five Americans with a hearing loss uses hearing instruments (Kochkin, 2001). Moreover, extensive clinical testing revealed that 60% of WW II and Viet Nam vets had impaired hearing, mainly due to loud combat noises (Tobin, 1991). The higher prevalence of hearing loss among these vets was largely caused by increased inability to hear as they became older.

Experiencing war is mentally stressful. Presently between the ages of 24 and 45, many Middle East war veterans need personal counseling and an unknown number need VR assistance. The unemployment rate for veterans between the ages of 20 and 24 was more than 15%, almost double the national average for similar-aged civilians (Danials, A., *Arkansas Democrat-Gazette,* 2006, June 10, p.5a). However, the G.I. Bill allows veterans to receive $1,034 for 36 months, which pays for a small proportion of the costs of a college education (Daniels, A., *Arkansas Democrat-Gazette*, 2006, February 27, pp. 1A–2A). More than one-third of military returnees from Iraq received psychological counseling, including 12% with a diagnosed mental disorder (Johnson, C. K., *Arkansas Democrat-Gazette*, 2006, March 1, p.7A; Zoroya, G., *USA Today*, 2006, March 1, p.7D). More than 20% of military returnees tested to be at risk to post-traumatic stress disorders were not referred to psychiatrists (Vedantam, Shankar, *The Washington Post*, 2006, May 11, p. A08). These disorders are serious mental-emotional disturbances that can lead to alcoholism, drug abuse, severe depression, and suicide. As reported in many newspaper articles, Congress grossly underestimated the number of Iraq returnees resulting in a serious shortage of funds for programs for mental and medical healthcare. It is uncertain if federal agencies have adequate resources to help these combat veterans.

Darlene: A Creeping Menace

Darlene was scared. While working as a bank teller she sometimes misheard the speech of some customers. Worried that a misunderstanding might jeopardize her job, she did not know what to do. After working 15 years for Sea First National, she had developed proficiencies in fiscal math and operating a computer. Tormented by anxieties, Darlene's hearing loss froze her into inaction. Her efforts to think about positive subjects delayed facing stronger realities. *By burying adverse feelings about her hearing loss under*

thoughts about favorable experiences she unconsciously used these <u>displaced emotions</u> to postpone steps to a solution. Darlene finally decided to tell the branch manager about her hearing problem. Cindy proved to be very helpful. She called Malcolm Nordstrom, the bank's human resource manager, who informed her about the local vocational rehabilitation office. Cindy encouraged Darlene to seek their professional assistance. After some reluctance, Darlene contacted VR.

What can service professionals do to make a difference?

Darlene's less than severe hearing loss narrowed her prospective eligibility for VR services. However, her good fortunes in receiving resourceful help continued. Emily Garrison, a Communication Specialist, was given Darlene's case. Besides having clear speech, Emily naturally practiced the best ways of communicating with hard of hearing persons. These included directly facing them, speaking naturally and strongly, articulating at a moderate pace, using appropriate facial expressions or body language, encouraging the person to interrupt if she or he did not understand, and rephrasing statements to ascertain if the listener comprehended her. She turned off noisy electrical appliances, had sunlight reflected on her face, not the consumer's face, and had a phone amplifier and tele-text phone available (Leavitt, R., 1996; Self Help for Hard of Hearing People, 2005).

Emily earned Darlene's trust by explaining she personally understood what it meant to have a hearing loss because her mother had one all her life and that all case information discussed between them was strictly confidential. Many persons with auditory problems have difficulties in specifically describing the extent of their inability to hear. Emily asked Darlene some probing questions to determine what she could and could not hear. Three facts stood out. Darlene misheard soft voices and foreign accents, her hearing was progressively deteriorating, and soon Darlene would be overly stressed working in public contact jobs.

Darlene's chain of good fortune was beginning to turn against her as state VR agency regulations obstructed in assisting her. Darlene faced losing her job as a bank teller, but her handicap was insufficient to classify her as "most severely disabled," the top priority group for VR services. In short, MSD was defined as having one or more severely limited functional capacities, needing multiple services over an extended person of time, and having one or more mental or physical disabilities (Hager, 2004). Even though Darlene's salary as a single worker was above the state's cutting line on a fiscal aids test she was eligible for diagnostic services, counseling, guidance, and referral

services, job placement, personal assistance services, auxiliary aids, and post-employment services (Hager, 2004).

Emily phoned Malcolm Nordstrom, Sea First National's human resource manager, who agreed the bank valued Emily's skills and wanted to re-employ her as a real estate loan examiner in its corporate headquarters. Under the agency's sliding fee scale Emily paid for 33% for two hearing instruments the state purchased for her (Hager, 2004). Darlene thrived on her new job researching long-term ownership and loan histories of each applicant's house. Her conversations at work focused on occasional shoptalk about various applications. The burden of communication strain was lifted from Darlene's shoulders. Three years later she sought a higher position that required attending college to obtain advanced work skills. By then the state DVR program had a *Memorandum of Understanding* with the state's Department of Higher Education specifying who was responsible for paying for accommodations for college students with various types of hearing loss. Historically, these memoranda focused upon meeting the needs of signing deaf students (see Chapter 4). Enrolled in Clover City University Darlene used an ALD and support services from the SAC program to successfully complete accounting and related business finance courses. She was then promoted to be a loan credit analyst.

Part of her new job required attending staff meetings where she accommodated by a laptop note taker and alternate turn taking in conversations. Initially the notes produced by a co-worker provided insufficient information for Darlene to understand why specific procedures were needed to do her job well, even though she had good English skills. The bank then decided to have an employee trained as a Typewell operator-notetaker. In an in-depth evaluation of transcripts made by 65 volunteer notetakers during a simulated corporate staff meeting, Balsamo (2006) concluded that most of the notes were flawed. Semantic analyses determined the transcripts primarily comprised truncated messages, discontinuous fragments, reports of broad themes, and inaccuracies. The net result would be unequal access for deaf participants in actual workplace meetings. Fortunately, Clover City University was able to provide training for the Typewell operator because the Student Access Center used these operators to assist the cluster of students with hearing loss on its campus.

Summary of Key Issues

This section comprises capsules summarizing significant emotional and communicative conditions experienced by hard of hearing and late-deafened

college students. These capsules tap issues portrayed in the presented case profiles and collectively exemplify intricate conditions in the postsecondary education of students with hearing loss. These conditions illustrate that the unorganized hard of hearing population psychologically and socially differs vastly from the organized deaf population. Hard of hearing persons are unique. Being neither deaf nor hearing, they occupy a twilight zone between both worlds. Realistically, almost all hard of hearing persons identify with those who hear, not those who are deaf. Because there is no permanent "hard of hearing community" functioning as a comparative reference group, most hard of hearing individuals struggle to define themselves. Those who are late-deafened face similar problems. Being hearing all their lives, then becoming deaf creates a sharp dilemma in self-identification. Adult-onset deafened individuals live in a psychosocial limbo. The answer to the question, "Who am I?" is not a problem for signing deaf persons. Consumer leaders emphasize that hard of hearing and adult-onset deafened persons have the right to define themselves without being defined by others. Much advocacy work remains to be done. Many persons have not yet received the message of equality for these long-neglected target groups. Under these circumstances maintaining the status quo is not an acceptable option.

First Things First

Not every hard of hearing and late-deafened adult has problems accepting their hearing loss. For those who do, resolving the emotional conflicts associated with the hearing loss is the first step toward accepting it. This may often require counseling by qualified persons who fully understand the social and psychological consequences of dealing with a hearing impairment after living a "normal" life as a person who hears. It is important to note that many adverse feelings these persons have about their inability to hear are understandably normal because they mirror grief about losing an essential life function. Thus, these reactions by themselves usually cannot be labeled as psychiatric emotional-mental disorders. Competent professionals need to prepare guidelines clarifying the knowledge and skills needed to provide therapeutic services to those in the process of adjusting to loss of hearing. Glass and Elliott (1992) reported that one leading concern expressed by VR counselors was how to help late-deafened persons overcome their anger about losing their hearing.

Self-acceptance, in turn, leads to affirmatively coping with loss of hearing by displaying willingness to accept help. There is no universal pattern in this process because hard of hearing and late-deafened persons vary widely in their personal resources such as resiliency, self-esteem, and fortitude. Well-

trained professionals will recognize indicators of these resources in each individual and help them shift their life styles toward positively managing communicative and social disruptions associated with hearing loss.

Self-identity: What is "Normal?"

The hard of hearing and late-deafened population is so large and heterogeneous it is important to avoid stereotyping persons within these groups. Not only do the ranges in age at onset and severity of hearing loss vary widely, but as the profiles exemplify so do personal qualities such as adaptability, assertiveness, and self-worth. However, experiencing loss of hearing arouses some generalizible observations. It is normal to express grief over the loss of hearing. It is normal to seek belonging in general society. It is normal to "think hearing." It is counterproductive to resist accepting one's hearing impairment by an unwillingness to use of helpful accommodations and services.

Because many of these individuals are unaware of their inability to hear, at a loss to understand it, or deny it service professionals have a central responsibility to effectively counsel them toward more affirmative life styles. The more that SAC, VR, and allied professionals can redirect these persons toward accepting services and accommodations, they convey it is normal to experience loss of hearing and seek assistance. The definitive literature has not yet been written to fully explain the social psychology of being hard of hearing or adult-deafened in a hearing world. For every one such college student there are 40 students who hear. A *viable body of information needs to be assembled then nationally disseminated, so that although these persons may always be outnumbered by those who hear, they need not be denied the opportunity to lead fruitful lives*.

Overcoming Underachievement

Several profiles exemplified how some hard of hearing or late-deafened persons counterproductively emoted and acted. Peter's denial of his loss of hearing impairment contributed to his leaving college. Joe's irritability and depression complicated his job and family problems. Harry's anger about his sudden hearing loss psychologically impeded him. These cases reflect viscous cycles leading to underachievement and lack of healthy self-fulfillment. To change these behavioral patterns trained professionals need to recognize and assist in efforts to alter student's weaknesses while identifying and reinforcing their strengths. Services must be crafted to meet individual needs and applied patiently and persistently. Relevantly, professional teamwork helps students overcome confusion, build self-esteem, and resolve

personal dilemmas. These steps enhance a student's desire to succeed by welcoming accommodations and services augmenting personal, academic, and vocational adjustment.

Assertive and passive behaviors not only exemplify the coping patterns of hard of hearing and late-deafened persons, but also can identify characteristics as clues in finding them. In a national study of 210 hard of hearing workers Schroedel and Watson (2005) ascertained that more than three-fourths acted *assertively* by reminding their supervisors to give them key job information, volunteering for extra work assignments, and asking co-workers to tell them important news they had missed. A majority of these employees made extra efforts to make friends, asked for help when they did not understand during meetings, and worked harder to show they were competent, which illustrate other assertive actions. By contrast, 59% *did not* pretend to understand other people or did not tell others when they misunderstood them. Less than half engaged in other *passive behaviors* such as avoiding meetings, hid their anger when they were left out of interactions, evaded small talk with co-workers, and did not participate when they could not hear conversations. The overall assertiveness of these workers is partially explained that 75% had a mild or moderate loss of hearing, which facilitated workplace communication. These 12 behaviors reflected on-the-job conditions; however, variations are applicable to college students with hearing loss. Schroedel and Watson (2005) combined these six assertive behaviors and six passive behaviors into a scientifically sound scale of assertiveness. They determined that increased assertiveness was significantly related to increments in expressed needs for workplace accommodations, which provide some face validity to the assertiveness measure. Assertiveness is also a factor in job advancement: 36% of the workers were supervisors.

The Influence of Significant Others

It is essential that parents and high school personnel be informed about key ramifications of hearing loss. Spouses or partners need to be involved during and after counseling adults with auditory difficulties. Neither Peter's parents nor his school counselor were able to assist him. By contrast, Crystal and Veronica provided invaluable help to their husband's comebacks from loss of hearing, a confusing process of recognizing, realizing, and accepting that a vital life function has diminished. These wives were partners supporting the vital transformation of their husbands from an emotionally "impaired persons" to persons who "happens to have a hearing loss." They were not co-dependents interpreting for them on the telephone or during group conversations. By avoiding such misdirected actions they made it clear their

husbands had to progress positively. Experience suggests that knowledgeable persons such as Crystal and Veronica are exceptional examples in the lives of most persons with loss of hearing. Much education needs to be done about informing the general public about the inability to hear, especially about how to assist a friend or family member cope with loss of hearing. Well-informed and resourceful significant other persons are valuable allies to professionals involved in facilitating personal growth after a hearing loss is discovered. In addition, these persons are priceless assets because it will probably require a decade or longer to train enough professionals and para-professionals to effectively serve the large number of hard of hearing and late-deafened college students. Therefore, successful program outreach will find not only hearing-impaired consumers, but potential helpmates as well.

Knowledgeable college professors can positively influence students with hearing loss. Utilizing data from the National Center for Education Statistics there are an estimated 750,000 working-aged persons with doctorates in the 50 states with approximately 600,000 employed in academic rather than nonacademic settings (Schroedel & Watson, 2005; U.S. Census Bureau, 2004). Professors and other instructional personnel with a hearing loss are of particular interest. Less than 1% of doctoral respondents to eight National Science Foundation surveys of scientists and engineers between 1996 and 2003 self-reported a hearing loss, which are obvious undercounts (http://www.nsf.gov/statistics/srvydoctoratework). Applying federal age-related prevalence rates of hearing loss to the estimated chronological average age of 600,000 college professors, most of whom have tenure (another age-related factor), tentatively suggests that 70,000 faculty members have a hearing loss (Reis, 1994; Schroedel & Watson, 2005). In four national surveys Kochkin (2001) determined that 10% of those 45–54 years of age with a hearing loss used hearing instruments and increased severity of a hearing loss was a major determinant in purchasing aids. Taken as a whole, this information implies that a noteworthy number of college professors have a less than severe auditory condition. National data on hard of hearing workers supports this observation (Schroedel & Watson, 2005). Identifying, recruiting, and training these unique faculty members would form a corps of particularly ideal significant academic role models for hard of hearing and adult-deafened students. Well-planned orientation of the estimated 600,000 professors would provide the nucleus for campus-wide networks to locate students who these teachers can refer to CAP service providers.

The Cumulative Effects of Hearing Loss

Almost 90% of hard of hearing adults have a progressive or inconsistent rather than sudden loss of hearing (Schroedel & Watson, 2005). The psychological attributes of progressively declining ability to hear are multifaceted. Strains in interacting with others, anxieties about the unknown, and fatigue from stressed communication accumulate to the point where a hard of hearing or late-deafened individual must retreat from unproductive conversational settings to recover from mental and emotional overload. This, in turn, results in uncertainties in knowing when and where one can effectively function. Understanding the speech of familiar family members at home differs dramatically from following a group conversation in a noisy cafeteria or comprehending a professor's lecture in a 200-seat classroom lacking a loudspeaker system. The inconsistencies of being able to hear and understand speech in these diverse settings is bewildering and frustrating. There are numerous factors influencing either comprehending or not comprehending speech in various settings. *These factors make a person with a hearing loss vulnerable to letting their social and communicative impairments "spread" to a psychological state such as depression or a reduced self-concept.*

These conditions necessitate taking a holistic perspective toward understanding reactions toward and emotional recovery from loss of hearing. This includes accurately assessing a student's real-life communication competencies which involves more than audiometric and speech perception data. As in Darlene's case, a counselor usually must ask a variety of questions to learn the parameters of a student's communication and emotional limitations and capacities. With this information fresh in mind, a timely counseling technique would be to ask the student to identify the advantages and disadvantages of her or his coping style (Harvey, 2004). If the student is psychologically ready, questions could be raised about the perceived advantages and disadvantages of wearing hearing instruments. As in motivational interviewing, the student is encouraged to do most of the talking.

Audiologists and other hearing aid vendors are giving more attention to the attitudes and personality attributes of prospective customers affected by factors such as matching professional interaction styles with different types of customers (Mynders, 2004; Traynor, 2003). Behavioral scientists have developed questionnaires and scales which vendors can use to clinically assess consumers' perceptions, emotional reactions, and experiences with loss of hearing (Andersson, Melin, Lindberg, & Scott, 1995; Kerr & Stephens, 1997; Punch & Weinstein, 1996). VR and CAP service providers

welcome expanded consumer-oriented practices by instrument vendors so that these professions can share mutual perspectives. It is understandable that audiologists and others in the hearing aid industry must focus on technological aspects in the rapidly advancing field of improved instruments. However, limited use of the "human touch" indicates that the medical model in which the vendor makes key decisions for the "patient" will continue unabated and potentially bar cross-disciplinary collaboration. By the same token, VR and SAC professionals need to reach out and communicate better with audiologists.

Implications for Action

Get the Big Picture

The complexities faced by hard of hearing and late-deafened students before, during, and after their college education necessitates that service providers think holistically. Understanding the communication and interpersonal needs of each student requires insights into her or his emotional and auditory attributes as impacted by key characteristics of diverse social environments including the attitudes, resourcefulness, and supportiveness of significantly influential other persons. Retaining these students in higher education requires providing comprehensive support services geared to each student's academic competencies, need for social peers, and developing a relevant career goal. Central to achieving these objectives is keen awareness of the resiliency, adaptability, and self-esteem of each student. Failure by service professionals to grasp all of these conditions creates ineffectual piecemeal actions. *Applied knowledge can empower these students to experience personal, social, and vocational successes*. For example, the gains by Jennifer at LCU were partially accomplished because her VR counselor matched the needs of this high school senior to the assets available at the university.

Develop Counseling Guidelines

Several examples of counterproductive viscous cycles were illustrated in the case profiles in this chapter. Peter's denial of his hearing loss combined by lacking a career goal, his lack of readiness for college, and failure to obtain assistance from potentially helpful persons contributed to his premature departure. Joe's irritability, nervousness, and depression in response to his hearing loss added to his problems with his job, marriage, and family in a two-way flow of negative emotions and consequences. Harry's skills and bravery in military combat did not help him in his battle against his sudden

loss of hearing. Instead, his impatience and anger delayed restoring meaningful cornerstones of his life. Many of the emotions displayed by these and other persons with hearing loss are normal grieving reactions, not necessarily symptoms of psychiatric disorders. Facilitating self-acceptance of the hearing loss is the initial step toward positive readjustment and requesting accommodations and services. Considering this as well as the extreme paucity of knowledgeable mental health specialists, developing guidelines other trained counselors can use is a high priority. Moreover, these standards and supporting information should be shared with groups such as the National Association of School Psychologists (http://www.naspcenter.org/).

Some Key Questions

This chapter focused upon the interplay of psychological characteristics of college students and the social-communicative conditions they endure due to their loss of hearing. Understanding the combined interactions of all these factors is a major hurdle to professionals unaccustomed to working with ordinary hard of hearing and late-deafened college students. This is especially the case with human service providers whose careers have concentrated on assisting severely and profoundly deafened students who sign. The first question for professionals is: What skills and knowledge do I need to best serve the large number of hard of hearing and late-deafened college students? Not every professional should or could serve this emerging student group. Specialized training is needed for those best suited and motivated to become a new type of service professional.

Coping with the environment in which these professionals work is a separate set of issues. This chapter reported numerous incidents of persons who hear ridiculing, bullying, or putting down hard of hearing and late-deafened persons in K–12 schools, colleges, work, and family settings. When a student directly complains about such behaviors, professionals should listen carefully to assess the situation. It is important to take steps to boost the student's self-esteem, build up their capacities to accept their hearing loss, seek help, and grow from there.

Another important set of questions focus on: What specific approaches should VR and SAC managers use to create changes within the organizations in which they function? These include modifying both the unit housing specialized services and the larger organization, be it a college or state agency. Chapter 2 reports information on hard of hearing and late-deafened persons as a group as well as recommends necessary catalysts program Coordinators can initiate to better serve hard of hearing and late-deafened

college students within dynamic organizations. The goal of Chapter 1 was to construct the foundations from which professionals can better understand the social psychology of being a hard of hearing or late-deafened individual in a hearing environment. Likewise, Chapter 2 presents information so that these service professionals can do their jobs more effectively in responsive and supportive work organization

Chapter Two

Estimating the Number of Hard of Hearing and Late-Deafened Students: Implications for Services Delivery and Job Opportunities

John Schroedel

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Abstract

An updated estimate of 414,000 deaf and hard of hearing college students replaces prior guesses of 25,000 such students. The methods used to obtain this estimate are explained. Information from a recent national study of hard of hearing adults is described. Large-scale retirements by the "baby boomer" generation will create 10 million job vacancies by 2010, which provide excellent opportunities for college graduates. Perspectives on funding public programs are presented. Priorities are proposed for changing these programs and recommendations are made for addressing funding issues related to expanding services to hard of hearing college and late-deafened college students. These patterns will profoundly affect vocational rehabilitation agencies, campus access service offices, and institutions of higher education. In response SAC and VR programs must emphasize out-reach to prospective students and once enrolled facilitate their persistence to graduation.

 Managers of campus access and vocational rehabilitation programs need accurate estimates of the number of prospective consumers to be served. Information on key characteristics of these target groups also helps to tailor services delivery. This information impacts programmatic budgeting, staffing, personnel training, services, and administration. Changes in the size and other attributes of a program's target population influence long-range

planning. Major revisions between previous and new estimated numbers of targeted students will create pronounced changes in the need for campus access and VR services. This chapter reports diverse information that will substantially influence future postsecondary and vocational rehabilitation services delivery. Will program managers respond with planned or unplanned organizational changes?

Confusing Numbers

A survey of college administrators led to an estimate of 11,250 hearing-impaired students among 11.3 million students attending institutions of higher education in 1978 (Wulfsberg & Petersen, 1979). During the 1990s surveys of *campus officials*, including Disability Support Services (DSS) coordinators, asked about diverse aspects of their programs including the number of deaf and hard of hearing students enrolled. Successive studies estimated increases in the number of such students from 17,000 in 1990 to 28,000 in 2001, with 25,000 students being the most widely circulated estimate (Billies, Buchkoski, Kolvitz, Sanderson, & Walter, 2003; Hopkins & Walter, 1999; Lewis & Farris, 1994, 1999). The four regional technical assistance centers within the Postsecondary Education Network (PEPNet) needed information to become more responsive to the needs of the campuses they serve. As a result, the above cited surveys were conducted to learn about services provision and technical assistance preferences of colleges and universities enrolling students with hearing loss. These surveys were not intended to be national head counts or censuses of these students. However, many unaware professionals and advocates disseminated inaccurate numbers.

Few professionals serving persons with hearing loss are aware of the National Postsecondary Student Aid Studies (NPSAS) of *college students* conducted for the National Center for Education Statistics. The NPSAS surveys estimated there were 346,000 students with hearing loss in 1986 and 258,000 in 1990 (Greene & Zimbler, 1989; U.S. Department of Education, 1993). *Differences in survey research methods most likely explain the discrepancy between the 1986 and 1990 numbers*. It is important to note that almost all surveys cited in this chapter were based upon representative samples of the nation's institutions of higher education with sample data projected to the total number of colleges and universities to provide such estimates. This cost-saving method of data collection is frequently utilized in social survey research.

What reasons can explain the vast difference between the average of 25,000 deaf and hard of hearing college students reported by campus administrators and the much larger numbers based upon college students contacted? Most of these students were either hard of hearing or late-deafened and it is clear that

almost all of them have not asked for assistance from the Student Access Center (Schroedel, Kelley, & Conway, 2002, 2003). As explained in Chapter 1 these students have diverse reasons for not seeking services. Many do not wish to disclose their hearing loss, are confused and uncertain about it, or are unaware they have diminished hearing. Consequently, there is an invisible population of hard of hearing and adult-onset deafened students at the nation's 4,200 colleges and universities (U.S. Census Bureau, 2004). With branch campuses included, we would estimate that there are approximately 6,900 college programs (http://www.ed.gov/admins/finaid/accred/accreditation_pg4.html).

In addition to knowing the number of people with hearing loss that need to be served, information on the characteristics and attainments of these persons is also useful to program administrators and service professionals. The best such information would be derived from a sample representative of a national population. Surveys of organizations of consumers with hearing loss are not representative because members differ from non-members (Schroedel & Watson, 2005). Likewise, studies of local, state, or regional groups are frequently not nationally representative. Further, results from research of service recipients from clinics, facilities, or similar organizations *cannot be generalized* to other groups. Unfortunately, no representative studies of late-deafened adults have been conducted. However, some results from a recently completed national survey of hard of hearing adults are helpful and will be described below.

ESTIMATING THE NUMBER OF COLLEGE STUDENTS WITH HEARING LOSS

Pivotal information for the estimate provided in this chapter was derived from the 1991 National Health Interview Survey, the *only* reliable federal source of information on the prevalence of hearing loss in the United States. Nearly 30 years of sustained research contributed to the reputation of the 1991 NHIS. During the 1960s efforts were made to develop and validate a psychometrically sound household interviewing protocol to measure the ability to hear and understand speech in various conditions (Schein, 1968; Schein, Bigman, & Gentile, 1969; Schein, Gentile, & Haase, 1965, 1970). Additional studies reported on the results of the 1971, 1977, and 1991 NHIS surveys which all used the same research methods (Ries, 1985, 1986, 1994; Schein & Delk, 1974). Each of these three national surveys reported an increase in numbers of Americans with hearing loss to establish a reliable bench line to estimate the number of deaf and hard of hearing college students in 2004. The NHIS surveys were planned by the National Center for Health Statistics and conducted by U.S. Census Bureau field staff.

The first step in estimating the population with hearing loss is determining the total number of students attending college in 2004. The next step is breaking out this total into age groups because prevalence rates of hearing loss and rates of attending college vary by age groups. Information on college enrollment rates was obtained from studies conducted for the National Center for Education Statistics (U.S. Census Bureau, 2002, 2003). These percentages are displayed in the right side column of Table 2.1. Each percentage was compared to the total of persons in the respective age group to determine the subsequent number enrolled as depicted in the middle column. It can be seen that these rates decline with age as do the corresponding numbers enrolled on campus. The exception is the larger enrollment number for those 35–44 years of age based upon the overall size of the underlying population. Thus, an estimated 15.9 million students were enrolled in college during 2004. One notable attribute in Table 2.1 is that the college-aged population is defined as those 18 to 44 years of age rather than the traditional 18 to 24 age group. This was done because significant numbers now attend college to study for advanced degrees or learn new career skills. The nation's economy and job market are changing so rapidly that upgrading one's education is essential to remain employable and advance in a career.

The next challenge is to determine how many of these students have a hearing loss. Kochkin (2001) reported that 2.4% of those 18 to 34 years of age and 3.9% of persons 35 to 44 years of age have a hearing loss. Ries (1994) provided similar aged-related prevalence rates. Applying these percentages to the age groups in Table 2.1 generates a total estimate of 414,300 college students with a hearing impairment (see Table 2.2). The question remains, how many of these have a more severe hearing loss and how many have a less severe hearing loss? The best available sources for answering these questions were the 1991 National Health Interview Survey (Ries, 1994) and the 1987 NPSAS survey (Greene & Zimbler, 1989). Both publications reported almost identical proportions of deaf and hard of hearing persons and were used to generate the estimated number of college students with hearing loss in Table 2.2. More specifically, among the 20.3 million Americans with hearing loss in 1991 Ries (1994) calculated that 15.6 million (77%) were hard of hearing, 4 million (20%) deafened after age 19, and 700,000 (3%) deafened before age 19. These percentages were applied to the total of 414,300 students with hearing loss. The results indicate that 305,300 students were hard of hearing at any age at onset, 101,500 were deafened after age 19, and 7,500 were deafened before age 19. The National Health Interview Survey defines a hard of hearing person as "one who has difficulty understanding speech" and a deaf person as "one who is unable to

understand speech" (Ries, 1994). Relevantly, only 5% of persons 18 to 34 years of age use hearing instruments (Kochkin, 2001).

Table 2-1. College Students Who Hear by Age and Attendance Rates, 2004

Age Group	In College	Attendance Rate
18–19	4,624,000	61.2%
20–21	3,030,000	44.1%
22–24	2,551,000	24.6%
25–29	1,914,000	11.4%
30–34	1,276,000	6.7%
35+	2,551,000	1.9%
All	**15,946,000**	

Table 2-2. College Students with Hearing Loss, 2004

Age	Number
18–19	108,700
20–21	71,200
22–24	59,900
25–29	45,000
30–34	30,000
35+	99,500
All	**414,300**

The estimate of 7,500 students deafened before age 19 is supported by other research. During 1987, the peak period of expanded postsecondary education for "rubella" deaf students, 7,000 students attended 150 special college programs, whereas 5,200 deaf students were enrolled at these colleges during 1998 (Rawlings, Karchmer, & DeCaro, 1988; Rawlings, Karchmer, DeCaro, & Allen, 1999). Deducting the approximately 2,400 students at Gallaudet University and the National Technical Institute for the Deaf, 4,600 students were enrolled at the 150 programs during 1987. The average enrollment per program was about 31 students with hearing loss, which indicates the magnitude of the critical mass of such students at that time. Many of these

150 colleges, including Gallaudet and NTID, have a comprehensive mix of support services needed by these students. Because some universities with Student Access Centers are not listed in these catalogs, the 5,200 students in 1998 is most likely an underestimate. However, the extent that these universities have adequate support services needed by a "typically" deaf student is not known. Academic access services such as tutoring, interpreting, captioning, and notetaking are especially important to these students (Lang, 2002). It is usually an exceptionally able deaf student who achieves well in a regular college or university without such services approximately 7,000 deaf students were estimated to be enrolled in college during 1994 and 50% had a reading level at the fifth grade or lower (Allen, 1994). Evidentially, many of these less academically skilled students attended community colleges with open admissions policies because of a nationwide shortage of special rehabilitation facilities. About 5,000 of these students were enrolled in 134 special colleges during the same year (Rawlings, Karchmer, DeCaro, & Allen, 1995). Most of these colleges served fewer than 20 deaf students which is below the critical mass needed to support a *truly* cost-effective comprehensive services program. All of these factors most likely contributed to the 75% attrition rate for these students.

The National Center for Education Statistics anticipates a steady increase in the nation's number of college students from 16.8 million in 2005 to 17.4 million in 2010, a net increase of 680,000 students (U.S. Census Bureau, 2004). Applying the techniques used early in this chapter an estimated 66,000 of these new enrollees will be hearing impaired, with an annual inflow of about 13,200 students during each of the following five years. The total estimated number of college students with hearing loss to about 470,000 individuals by 2010. Other research supports the 2006–2010 enrollment projections. The National Center for Public Policy and Higher Education (2006) reports that 2.8% of persons 25–49 years of age attend college. Applying this percentage to these age groups in Table 2.1 yields a total similar to the 174,500 students in the corresponding age groups in Table 2.2. This finding reinforces the original estimate for future students over 24 years of age.

However, the initial estimate for younger college students may be conservative. Based upon audiological data from a sample of 6,200 children 6 to 19 years of age it was estimated that one million K–12 pupils have a mild or more severe hearing loss, with most have a loss in one ear (Niskar, Kieszak, Holmes, Esteban, Rubin, & Brody, 1998). Federal data suggest that about 357,000 of these youth reaching college age between 2006 and 2010 and 214,000 will enroll in college during the same period (U.S. Bureau of the Census, 2003). This averages to an annual influx of 43,000 college students with hearing loss. The higher prevalence of hearing loss among today's

youth is largely attributed to their exposure to loud electronic devices such as CD players and headphones (Fligor & Cox, 2004). Follow-up evidence is lacking to ascertain the extent to which the youth in the sample tested by Niskar and associates have a temporary or permanent hearing loss. This probably means that the yearly estimate of 43,000 new students with hearing loss is an overestimate; however, the size of this cannot be calculated. However, the larger estimate of this age group by the Niskar group is overall scientifically sound. Perhaps as many as 30,000 new hard of hearing students will be attending college during the next five years.

The 13,000 college students with hearing loss annually arriving on campus should not overload the capacities of SAC and VR service programs; however, 30,000 yearly arrivals most likely will strain existing service programs. *The more important numbers to remember are the total estimate of at least 414,000 college students with hearing loss in contrast to the "guesstimate" of only 25,000 such students.*

EMPLOYMENT TRENDS

Students with hearing loss graduating from college between now and 2010 will enter a national labor market with 10 million unfilled jobs because increasing numbers of the more than 60 million Americans born between 1946 and 1964 have started to retire. More than four million will turn 55 each year during the next decade and substantial numbers will retire from their jobs (Benjamin, M. *Arkansas Democrat-Gazette*, 2006, February 26, pp. 1G–2G). These graduates will have better employment opportunities in professional, managerial, and human service fields, which include jobs in business, health, and social services. These five major occupational categories are projected to account for 70% of new jobs based upon consumer spending (Baxter, 2003; Toossi, 2002). Most jobs in these fields, which comprise a wide range of occupations, will require college training. This implies that Student Access Center personnel must ensure that hard of hearing students have access to all departments on campus. Moreover, it is essential that these students have the support services and resources needed to persist in college and graduate.

CHARACTERISTICS OF HARD OF HEARING ADULTS

Research on the background characteristics and socioeconomic attainments of hard of hearing adults would be useful to service professionals by providing a "snapshot" of what current hard of hearing college students could achieve in the future. In an effort to obtain this information Schroedel and Watson (2005) conducted a national survey utilizing 66,0000 computer random assisted phone calls to identify 1,050 targeted persons more than 18 years of age who received a follow-up mail questionnaire.

The obtained survey sample data were similar to five of six comparable sociodemographic characteristics in the data set of hard of hearing adults in the 1991 National Health Interview Survey (Ries, 1994), the best available "population" to appraise the representativeness of the sample. The mail sample was also compared to the master telephone list of 1,050 addresses and was found to be geographically similar in 37 of 43 states where survey respondents lived. In short, this study acquired the first ever nationally representative sample of hard of hearing adults with in-depth information about their experiences on their jobs and with human services. Representative research is important to service practitioners because the results can be generalized to larger populations rather than be limited to the survey sample. This provides research consumers with stronger information to advocate for or plan better services and practices.

Some key characteristics of the survey participants include:

- As a group they were primarily hard of hearing. Three-fourths reported their hearing loss as less than severe: mild (26%), moderate (49%), severe (23%, and profound (2%). Most revealed a mid-career or late-career onset of their hearing loss as follows: before 18 years of age (14%), between 19 and 44 years of age (43%), between 45 and 64 years of age (34%), and more than 65 years of age (10%). The majority had a slow rather than rapid loss of hearing.

- Survey respondents were socioeconomically successful: 73% had more than a high school education and 63% worked in a broad diversity of white-collar jobs ranging from professional to clerical positions. Personal income was largely influenced by factors related to gender regardless of hearing ability. Males who were hard of hearing *or* hearing earned $40,000 yearly compared to $23,600 to their similar-aged female counterparts.

- More than 70% of workers responded they did not know about the VR agency in their state. In answering a questionnaire item that explained about vocational rehabilitation, participants were more than twice as likely to express a need for five communication services (e.g., get a hearing test) rather than six employment services (e.g., get workplace accommodations). The average age of these workers at 52 years old and that most were well established in their careers contributed to these perceptions of services.

These patterns have vital consequences for hard of hearing and late-deafened college students. They need to make career decisions and obtain relevant career training leading to employment. Moreover, SAC and VR programs

must marshal their resources so that these students graduate and enter the labor force. *Services need to concentrate on augmenting student retention.*

Summary of Key Findings

Even though most SAC and VR professionals have some experience serving hard of hearing and adult-deafened persons, many will wonder how there could be 400,000 such college students. These students are unseen because few wear hearing aids and seek services. None-the-less they exist as unrecognized and unserved. Three-fourths of a national sample of hard of hearing workers had a less than severe hearing impairment in both ears that occurred during their career and deteriorated slowly. This implies a majority of these adults will need vocational rehabilitation services while they are working, yet most are uninformed about this program. Being unaware of VR services also means that when these hard of hearing persons were in school they neither knew about IDEA-mandated educational support services nor college access services. Most had some college education, including 40% who earned a degree, and worked in a wide variety of occupations. If the economy holds, college graduates between 2006 and 2010 will have good job opportunities. These results illustrate the importance of hard of hearing and late-deafened students selecting college majors leading to viable employment prospects, having equal access to all academic departments on campus, and staying in college to acquire a degree. The primary objectives for providing SAC and VR services are to enhance college persistence, graduation, and employment in jobs relevant to their career training.

IMPLICATIONS FOR ACTION

Before campus access offices and vocational rehabilitation agencies can effectively serve these targeted students colleges and universities will need to systematically modify their policies and procedures. *This must be done in ways that enhance services to hard of hearing and late-deafened students and does not diminish services to deaf students.* A state VR agency would need to follow many of the program reorganization actions listed below:

As a first step each program must assess all aspects of its services delivery system to identify practices that must be changed to accommodate the unique needs of hard of hearing and late-deafened consumers.

Endorsements for programmatic restructuring need to be obtained from top organizational administrators and program staff. These top-to-bottom and across-the-board foundations of support form a program-wide consensus favoring change,

All institutional commitments may require adjustments in funding to expand services. Major aspects of this pivotal issue are discussed at length below.

Specialized staff will need be recruited and trained. Administrative support for them needs to be integrated into the overall organization.

Program outreach and marketing strategies must be pilot-tested and their results examined.

After services have been delivered to the new clientele they need to be evaluated to detect weak spots and build upon strong spots.

CHANGING PRIORITIES

Current priorities in campus access and VR services face changes to accommodate both the expected increase of hard of hearing and late-deafened college students as well as their unique needs. The findings from this Chapter imply that the most pressing needs in the delivery of SAC and VR services are:

1. Develop curricula, train trainers, and nationally expand the number of service professionals knowledgeable about the special needs of hard of hearing and late-deafened students.

2. Reallocate funding as needed to expand services to these target groups.

3. Determine effective means to identify and follow-up these students in junior and senior high schools. This includes educating parents, teachers, and other school personnel. This topic is discussed further in Chapter 3.

4. Devise efficient outreach strategies to find these students on campus and integrate them into SAC services. Orientation of college personnel to be aware of these students is especially important.

5. Conduct more research and increase networking among experts to expand knowledge about these target groups.

6. Provide training to students to better cope with their hearing loss. (See Chapters 1 and 6 for in-depth discussion).

An adequately staffed and funded services delivery program has to be in place before the anticipated increase in new students can be properly accommodated in colleges and universities. When asked what they needed to make their programs better, almost 600 SAC coordinators and other college administrators replied that their most important needs were: (1) more resources or funding and (2) and more information about disabilities (Harbour, 2004). Another sign of concerns about programmatic financing was found in a survey of 3,960 postsecondary education programs. Among

32 listed technical assistance needs, the highest rated was "funding for support services" (Hopkins & Walter, 1998).

Achieving Priority 5 will help update what is known about these students and what are the most effective means of serving them. Schroedel (1984) assessed 52 data sets resulting from diverse surveys done between 1959 and 1981 of adults with hearing loss: 48 studies concentrated on signing deaf persons, whereas four centered on hard of hearing persons. Despite a slight decrease in this imbalance since that time, it is very clear, that aside from research on audiology and hearing aids, there is a paucity of federally funded projects for behavioral scientific research on hard of hearing and late-deafened adults. A major step toward addressing this disparity was the teamwork by thirty professionals to develop a "national research agenda" for the postsecondary education of deaf and hard of hearing students which presented a conceptual framework for developing studies (Schroedel, Watson, & Ashmore, 2003).

Extending VR services was not mentioned with Priority 4 regarding outreach of SAC services because of the unique complexity of this endeavor. College campuses are relatively well-defined communities, whereas citizens with hearing loss within a state represent a diffused group. As a general rule of thumb, about 10 percent of a state's population has a hearing loss, half of whom will be of working age (18–64), the prime target group for VR services (Schroedel, Watson, & Ashmore, 2005, May). Reaching them is a daunting challenge. Specialized program managers need to determine which outreach efforts, if any, have been utilized in the various states to contact these people.

It is important not to stereotype hard of hearing and late-deafened working-aged adults. Therefore, leaders representing these consumers should be invited to convey their impressions of VR services to gain insights to fine tune marketing endeavors. Agency follow-up surveys of former rehabilitants can be productive but successful rehabilitants who are satisfied with services received may respond less often than successful rehabilitants reporting dissatisfaction. The more we understand about the attitudes and behaviors of this target population, the more accurate VR outreach campaigns, including creative use of mass media can become.

Programmatic organization of SAC and VR services to address the needs of these college students will differ in each of the 50 states. Each state needs to consider implementation of a Memorandum of Understanding (MOU) between the state VR agency and the state Department of Higher Education, as described in Chapter 4. These *MOUs should identify appropriate accommodations and services for hard of hearing and late-deafened students as well as deaf students*.

PERSPECTIVES ON FISCAL CONDITIONS IN PUBLIC PROGRAMS

Expanding SAC and VR services will require revisions in funding. However, the minds of most college administrators across the nation are attuned to prioritizing institutional programs to reallocate funds to achieve campus-wide programmatic objectives without raising student tuition or reducing essential campus personnel. There are several reasons for the current fiscal challenges on college campuses. Federal expenditures for higher education have been cut. For example, the average annual student loan is now $4,000 (2006, February 2, *Arkansas Democrat Gazette*). By contrast, full-time students in four-year public colleges must pay an average of $26,200 yearly for tuition, fees, room, and board, books, academic supplies, and personal expenses. Students attending the nation's two-year colleges must pay about $13,100 annually (http://www.collegeboard.com/). Moreover, in at least eleven states including California, New York, and Florida with fiscal surpluses, many planned to increase funds for K–12 education, not higher education (2006, February 21, *Arkansas Democrat-Gazette*, pp.1A–2A).

VR programs nationwide face parallel difficulties. While federal and state monies for VR across the 50 states increased from $1.1 billion in 1980 to $3.1 billion in 1999, state agencies still face major obstacles (Schroedel & Watson, 2005). These include, but are not limited to a severe nationwide paucity of trained counselors who understand the special needs of hard of hearing and late-deafened consumers. Furthermore, state VR agencies tend to first serve persons who are the most severely disabled. In addition, the recent dismantling of the national coordinating unit regarding hearing loss within the Rehabilitation Services Administration, which was an invaluable bridge to the 50 state coordinators of VR services to those with hearing loss, represents a catastrophic setback.

RECOMMENDATIONS REGARDING FUNDING ISSUES

It is important that coordinators of specialized SAC and VR programs are "on the same page" when communicating about allocating funds to support growth in services to the nation's 400,000 hard of hearing and late-deafened college students. These program managers need to emphasize that funding for those with hearing loss is a good investment because it is cost-effective and meets the primary objectives of a college or university.

There are four issues that must be addressed with college administration: (1) the advantages of assembling a critical mass of these students, (2) identifying them via innovative outreach strategies, (3) providing better services to enhance student retention, and (4) making sure that colleges and universities

are informed about the demographic methods that were used to estimate the number of these students.

Each of these points is discussed in turn below.

Why Critical Mass is Important

SAC Coordinators need to demonstrate these services are cost effective. The concept of "critical mass" became well established in the postsecondary education of deaf students during the 1980s as deaf youth born during the rubella bubble of 1964–1965 were educated at 150 special college programs (Schroedel, *et al.*, 2003). There are two current definitions of critical mass. The first indicates that about 50 deaf *and* hard of hearing students are needed on campus to assist a SAC towards becoming economically self-sufficient. At this population density, obtaining services and equipment become more cost effective. For example, when more than one hearing-impaired student takes the same course, interpreting fees per student are reduced or ALDs may be ordered on a bulk basis. When a critical mass of special students is identified, a Student Access Center can justify sufficient funding to pay for specialized staff and related administrative costs. *Another definition of critical mass is about 20 hard of hearing students enrolled so that Student Access Center staff can facilitate the social development and peer support needs of these students. This second definition is the standard applied throughout this handbook.* Critical mass is achievable, because, conservatively, about 2.5% of an institution's student body will have a hearing loss. This means a college with 25,000 students will have 625 such students and a campus with 50,000 students will have an estimated 1,250 hearing-impaired students. About 98% do not use sign language. There are 48 hard of hearing and late-deafened students for every one signing deaf student.

How many colleges and universities with SAC units have a critical mass of students with hearing loss enrolled? A national survey of more than 440 SAC Coordinators reported an average of 14 deaf and hard of hearing students were served per campus (Harbour, 2004). The 1990 National Postsecondary Student Aid Study estimated that an average of less than 10 students with hearing loss was enrolled at 2,400 colleges and universities (U.S. Department of Education, 1993). These reports exemplify that administrators and campus service professionals are undercounting hard of hearing and late-deafened students and few student access centers have achieved a critical mass of these students. An indication of the lack of readiness for colleges to serve these students is a survey of 250 two-year colleges that found 72% did not offer real-time captioning (Black, Smith, Chang, Harding, & Stodden, 2001).

Pragmatically, as more of these students enroll on campus more basic support services will be necessary and a critical mass of such students enables cost-effective delivery of these services. While there is a lack of research on hard of hearing students, studies on deaf students are applicable. Five research studies discussed earlier in this chapter support the above observation. In a nationwide evaluation of 46 such colleges Schroedel and Watson (1991) found programs with fewer deaf students lacked special remedial classes, student social programs, and counselors skilled in sign language. Overall, 740 deaf students favorably rated 14 academic support services and nine career development services; however, the least positive ratings were given to these services at community colleges with few deaf students enrolled. In his study of 156 special college programs with most having small numbers of deaf students, Walter (1989) found half had no special training for note takers, 74% required no level of proficiency for interpreters, and less than half of the sign interpreters were certified. Evidentially, critical mass is a factor influencing the qualifications of service providers and the quality of services they offer.

Equally important, providing access services to these students increases student retention. Having a group of hard of hearing or late-deafened student peers reduces risks of social withdrawal, a leading cause of dropping out. Better career counseling assists these students in establishing more viable career goals, which, in turn enhances their post-graduation employability.

Improving the quality of the work force is a key to attracting corporations to move into a state. Better jobs and higher wages augment state revenues needed for funding public education. It is a win-win situation for all stakeholders as the viscous cycle of a low-skilled workforce, low wages, and low state income is reversed. The key to this reversal is improving student academic achievement at all levels of education.

Expanding on-campus outreach

Effective program outreach and marketing are the keys to assembling critical mass. It has been said, "Rounding up hard of hearing persons is like herding cats." For diverse reasons most hard of hearing students do not consider themselves to be disabled. They more likely see their hearing loss as a communication problem, not as a disability. Moreover, some think their hearing loss is too mild to qualify for support services. *The larger problem is most do not know about campus services that are available to them.* At almost all colleges the large majority of hard of hearing and late-deafened students have not requested SAC services. They are an "invisible population" on campus and the Student Access Center is serving few of them.

Efficient outreach methods known to be successful include peer mentoring, small self-help groups, and teamwork between SAC, VR, and allied professionals. Two other outreach techniques include providing a booth to exhibit communication devices and promoting "Hearing Loss Day" rather than "Disability Awareness Days." Relevantly, Disabled Student Services is the most widely used term to describe programs in this field. However, because most hard of hearing students are not responsive to organizational labels such as DSS, the name "Student Access Center" is presented throughout this handbook as a more acceptable alternate. How to induce service personnel and campus administrators to accept this new name is problematic as is how to better market SAC services and communication technologies on campus to students with hearing loss.

Campus outreach efforts must begin at the start of the autumn academic term. Hard of hearing freshmen graduate from ordinary high schools before starting college. They do not attend special high schools where their deaf peers receive IDEA services, thus there are no "funnels" or feeder schools where service professionals can routinely identify and refer genuinely hard of hearing students. These students could be contacted during orientation or "campus survival courses" where SAC services can be advertised.

Chapter 3 presents a detailed description of a multi-faceted front-line approach to identifying and assisting hard of hearing students in grades 7–12. However, such an ideal system is not yet widely in place, thus, these students usually enter college undetected and unserved. Subsequently, the college campus becomes the primary line of reaching out to these youth. *The first year in college is the key time for emphasizing persistence because it is the most vulnerable period for dropping out. If a student stays beyond the freshman year her or his chances of graduation are enhanced.* This reinforces the importance of contacting hard of hearing and late-deafened students during their first year on campus or else the effectiveness of SAC interventions is diminished. This crucial situation enhances the significance of identifying and following up these students in junior and senior high school as well as collaborating with their parents.

Training campus personnel to become more aware of these students is a worthwhile and timely technique. Kolvitz, Cederbaum, Clark, and Durham (2000) made several significant suggestions to enhance the effectiveness of this training:

- First, one session is insufficient to address central issues; training must be on-going.
- Second, SAC staff should assess the need of faculty and other personnel to better understand how to meet these needs.

- Third, a version of train-the-trainer method is applicable: intensively train a few select faculty members from each department who, in turn, can train their colleagues.
- Fourth, printed materials and other media can supplement in-person training (See appended Resources)

The majority of late-deafened students will be older than most hard of hearing students and many will be entering college from the work world. Due to the greater severity of their hearing loss compared to their hard of hearing peers, these students may be more prone to dropping out. Finding and serving them is a major challenge to SAC service providers. Reviews of the national VR database indicate that the state agencies are serving very few adult-onset deafened consumers (e.g., Moore & Schroedel, 2001).

Enhancing College Persistence

The ultimate objective of SAC and VR assistance is to see students graduate with a degree. It has been suggested that the four pillars of college retention were the student's academic abilities, availability of campus access services, social peer support, and a viable career goal (See Chapter 1). Remove any one of these and the student is at increased risk to drop out. Scant research is available on patterns of retention by hard of hearing and late-deafened students primarily due to the "invisibility" of these students. Professional experience suggests that relevant and meaningful personal, academic, and career counseling will keep these students on track toward graduation. Support from service providers and "significant other persons" such as parents or close friends is instrumental in achieving this objective. This is particularly a focal point for collaboration between SAC and VR personnel.

Nationwide among first-time, full-time freshman, retention rates are 55% at two-year colleges and 74% at four-year colleges (http://www.higheredinfo.org/). Analysis of a 1996 NCES data tape showed that 73% of students with normal hearing and 63% of students with hearing loss return for their second year of college (Billies, *et al.,* 2003). There are reasons to believe that: (1) these are first-time full-time freshmen at 1,200 four-year campuses and (2) most of the students with hearing loss are hard of hearing. *These studies provide some evidence that persistence rates for hard of hearing students are comparable to their hearing peers*. However, 61% of all college students are part-time enrollees (U.S. Census Bureau, 2003).

The Integrity of the Demographic Estimate

As a practical point coordinators of specialized programs can use the estimate of at least 414,000 college students with hearing loss when preparing funding proposals. Several key points underlie the scientific rigor of this estimate. First, four research grants from three federal agencies

underwrote the development of the Hearing Ability Scale used in the NHIS surveys in 1971, 1977, and 1991. U.S. Census Bureau personnel interviewed 240,000 persons in the 1991 NHIS study that identified 20,640 persons with hearing loss. (Ries, 1994). The results from that sample led to a national estimate of 20.3 million Americans with hearing loss in 1991 compared to 14.2 million in 1977, and 13.2 million in 1971. This trend line was a key component for our estimate of more than 400,000 college students with hearing loss in 2004. Moreover, four other studies between 1988 and 1998 supported the estimate of 7,500 deaf students in 2004. Demography is perhaps the most misunderstood of all professional specialties related to hearing loss. The 30 years of research leading to the 1991 NHIS study and the national magnitude of that survey have contributed to its highly regarded reputation.

Conclusions

This handbook provides service professionals and consumer leaders with the information needed to decide allocating resources to change programmatic policies and personnel to meet the daunting challenge of better serving VR and SAC more hard of hearing and late-deafened students. Activities were presented to reorganize service systems in an efficient manner. The list of priorities provides professional leaders with focal points that can be followed step-by-step to manage needed changes. These lists outline what needs to be achieved; however, program managers will need to address underlying conditions to ensure that funding is made available to expand services to the anticipated increasing number of hard of hearing and late-deafened students.

Research studies make it clear that few colleges have assembled a critical mass of targeted students. The students are on campus, but not approaching the Student Access Center. Reaching these students during their first year is a crucial step in fostering their persistence in college. Systematically training faculty and other personnel to be more alert to recognizing and referring these students to the SAC was recommended as the best means of initial outreach. Disseminating model faculty training packages would encourage and support more college SAC coordinators to adapt them on their campuses.

Chapter Three

Adjusting to Hearing Loss during High School:
Preparing Students for Successful Transition to
Postsecondary Education or Training

Louise A. Montoya

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Abstract

Completion of postsecondary education frequently builds upon a student's
successful academic and personal experiences during high school. For
students with hearing loss, healthy adjustment to hearing loss is a key life-
long developmental process. The vast majority (94%) of about 1.1 million
K–12 students with hearing loss do not receive educational support services.
In fact, many of these students are not aware of their hearing loss, possible
educational accommodations, and their legal rights to these accommodations.
Suggestions are offered for identifying students who do not know that their
hearing loss can affect them academically, socially and emotionally. This
chapter reviews the variety of students with hearing loss that may be
encountered in our nation's schools. A four-stage framework is offered for
understanding a student's readiness for accepting help. Steps are suggested
for assisting these students adapt to their hearing loss and successfully move
on to college. The four-stage framework and interventions suggestions can
be extrapolated to postsecondary students by college service professionals by
taking a broader perspective beyond the high school level described in this
chapter.

As described in Chapter 2, defining the population of deaf and hard of
hearing people has often been an inexact science among researchers, partly

due to the continuing evolution of definitions and self-identities among people with loss of hearing. This chapter uses the terms "students with hearing loss," "students who are hard of hearing," and "students who use speaking, listening and technology" to refer to students with a severity of hearing loss ranging between mild to profound, involving one or both ears, who communicate using speaking and listening only. This chapter also uses the term, "late-deafened" youth to refer to those who lose all or much of their hearing over a short period of time after they have developed spoken language and the ability to understand what is heard.

Completion of postsecondary education for any student frequently builds upon a student's successful academic and personal experiences during high school. For students with hearing loss, healthy adjustment to hearing loss is a key developmental process that occurs continuously over a lifetime, and in particular, every time they encounter a new setting and developmental life stage. Understanding the developmental and evolutionary nature of psycho-social adjustment to hearing loss, especially the range of this adjustment seen in high school students, can help vocational rehabilitation counselors and student access center personnel evaluate where students are in this significant developmental process upon entry to college. Clearly, high school educators and parents of students with hearing loss are best positioned to help students make these necessary adjustments prior to entry into college. Ideally, vocational rehabilitation counselors and other postsecondary service providers can reach out to hard of hearing high school youth to help guide them and their educational support team through a successful transition into postsecondary education or training.

This chapter reviews the variety of high school students that professionals may encounter. A four-stage framework is offered for understanding a student's readiness for accepting help. Intervention strategies and resources are suggested for assisting students to adapt to their hearing loss and to engage and help high school students with hearing loss transition successfully to post-secondary education. The four-stage framework and interventions suggestions can be extrapolated to postsecondary students by college service professionals by taking a broader perspective beyond the high school level described in this chapter. In place of the "core team" described later in this chapter for supporting students through high school, a vocational rehabilitation counselor, academic advisor, student access specialist center and even general campus counselor can become the key personnel to provide the student with the recommended supports and interventions described below when the student transitions into postsecondary-level education or training. The significant differences at the postsecondary level include a shift from shared responsibility and involvement by both the student and their parents at the high school level to primary responsibility for the student's

adjustment shifting fully to the student alone in college settings, and the major shift from legally entitled education and supports through the Individuals with Disabilities Education Act (IDEA) to voluntary education with accommodations and educational supports required upon the postsecondary student's request and demonstrated need through the Americans with Disabilities Act (ADA).

Population

During 1991, of the 44 million students between the ages of 5 to 17 years, 876,000 (2%) had a hearing loss among whom *only 8% received educational support services mandated through the Individuals with Disabilities Education Act* (Ries, 1994; U.S. Census Bureau, 2003). *This means that 92% of these students received no special educational support services.* Applying National Health Interview Survey (NHIS) demographic criteria to 2004 National Center for Education Statistics (NCES) data determined that the number of students with hearing loss in grades K–12 rose to approximately 1.1 million (Ries, 1994; U.S. Census Bureau, 2004). Meanwhile, the federal Office of Special Education Programs reported that even a lower proportion (only 71,200 or 6%) of students with hearing loss received educational support services in 2002 (U.S. Census Bureau, 2004).

Hearing loss is often unrecognized, and may be inadequately accommodated for most of these students. Many of these "invisible" students have a mild hearing loss where the effects are often "misattributed" to other problems either real or imagined ("I am not capable," "I am not smart enough," or "He's out to get me."). A mild hearing loss or hearing loss in only one ear (unilateral) does not imply mild impact on the student. On the contrary, the effect can be quite significant on such a student. Few of these children have hearing aids and most have problems with understanding group conversations or at least some classroom instruction, particularly with background noise. Moreover, their emotional and psychological adjustment many times is particularly difficult. Many of the hearing, communication, and psycho-social difficulties encountered by adults with hearing loss described in Chapter 1 often are also experienced in a similar fashion by students with hearing loss that is untreated.

If most of the high school students are not identified, it is most likely they will be uninformed about services from their state's vocational rehabilitation or college access programs. In fact, it may be hard for them to understand the existence of or even the need for these services. Most hard of hearing high school students and their families have never heard of the American with Disabilities Act (ADA) which may provide some reasonable

accommodations that could greatly increase their chances of completing a postsecondary degree.

UNIVERSAL NEWBORN HEARING SCREENING (UNHS).

Most states now require routine hearing screening of all newborn children before they go home for the first time. *Eventually, UNHS should help with early identification of hearing loss in children, particularly children with congenital hearing loss in one or both ears. Theoretically down the road, these diagnosed children may self-disclose their hearing loss to secondary and postsecondary staff earlier and in greater numbers than their hard of hearing peers do now. However, there are several reasons that the full potential of UNHS may not be fully realized within the next 20 years.* There are many states where the quality of the UNHS program is still poor. Some problems include a high number of babies flagged for further testing due to human error during the screening and inconsistent training and monitoring of infant nursery hearing screeners. Generally, there is no mandated follow-up with the child and family after the initial diagnosis. Many families avoid the services system until the child's hearing loss leads to educational, social, emotional, or behavioral problems. Additionally, families are not required to enroll their child in early intervention or special education programs. Enrollment in schools is not mandatory until the child reaches age 6. Also, UNHS will not identify children with progressive or delayed onset hearing loss or children who acquire hearing loss later in their childhood through illness, ototoxic medication, or exposure to noise. Of course, with these limitations notwithstanding, UNHS is the vital beginning to the life-long process of minimizing the negative effects of hearing loss.

SIX TYPICAL GROUPS OF HIGH SCHOOL STUDENTS

It can be helpful to identify the student's onset of the hearing loss, skills, coping strategies and tools for addressing subsequent problems. Generally, hard of hearing high school students fall into one of the following six distinct subgroups:

1. Prelingual (prior to age 3) onset of hearing loss and coping to some extent.

Typically this group of students has received accommodations in school and/or specialized educational support services coordinated through their Individual Educational Plan (IEP). However, it is likely that these students will be inexperienced with the full variety of appropriate support services and accommodations. Few of the students in this group will know about the availability of vocational rehabilitation services. Unfortunately, few will be aware of federal laws related to their transition from high school to

postsecondary settings outlined in Chapter 5. Thus, few will seek out or request communication access accommodations. Most of these students will have known at least a few other peers with hearing loss through their lifetime, but, are likely have not yet met a positive adult role model with hearing loss.

2. Prelingual onset of hearing loss, with no supports, and overall are coping ineffectively.

This group of students includes many with mild or moderate and unilateral hearing losses that were likely diagnosed early in the child's life, but, because the child appeared to speak and respond within normal limits, it was decided not to follow through with audiological recommendations. Very often these children are not identified with an academic disability and use no assistive technology accommodations or support services. *Although most will be promoted each year, some have significant gaps in their basic reading comprehension and writing skills.* They may have a specific learning disability that is due to their untreated hearing loss, or they may have an overlapping learning disability. By contrast, *some* of these students develop very effective coping strategies that "overcompensate" for problems caused by their hearing loss. These students read and reread class textbooks, read the book for a video shown in class, and regularly review texts and class notes.

In general, these students are completely unaware of federal laws, accommodations, and support services available from vocational rehabilitation services and colleges. Many are at high risk for dropping out of high school or college before graduation due to the significantly increased burden they face just to comprehend their teachers, professors, and discussions by their classmates.

3. High school students with "progressive hearing loss."

That is, a student who's hearing gradually becomes worse over time. A child with a progressive hearing loss can experience gradual deterioration or sudden drops in their hearing over time. *Most teens whose hearing gradually declines by the time they are in high school cannot function with a more severe hearing loss and often become emotionally distressed by their impaired ability to perform academically, socially, and vocationally.* Unfortunately, the decline for most is so gradual that his or her parents, teachers, peers and even the teen themselves do not realize what is happening. Often, all these players become acutely aware of the negative effects of the teen's worsening hearing without realizing the source of the problem. *Many of these teens misattribute the subsequent problems to negative views of themselves, or to teachers, parents, family or friends who "just don't understand" them.* These students are at high risk of becoming

socially isolated and alienated from other significant persons. Some teens slide steeply into a full blown episode of major depression, have attendance problems, drop out of school all together, or turn to drugs or alcohol in an attempt to self-medicate their emotional problems.

In general, these students are completely unaware of vocational rehabilitation and college access services or choose not to use them due to their strong anger or depression. They are also at high risk for dropping out of high school or postsecondary training before graduation due to the significantly increased burdens they face with their deteriorating hearing in school, family and social situations, and their frequently untreated depression

4. "Late-deafened" high school students who lose their hearing fairly quickly.

These children comprise several sub-groups based upon the cause of their loss of hearing. Some needed to take ototoxic medications to survive a life-threatening health condition; however, these medicines have the side effect of permanently damaging their hearing. Others experience various life-altering health disabilities or accidents that led to their hearing loss. All of these students spent their childhood with normal speech and hearing then endured a sudden decline in their ability to hear. Not only are these children and their families dealing with the consequences of this hearing loss, they are also trying to cope with the consequences of the underlying problem that caused their hearing loss.

Most late-deafened children and their parents have no knowledge or experience with effectively treating a hearing loss in school, at home, or in the community. Understandably, many of the children and their parents experience significant grief due to the child's acquired hearing loss which can delay them from seeking treatment for a year or more while they hope for "normal" hearing to return or accept the permanence of the hearing loss. *A few children and family members* react very differently to the sudden onset of hearing loss. They adjust quickly and embrace professional recommendations. These families are relieved that the child overcame the life-threatening situation that preceded the onset of hearing loss, which is viewed as a "bump in the road" or "small price to pay" for having a long healthy life ahead. Typically, these children are outstanding candidates for hearing aids or cochlear implants, since they already have well developed spoken language and auditory discrimination skills.

Late-deafened adolescents and their parents should be referred for counseling and ongoing audio logical management to educate them about the teen's new hearing loss, amplification technologies, and other strategies for effective communication. Adjustment counseling will help the child and

family adjust to coping effectively with the teen's new hearing loss. Obtaining counseling from a mental health professional knowledgeable about living effectively with hearing loss is strongly recommended. Otherwise, seeing as untrained mental health professional can unknowingly reinforce common misconceptions about living with hearing loss and could prolong grief. Delay in audiological and mental health treatment can significantly impede the teen's normal development and education.

For obvious reasons, *late-deafened high school students, their teachers, and parents often lack information about accommodations, and support services that are available from their State vocational rehabilitation agency and college programs. These students need to receive this information to support them through high school and postsecondary graduation.*

5. Students unaware of their undiagnosed mild, moderate, or unilateral hearing loss.

Since the 1960's, states have mandated that students receive routine screening of their hearing upon entering school and periodically at least through fifth grade. Despite this important public health service, we know that many children with mild or moderate hearing loss are not identified. *Unfortunately, such a hearing loss can adversely effect a child's education, behavior, self-esteem and social life. Approximately 37% of children with minimal hearing losses fail at least one grade and many have significantly more problems with their behavior, self-esteem and social skills than children with normal hearing (Bess, Dodd-Murphy, Parker, 1998; Tharpe & Bess, 1999). Lieu (2004) analyzed 19 studies on children with hearing loss in only one ear and found that between 22% and 35% failed at least one grade and between 12% and 41% received some educational support.*

People with mild or unilateral hearing loss can have great difficulty understanding what they hear in rooms with poor acoustics due to tile or laminate flooring, high ceilings, bare windows. The same problems occur in rooms with background noise caused by two or more people talking at the same time, loud air conditioning or heating units, or external noises such as traffic, people walking or talking in the hallway, or construction. Additionally, individuals with unilateral hearing loss also face difficulties locating the source of the speaker, which can be problematic in group work, labs or classroom discussions. Zheng, Caissie, and Comaeau (2003) report that teachers and peers of deaf or hard of hearing teens often underestimate the communication difficulties they experience, particularly in the presence of background noise. *Although no studies are available on the percentage of students with mild or unilateral hearing loss who require accommodations or assistive technology in college, it seems reasonable to expect that at least*

some will require and hopefully request these accommodations as they need them.

6. Are students with cochlear implants any different?

On a day-to-day, practical basis for high school or mental health personnel, students with cochlear implants do not present substantially different issues from students who use hearing aids. What we know about pediatric cochlear implantation has matured immensely over the past 16 years. Cochlear implants have led to remarkable language, communication, and educational improvements for most of the children, particularly those with no other disabilities, but not all. For some children, the cochlear implant is not "the" solution, but, rather a complement to the child's other communication skills such as American Sign Language or Total Communication. For a smaller number, the cochlear implant appears to have almost no benefit.

Deciding to get a cochlear implant is not an easy decision for a family or a careful and responsible cochlear implant center. Many factors should be considered before a cochlear implant is recommended for a child. *We now know that receiving a cochlear implant before age 2 in a child's life largely enhances the potential outcomes for the child. We also know that it helps if the child receives ample therapy and specially designed educational supports from their family and a multi-disciplinary team (hospital and school-based) to promote age-appropriate speech, language, communication, academic, social, behavioral and emotional development. It is very important for all involved to remember that despite how "normal" the child's speech or listening skills are, she or he is still deaf and subject to the same limitations as children with hearing aids.* For example, hearing aids do not work well in noisy environments, outdoors, when multiple people are talking at once, or when batteries or equipment fail. *Most young cochlear implant users are also subject to similar challenges in school as students who have severe to profound hearing loss in one ear, since they have only one implant. These problems include: inability to locate the speaker within a group, fatigue from constantly concentrating on understanding what is heard, and missing what is said from the direction of the "bad ear."* Many children who are not exposed to sign language early in their life, choose to learn sign language, and about Deaf culture and their signing peers with hearing loss during adolescence, college, or their young adult life.

This chapter author considers *some children with cochlear implants to be among "the lucky ones."* Many are fluent in both American Sign Language (ASL) and English (spoken, receptive and written), have normal speech and very good auditory and speech comprehension. These children and teens regularly switch their "deaf identity" between a person with hearing loss that

uses only speaking, listening and technology to a Deaf person who uses only American Sign Language with no speech. The benefit for these students is that they are broadening their repertoire of communication skills. The bad news for parents, high schools, and postsecondary institutions is these students may request vastly different accommodations from year to year or semester to semester. They can frequently pass in or out of any segment of the deaf or hard of hearing communities, as they prefer. A steady *small* stream of deaf adolescents decides to obtain cochlear implants during their high school years, with the previously mentioned exception of late-deafened teens. Very often, the cochlear implant serves as a complement to the student's other communication methods and skills used prior to receiving the implant.

FOUR STAGES OF READINESS TO ACCEPT HELP

It is helpful to understand stages of "help-seeking" readiness through which most people progress before seeking professional help before reviewing how to successfully prepare hard of hearing high school students for the successful transition to postsecondary settings, (Clarke & English, 2004). It is important to determine the student's stage of help-seeking or "help acceptance readiness." It is also productive to determine the help-seeking stage of the significant others in the student's life, such as their parents, family, teachers, educational support staff, coaches, and peers since they can either facilitate or hinder the student's adjustment to their hearing loss.

Stage 1: Unaware of the need for help or behavior change.

In this initial stage, a high school student is unaware of significant factors, such as not knowing they have a hearing loss or not realizing that their hearing problems contribute to their difficulties in school, at home, with friends, or their personal emotional state. During this stage, offering help or information about strategies for accommodating a hearing loss is confusing since the student does not recognize the role of their hearing loss with these problems.

Stage 2: Aware that a problem exists, but unaware that help is possible and available.

In this stage, a student is conscious they have difficulty hearing, but does not know that assistive technology, environmental improvements, and specific communication strategies exist that can vastly augment their communication skills, which in turn, can improve their academic achievement, relationships with peers and family, self esteem, and emotional well-being. Peter, the first student profile featured in Chapter 1, exemplifies a person between stage 1 and 2 of readiness to accept help. Peter is keenly aware of his hearing loss,

but beyond hearing aids, he is unaware of other communication accommodations and federal laws that can enhance success in college.

Stage 3: Aware that a problem exists, and that help is possible and available. Not interested in or ready for help.

Students at this stage often are actively grieving their hearing loss. When the hearing loss has been diagnosed and known for several years, most of theses students are experiencing complicated grief over their lack of normal hearing. *Very often, children who are stuck have parents who are likewise stuck in this stage, immobilized by grief over their child's hearing loss and motivated by deep hope that the hearing loss will not interfere with their child's normal development.* Harry, the Special Forces soldier profiled in Chapter 1, exemplifies a person stuck at stage 3. Harry is keenly aware of his hearing loss and even experienced with some "help" available, but, it is not until he progresses in mental health counseling that he finally becomes willing to try some of the help offered (stage 4).

In order to advance to the final stage of help-seeking readiness, a student must arrive at a "healthy acceptance" of his or her hearing loss. This healthy acceptance happens most easily when their parents, other family members, teachers, and friends also accept the child's hearing loss." Kent and Smith (2006) found that teens that had family and friends, who affirmed and accepted their hearing loss, were most comfortable wearing hearing aids. *It is helpful to describe what "healthy acceptance" of hearing loss looks like to these children and their parents, so that everyone has a clear idea of what target behaviors are recommended for optimal functioning of the child.*

Healthy acceptance of hearing loss involves*:*

For parents and significant others in a teen's life: *Acknowledge their preference that their child not be hard of hearing or deaf.*

For teens: *Acknowledge their preference that he or she not be hard of hearing or deaf OR acknowledge that she or he wishes they were not different from their peers or that things were not harder because of their hearing loss.*

For both parents and teens: *Accept the permanence of the hearing loss.*

For parents, teens, family members, teachers, other significant adults, and peers: *Understand and have the family, school personnel, and the teen's peers* **act consistently** *to make changes for an accessible and effective communication environment for the teen with a hearing loss across settings* **without dramatics or complaints.**

In other words, a healthy acceptance of hearing loss has been achieved when the teen and family view communication accommodations, including wearing hearing aids, as just another "normal," everyday life activity (Kent & Smith, 2006). Eventually, many teens and the significant others in their lives achieve the first two components of "healthy acceptance." However, it is the third part of healthy acceptance that many teens and their significant others do not reach prior to their high school or postsecondary graduation. *These students at help-seeking stages 1 through 3, are not open to receiving assistance that could minimize the negative effects of their hearing loss on all aspects of their lives. Trying to do so will not result in an effective intervention despite the well-meaning intentions of the intervening professional.*

Lynne, the "resistant" student profiled in Chapter 1 is an example of a student at stage 3. Like Lynne, many students at this stage go along with well meaning parents for a hearing evaluation. Most though, do not accept any audiological recommendations offered. Had Lynne's audiologist focused solely on her hearing evaluation and recommendations, the conversation would likely have remained one way and unproductive. Instead, the audiologist in Lynne's profile wisely allowed her to express her feelings about the most significant problems in her life. *Most people, however, move from stage 3 to stage 4 through a series of substantive discussions, rather than the single encounter* as portrayed in Lynne's profile.

Stage 4: Aware that a problem exists, and that help is possible and available. Interested and ready to seek and accept help.

People at this stage are ready and sometimes even eager to receive information, support, and guidance from knowledgeable and experienced consumers who have made successful adaptations to hearing loss and educational and rehabilitation professionals. Teens, parents, teachers, and other significant people in the teen's life progress to this stage when grief over the hearing loss has been resolved at least one time and these persons have achieved a healthy acceptance of the hearing loss. These individuals can see the "bigger picture" for the student's future focused on achieving a fulfilling work and personal life rather than focusing solely on the student's loss of hearing. These individuals are eager to learn *and implement* what they can to minimize any negative effects of the hearing loss across all key components of the student's life. Jennifer, another student profiled in Chapter 1, exemplifies a student who quickly moved from stage 2 through to healthy acceptance of her hearing loss as she fairly quickly embraced the help she found available through her university's access center.

HELP-SEEKING STAGE IDENTIFIED. NOW WHAT DO I DO?

Students will benefit if intervening professionals first become well informed about dealing effectively with hearing loss. This begins by following a basic approach:

- Think "iceberg."
- Become informed.
- Do not be part of the problem.
- Assess and intervene.
- Cultivate your own school and community resources.

Think—Iceberg.

We know that the visible part of an iceberg is only the "tip" of its whole size. Often times, large parts of icebergs are concealed, or *invisible*. Ignoring the part of an iceberg that is not seen can have very serious consequences. It would be best just to avoid any problems by learning ways to safely navigate around it. This is a useful analogy to remember when beginning to work with a student with hearing loss. *Like an iceberg, hearing loss always has a greater effect than is apparent. If the total impact of hearing loss is ignored or overlooked, there can be very serious negative consequences for the student.*

Become informed.

The following recommendations are made to help intervening professionals become more knowledgeable about issues involved in living with hearing loss:

Read about the experience of living with hearing loss. In the resources section appended to this handbook are several autobiographical books and websites that inform readers about the daily challenges and achievements experienced by students and adults living with hearing loss.

Learn about hearing loss including the diversity within the population of Americans with hearing loss *and what is possible through auditory rehabilitation* (see Chapter 7).

Seek out friendships and professional collaborations with hard of hearing adults, pediatric audiologists, deaf and hearing support educators and behavioral health specialists in hearing loss. Note, specialized teachers who work with hard of hearing students only are often referred to as "hearing support teachers."

Review the professional literature. Check resources available on the Internet. Several excellent online resources for hard of hearing high school

students, their parents and educational staff are listed in the Resources Appendix.

Seek consultation from experienced educational specialists for hard of hearing children, pediatric audiologists and behavioral health specialists in hearing loss.

Don't become part of the problem.

Examine your own response to the child's hearing loss. Lose the stereotype: "But he speaks so well!" Very often, peers, school personnel, and sometimes even parents and siblings misperceive that these students "have no problems, since they "speak so well" and appear "to understand so well." Hard of hearing people share our languages, speak, and, at times, hear like people with normal hearing. Those of us with normal hearing often grossly underestimate the impact of hearing loss. *Frequently, both the student with hearing loss and person with normal hearing overestimate the clarity of the communication with a hard of hearing person. Without confirming comprehension with one another, neither party could be aware that miscommunications have occurred.* Other times, the impact of the hearing loss, be it mild, moderate, or severe, is minimized by those with normal hearing, thereby minimizing the need for changes in communication behavior. Many hard of hearing high school students reported in Kent's (2003) study found they had an unsupportive experience in regular education and had better experiences in those situations where they did not self-disclose their hearing loss.

How you can be part of the solution.

Caring adults can become part of the solution for the teen by self-examining their preconceptions about hearing loss. It helps to imagine being in the student's position. The professional should take a second look at the quality of communication around the student and consider whether the ease of understanding is being overestimated by those with normal hearing, or even by the student with hearing loss. The professional should carefully examine whether the student or significant others are minimizing the consequences of the student's hearing loss. The professional should avoid stereotyping situations based upon his or her cultural, and communication preferences and biases. Professionals should honestly assess for themselves how the situation with the student makes them feel. If this is new territory for the professional, it is normal to feel intimidated, uncertain and uncomfortable. To be part of the solution, the professional should explore how their feelings may affect their responses and interventions with this student. Furthermore, the professional should assess the parents' skills and self-confidence about helping their child effectively cope with the hearing loss. The intervening

professional should note how much is the student saying? Notice who is doing the most talking, the student, their family members, or the intervening professional? *After giving some information, stop talking and listen. Give the student the opportunity to express their thoughts and feelings.* Moreover, the professional should appraise how their feelings towards the student's family, audiologist, support educators, or specialized counselors, may influence how he or she is responding to this student.

Assess and intervene.

Obviously, a mismatch between the professional's actions and the student's and/or their significant others' stage of help-seeking readiness will be counterproductive. Instead, assess these persons' stage of readiness for help acceptance. Provide interventions to the teen, their parents, and educational staff that match their readiness stage. Glickman and Gulati (2003) describe these steps prior to the individual's commitment to change as the "pre-treatment" period. They discuss several strategies adaptable to students with hearing loss during this period. They begin with educating the student about the process of change, explaining types of professionals who would work with him or her and the impact of a hearing loss on anyone. They emphasize developing trust, engaging the student in a relationships and the process for making a written contract for change and problem solving. Glickman and Gulati suggest sharing information with the student, as well as defining and offering choices for solutions. A useful technique is giving examples from other student's lives that faced and resolved difficult situations with presenting metaphors, such as climbing through a steep valley, or of a race over hurdles, or of a fork in a road.

Glickman and Gulati's final two strategies can be very powerful: *asking permission and having the student monitor themselves. One of the most powerful ways to open a discussion with the student about a topic they prefer to avoid is to ask their permission before beginning the discussion. It is necessary for the intervening professional to raise the issue because by its nature and the student's early help-seeking stage, make it unlikely that the adolescent would independently raise the issue.* Starting the conversation with a precursor question such as, "Matt, I know this is a subject that you really don't like to discuss, but this is important and I wonder if it would be okay with you if we talk about, for example, your hearing loss, problems you're having with your hearing, or problems you're having in school? Is it okay if we talk about this now?"

Finally, these authors recommend that the intervening professional *suggest various strategies for the student to self-monitor areas of their life that concern them. Ask the student to keep a record of the number of times they:*

(a) didn't understand something someone said and they didn't get clarification, (b) they realized that they misunderstood what someone told them, or (c) they get "sick and tired" of their problems with their hearing using some kind of rating to show the severity of these feelings. This information is very useful to pull the student into the discussion about their willingness to accept help to manage and minimize the negative effects of their hearing loss.

Another useful approach mentioned earlier in Chapter 1 for working with students, parents, and educational staff during the first three stages is motivational interviewing. *Motivational interviewing strategies help people make various behavioral changes* such as recovering from substance abuse, overcoming mental health problems, stopping smoking or to other behavior changes that improve ones' overall well-being (Carmen, 2001; Harvey, 2004). Miller and Rollnick (1991) give the following general principles for utilizing motivational interviewing:

- Express empathy through active listening, using statements that reflect emotions expressed by the student.

- Identify and explore discrepancies between the student's goals or values and their behavior.

- Avoid argument and direct confrontation. Rather emulate Peter Faulk's style in his TV role, "Columbo." For example, drop hints, use "fishing" questions, and probe positively.

- Adjust to the student's resistance by affirming their control, decision-making power over their hearing loss. Do not oppose the student's choices directly.

- Support the beliefs that change is possible and the student is responsible for choosing and carrying out the change. Offer hope and model optimism.

HELPFUL INTERVENTIONS FOR EACH STAGE

Stage 1 interventions: Key people are unaware of the student's hearing loss.

Since most students with hearing loss are educated in regular schools, it is recommended that school administrators, counselors, and nurses' team together to implement the following recommended interventions.

Identify students who may not know they have a hearing loss. The main intervention at this stage is to locate students and make them aware of their hearing loss. The first part is much easier for professionals, obviously, helping students and their family explore then verify the hearing loss can be emotionally difficult.

Based upon the carefully designed studies conducted by the U.S. Census Bureau (2003, 2004), and data reported by the U.S. Office of Special Education Programs (OSEP), it is conservatively estimated that at least 2% of all students in a given high school have a hearing loss. In a high school with 2,400 students, for example, it is reasonable to believe that at least 48 students have some level of hearing loss.

Determine the number of students with hearing loss at your high school. Estimate how many of your students are likely to have a hearing loss. If the number of known students with hearing loss in your high school is significantly below the 2%, efforts to identify students at risk and screening these students are the first step. The school team must cast a wide net around the entire student body in an effort to identify children who unknowingly may have a hearing loss to ensure that they are not misdiagnosed or do not "fall through the cracks" and become at risk for dropping out of high school or college.

Strategies for Identifying Students Who are Unaware of their Hearing Loss:

Identification During Routine In-school Hearing Screenings:

As previously mentioned, most states require that students receive regular hearing screenings at least through elementary school. *School nurses should follow each student identified at risk for hearing loss until an audiologist completes a diagnostic hearing evaluation.* Some districts permit audiologist in their special education unit to perform these evaluations if the student cannot obtain a diagnosis privately.

Screen Students at Risk to Hearing Loss:

Students who exhibit the following characteristics or behaviors which are directly related to the communicative and social consequences of loss of hearing would be prime candidates for a hearing evaluation (American Speech and Hearing Association, 2006):

- Inconsistently responds to sound.
- Language and speech development is delayed.
- Speech is unclear.
- Does not follow verbal instructions well.
- Often says "Huh"?
- Does not respond when called.
- Parents, guardians, school personnel, and other service professionals express concerns about the student's hearing speech, language, or learning abilities.
- A family hearing of any type of hereditary hearing loss.

- *An* ear infection or fluid in the middle ear persisting for at least three months.

Additional indicators of hearing problems are revealed by a self-report test developed by the American Speech and Hearing Association available at http://www.asha.org/. *It would be very helpful if the interviewing professional can ask the student to answer the following 14 questions. Their responses would provide an excellent basis for follow-up questions to learn about the student's feelings about related problems and experiences.* Some questions can be revised to fit better in school-based situations.

The following questions will help you determine if you have a hearing loss and need to have your hearing evaluated:

- Do you have a problem hearing over the telephone?
- Do you hear better in one ear than the other when you are on the telephone?
- Do you have trouble following the conversation with two or more people are talking at the same time?
- Do people complain that you turn the TV volume up too high?
- Do you have to strain to understand conversation?
- Do you have trouble hearing in a noisy background?
- Do you have trouble hearing in restaurants?
- Do you have dizziness, pain, or ringing in your ears?
- Do you find yourself asking people to repeat themselves?
- Do family members or co-workers remark about your missing what has been said?
- Do many people you talk to seem to mumble (or not speak clearly)?
- Do you misunderstand what others are saying and respond inappropriately?
- Do you have trouble understanding the speech of women and children?
- Do people get annoyed because you misunderstand what they say?

If the respondent answers "yes" to more than two of these questions, they should have their hearing tested by an audiologist. An online audiologist referral service is available at the American Speech-Language-Hearing Association website (See Resources Section). *Sometimes, the student is so unaware of the difficulties their hearing loss causes them, that using a self-test that has a version to be completed by the student's parents, friends, or siblings can provide evidence for discrepancies with the student's own*

perceptions. The Self-Assessment of Communication for Adolescents and the Significant Others Assessment of Communication for Adolescents are excellent evaluative tools (Elkayam & English, 2003, English, 1997) (See Resources).

Disseminate risk factor information to key school personnel annually and online Preferably this information will be highlighted annually during in-service training and available online. In particular, *middle and high school counselors, principals, assistant principals and special education directors should be trained to routinely rule out an undiagnosed hearing loss when children are referred to them for intervention due to the risk factors noted in the previous section.* This information and training should also be made available to the members of the National Association of State Directors of Special Education (NASDSE, http://www.nasdse.org/) and the National Association of Special Education Teachers (NASET, http://www.naset.org/) so children exhibiting these risk factors can be identified and routinely referred for hearing screening.

Refer the student for an audiological evaluation either through the school district's special education unit or to an available audiologist.

Support the student and parents' follow through with audiological evaluation. School administrators, counselors, and nurses should work together to ensure that:

- All students identified with risk factors have their hearing screened.
- All students who failed hearing screenings and whose school health records lack documentation of follow through with diagnostic hearing evaluations contain evidence that the student and their family have been advised about the need for visiting with an audiologist for evaluation and requesting that the family send in the evaluation results to the school nurse.

Stage 2 interventions: Student, parents, and the educational staff are aware of the student's hearing loss, but not aware that help is available.

The main intervention at this stage is regularly providing accurate information about help available to the student. Students and significant others at this stage know about the hearing loss, but, may not realize that it can negatively impact the student's high school performance or that help is available through their school district and possibly through their health insurance benefits. When this information is provided to the student and their family they often feel relieved since an alternate cause of the teen's behavioral, academic, social, and emotional problems is considered along

with new solutions, rather than misattributing these problems to other factors.

Getting started: Many times an excellent conversation starter with the student is to ask what they hope their future career and personal life will look like at age 25 (Punch, Creed, & Hyde, 2006). Put this on paper using hand-drawn pictures and words, labeling the paper, " _(insert student's name)'s Hopes and Dreams." It is preferable to have the student do this. The intervening professional should ask where the student hopes to be living, location, kind of home, with whom, what they would like to have in their home, what kind of job they hope to have, whether they see themselves as married or single, what they hope to do in their free time and social time with friends and family. From there, ask what they think it will take for them to achieve their dreams by age 25 and if they have any concerns that their hearing problem might interfere with them realizing their dream.

In a study involving a written survey of 65 high school students with hearing loss and 12 follow-up interviews, Punch, Creed and Hyde (2006) reported that these students perceived the greatest potential barrier to their goals was lack of understanding about their hearing loss by other people. Further, these authors found that most of these students were unaware of effective communication strategies or accommodations that hard of hearing adults use in employment. Some of these students even admitted to limiting themselves to career goals that they felt could be accomplished by an individual with poor hearing. A practical implication of this research is that after a student shares their concerns about barriers to their hopes and dreams, the intervening professional can inform them about available resources to help achieve their dreams.

Support the student and parents' follow-up with audiological recommendations: School administrators, counselors, and nurses should work together to ensure that:

- All diagnosed students who have not followed through with the audiologist's recommendations have their health records flagged to highlight the child's hearing loss if she or he displays any behavioral, social, or academic problems.
- The child's audiological status should be conveyed to all of the student's teachers, school administrators, and counselors so the youth can be monitored and the impact of their untreated hearing loss can be considered if the child experiences problems in school.

Inform key people about hearing loss and resources available to students with hearing loss: Blair, EuDaly, and Von Almen Benson (1999) investigated how well 274 K–12 grade teachers in Georgia understood the needs of their mainstreamed students with hearing loss without special

education support services in regular classes. These researchers found major gaps among what these teachers understood about their student's hearing loss. Generally, the elementary teachers knew which of their students had an identified hearing loss. However, only half of the middle school teachers and *only a quarter of high school teachers knew about their students' hearing loss* despite the fact that each teacher having previously received a letter and a copy of their student's audiological report. This study also looked at how teachers received information about their student's hearing loss and how to support any special needs their student might have. Only 57% of the teachers recalled receiving a letter about their student's hearing loss. About 39% of the teachers reported receiving information from the audiological report and 29% received information from the student's parent. *Only 12% of teachers learned about the student's hearing loss from the student themselves, implying that students with hearing loss are not informing their teachers and educational support staff about their hearing loss, which is consistent with other studies focusing on students' unwillingness to reveal their hearing status* (Israelite, Ower, & Goldstein, 2002; Kent, 2003).

Blair, EuDaly and Von Almen Benson (1999) reported that teachers obtained information about their student with hearing loss from multiple sources: a form letter (28%), the child's parents (17%), speech-language evaluation (16%), and audiological report (13%). Only half of the teachers felt the audiological report was helpful to them. Teachers suggested that layman's terms be used, reports are short and concise, and offer practical suggestions customized for their student. *Generally, high school teachers knew much less than elementary school teachers about their student's hearing loss and preferred to get information about the child from familiar information sources. These authors recommend that each school designate a staff resource person on hearing loss and that contact between this resource person and high school teachers occur at least quarterly. The school nurse, counselors, and one or two administrative staff should work together to provide information to the student's teachers, becoming <u>the core staff</u>, with regular access to student educational and health records, building their knowledge about hearing loss, as well as accommodating and teaching students with hearing loss over time.*

Section 504 plans, IDEA and Individual Educational Plans (IEP). At least twice a year, key school personnel should meet the adolescent and inform his or her parents that hearing loss can negatively impact the student's academic performance, behavior, social relationships and emotional state. Additionally tell the parents that a hearing loss can be managed to minimize any negative effects. In particular, the following information should be provided:

- Audiologists can help them understand the student's hearing loss and what this means he or she can hear in various settings.

- Audiologists can recommend assistive technology that can improve the student's ability to understand what others are saying in a variety of situations in and out of school.

- Students, teachers, family members and other significant others can use effective communication strategies, and listening environments, including preferential seating, visual cues, and receiving class notes from a classmate or having a note taker. (See Resources section).

- Several federal laws entitle students to reasonable accommodations and education supports if needed: Section 504 of the 1973 Rehabilitation Act, the Americans with Disabilities Act (ADA) and the Individuals with Disabilities Education Act (IDEA).

- Reasonable accommodations can involve loaning the student assistive technology.

- Students who meet IDEA requirements for special education due to their hearing loss can obtain educational supports or placement into educational settings specially designed for students with hearing loss through an IEP process.

- Students should be fully aware of and understand the implications of their academic achievement scores specifically in reading comprehension and math. This is a reality check, and a good way to identify poorly prepared students. Compare these scores to their IQ (potential). If gaps between the child's potential, grade level, and academic achievement scores exist, the child's hearing loss is likely negatively effecting the student's academic attainments.

- Students with an IEP, who have been poorly prepared for roles after high school are eligible to stay in school until age 21. They should be encouraged to stay and not graduate early without exiting academic skills adequate for future activities. To exemplify this point, California students are required to pass an exit exam in order to be awarded a high school diploma. Many high school students with hearing loss from California are failing these exit exams and therefore, lack the credentials to enter postsecondary education. These students must earn a GED through adult education programs before they can enroll in college. Students with an IEP who will not enroll in postsecondary education can remain in high school through age 21 to develop life and employment skills that prepare them for the transition to adult life.

- By the start of high school, students and their families need to learn the differences between IDEA (entitlement) in preschool through 12th grade education versus the ADA in the postsecondary settings. (See Chapter 5).

- By the 11th grade students should meet with their vocational rehabilitation counselor to begin planning a career goal and learn the ways in which VR can and cannot assist them.
- Obviously school personnel should assist the student and family in obtaining the help necessary when these persons are ready to obtaining treatment for the student's hearing loss.
- For high-achieving teens, having them and their parents observe and recognize the amount of energy expended, work performed, and coping strategies used to maintain their high academic performance can be helpful.

Stage 3 interventions: Key people are aware of the student's hearing loss and available help, but are not ready to accept professional help.

At this stage, acceptance and respect for the student and their family's decision not to pursue professional help should be respected as long as the student is able to function adequately at home and in school. However, if the student cannot adequately function in one or more significant settings, school personnel need to decide whether the child's parents, educational support staff, and audiologist can help the student through the difficulties to make needed changes in within 1–6 months. If not, it may appropriate for the family to enlist the help of a qualified mental health professional specialist.

Sometimes parents or other significant people need to be the focus of interventions. At times, parents or significant others involved with the student would themselves benefit from focused interventions since they are in denial of or minimize the impact of the hearing loss. In these cases, the intervening professional can follow the recommendations below.

Intervening when the student is functioning adequately across settings. Information sharing should continue with school personnel, the student, and their family at least twice a year. Involved school personnel involved at this stage should be informed of the student's hearing loss and trained in strategies for successfully communicating and teaching students with hearing loss by the core staff: school nurse, counselor, 1–2 administrative staff. Written and face-to-face communication is recommended methods to inform the students' teachers and other significant people.

These core staff should also be the main contact with the student and their family. It is important that school personnel, parents, and anyone supporting the targeted student continues learning about current advances in audiological habilitation. To achieve the goal for the student to better understand their hearing loss and be willing to better understand assistive technology and accommodations available, adults who are helping the student, need to first reach this understanding for themselves. This does not

mean that a school counselor, regular or specialized teacher, or school administrators replace the audiologist as the student and family's "expert consultant." However*, in order to be an effective "front line intervener" with the student, the educational professional needs to have at least the same understanding about the student's hearing loss, accommodations and assistive technology that we hope the student will eventually attain.* It is this professional who is best positioned to remind the student that their hearing loss could be managed differently and appropriately, it would likely make their communication and learning in school easier and more reliable for them, if and when they would like this information and help.

Follow-up with Audiologist and Related Actions. Intervening educational professionals should use each student's audiogram and audiological records (See Chapter 7) and minimally find out: *If there are significant differences between what the audiologist or audiological records and the student, family, and other significant others tell you about the student's hearing loss and audiological recommendations, collaboration is required with their audiologist.* Most audiologists are willing, with parental permission, to cooperate with "front line" school personnel encouraging the student's readiness to accept help. *If however, the student and/or their family are disinterested in receiving help, this probably indicates that these persons' grief over the hearing loss is unresolved.* The family and student should be exposed to opportunities below to learn more about how young persons live their lives fully without allowing their hearing loss to interfere.

At the same time, it is essential not to badger these students about using communication devices, because this can further entrench their resistance to accept help. *Rather, it is important to maintain a relationship with the student and their parents and periodically inform them that the child's hearing loss imposes challenges. Moreover, although they endure these challenges unassisted, help is available when they are ready to accept it.* It helps to respect the student's choice not to pursue help and leave on a positive note such as, "You're welcomed back any time in the future, if you'd like to hear more, or if you reconsider using communications devices such as hearing aids again." In this situation, most young individuals eventually return, ready to accept help to enhance communication, social, employment, and other key life experiences. It is very crucial not to struggle with these students as they explore their self-identity as a person with a hearing loss, but rather be an approachable and reliable source of information to them.

<u>Use communication assessment tools to start discussion</u>. Using self and significant others' assessments of the student's daily communication skills can be effective tools to begin discussion with the student and their parents

about the negative impact of the hearing loss. The Self Assessment of Communication for Adolescents (SAC – A) and the Significant Others' Assessment of Communication for Adolescents (SOAC – A) are excellent instruments to facilitate counseling (Elkayam & English, 2003, English, 1997). The student should be asked to complete the SAC – A and their parents, teachers, best friends and siblings should be asked to complete the SOAC – A prior to meeting with the student and their family. Any differences in the responses between the student and his or her significant others can be discussed with these persons present as an effective conversation starter about the student's untreated hearing loss.

Meeting other teens and adult role models—*Identify and "grow your own" local resources*. *At this stage, it is very important for the student and their parents to meet other students and adult role models living effectively with their hearing loss. Specialized* education personnel can identify such individuals. Adult role models could be sought through the state's commission or office for deaf and hard of hearing individuals, vocational rehabilitation agency, and or the nearby chapter of the Hearing Loss Association of America (formerly known as the Self Help for Hard of Hearing People). Many find identifying successful peers and adult role models online as a convenient and less intimidating way to start this learning process. (See "Achieving Goals" http://www.netac.rit.edu/goals/menu.html). This is an excellent resource where many of the adults listed share their email address and welcome contact from hard of hearing or deaf teens and their families. For students with hearing loss in rural communities, connection to other successful peers and mentors can be supported by the specialized staff available through the school district's special education department through email, instant messaging (IM), chat software, and video phones (VP).

Summer camp opportunities: *to meet other high school students with hearing loss are excellent venues to meet similar peers and should be encouraged.* There are a multitude of summer camp opportunities in each state and summer camps that attract students with hearing loss nationally to focus on a particular interest or purpose such as leadership, prepare for college, subject specific academic excellence, or sports. An updated listing of summer camp opportunities can be found annually at the Laurent Clerc National Deaf Education Center (http://clerccenter.gallaudet.edu/ search "summer camps")**,** Clarke Mainstream Center, and the Alexander Graham Bell Association (AG Bell) **websites** (See Resources).

Informative autobiographical books and websites: *can be helpful at this stage for students, parents and the other significant individuals to vicariously learn what life is like for other peers and adults achieve their personal and*

lifetime dreams. Recommended resources and readings for educators, school counselors, parents, and teens are listed in the Resources section.

Intervening when the student is <u>not</u> functioning well in one or more important settings (home, school, or social-emotional-behavioral parts of their life). The student in this category may demonstrate:

- Prolonged denial of hearing loss and ineffective coping strategies

- Delayed, unresolved grief and acceptance of the hearing loss by student, parent, or other significant people such as teachers, coaches, or counselors

- Minimization of communication problems, such as misunderstandings, overestimated ability to hear, and underestimation of what is missed by the student by all involved (student, parents, teachers, siblings, peers)

- Inability to adapt to demands of a new communication environment

- Unproductive communication between the student and family members, teachers, and peers.

- Student will not use recommended hearing aids or assistive technology.

- One or two grade levels behind peers and parents just beginning to understand its possible relationship to the student's hearing loss which commonly occurs between 4th and 9th grades.

- Important people misattribute problems caused by the student's unmanaged hearing loss to inherent character, behavioral, or cognitive problems in the student. This can lead to significant poor self-esteem and learned helplessness.

With the above thoughts in mind, responsible adults should be alert for attitudes and behaviors that may be exhibited by children with hearing loss. These include being distrustful, inattentive, stubborn, obsessive, or compulsive. Related emotions include prolonged display of anxieties, withdrawal, and shyness. Additional problems may include intense anger and physical aggression during fits of anger. Poor attendance at school is another concern. *It should be noted that these characteristics are not associated only with hearing loss, but can be symptoms of other disorders in children.* Often these symptoms begin as normal responses to coping with a hearing loss. When an individual is not effectively managing their hearing loss, these symptoms can increase and become problematic. Very often, many of these attitudes and behaviors can be corrected when the student <u>and</u> adults in such a student's life begin to consistently use recommended accommodations, assistive technology and effective communication strategies, <u>and</u> the student

begins to consistently uses recommended hearing technology. In these cases, improvements to these symptoms can take several months to a few years to be achieved as the student and the adults in their lives learn new ways to effectively manage problems caused by the student's hearing loss. In some cases, obtaining services from a mental health professional that specializes in working with individuals with hearing loss is necessary to bring efficient and timely resolution of both underlying mental health problems and these unhealthy coping strategies that develop when hearing loss is ignored and untreated.

When a student has any difficulty functioning, it is imperative to more intensively work with both the student and their parents to explore the reasons for and against keeping the current situation. It is important at this time to ask the student and his or her family to describe their hopes for the adolescent's current and future dreams and to inform them of the realistic hope for a positive outcome. If the student and family are willing, it would help to discuss the advantages and disadvantages of making changes to reduce the negative effects of hearing loss and explore these persons' major fears about these changes. Providing confidence and examples of hope is also essential. Asking these individuals to assess the distastefulness of the current situation and their willingness to change will determine the pace of interventions. Emphasize what the student can control and decisions he or she has or can make.

This is likely the most difficult stage for both the student and the professional. Students, are at highest risk for depression and dropping out of high school. For professionals, it is difficult to balance between the need to maintain a trusting, positive relationship and the need to restrain the urge to "want to fix" the student's situation. It is imperative that the student be evaluated for social isolation. It is especially important to be aware of urban teens who have the hardest time coping with their hearing loss on top of the preexisting challenges of inner city life. Teens with progressive and late-onset hearing loss may be at particular risk for dropping out of school and developing serious major depression. They may turn to alcohol or drug abuse or dependence to self-medicate an underlying depression.

Most children cannot easily accept their own hearing loss until their parents do first. This changes to some extent when the child reaches adolescence. As the adolescent becomes more independent core staff have a chance to help her or him deal with feelings about their hearing loss whether or not their parents have accepted it. Obviously, this process goes much more smoothly if their parents initiate acceptance of the hearing loss.

Defining "mental health" and "mental illness." **It can be informative to define and contrast "mental health" and "mental health problems."**

Mental health lies on a continuum between "mental wellness" and "mental illness." "Mental health" is successful mental functioning, productive activities, fulfilling relationships with other people and adaptability to change and adversity. While "mental illness" occurs when thinking, moods, or behavior are changed by distress, impaired functioning, thinking and activity, and unsatisfactory relationships.(U.S. Department of Health and Human Services, 1999). Students who exhibit one or more problems listed above may have co-occurring mental health problems or experience mental illness resulting from extended grief over their hearing loss and the complicated challenges associated with, unmanaged hearing loss. *It is likewise possible that a student has a mental health problem or mental illness that would be present whether or not the teen had a hearing loss.*

Basic mental health intervention with students who are hard of hearing.
The following basic mental health interventions can be done by a caring adult or professional involved with the student.

- Increase access to meaningful communication through accommodations and assistive technology as much as the student is willing to try (Chapters 5–8).
- Increase the quality and quantity of student's communication with their peers, teachers, and other educational staff by improving the listening environment for them in their classrooms and at lunch by offering a quiet place for them to eat lunch with a few friends.
- Provide daily morning and afternoon announcements in writing, online, through other visual information media, written schedules, and calendars.
- Offer note taking, speech-to text services and other appropriate communication accommodations.
- Inform and train school personnel about the above accommodations and advocate for their use with school personnel once the student agrees to try them.
- Specifically teach the student needed social skills for high school.
- Specifically teach language for emotions. Model and encourage using language to express emotions ("Use your words, not your fists.").
- Refer the student to the school counseling services.
- Obtain support services for student and family from the hearing support or deaf education program for your school district.
- Refer to a counselor outside of school.

When is the right time to seek outside professional help? *The latest time to refer a student to an outside professional is when the student's behavior or emotional state interferes with their ability to learn or function in school or at home, or is not improving with the your attempts to use the above interventions.* Oftentimes, making a referral to an outside specialist is complex for school personnel for several reasons. First, just suggesting this to the student and their family can be an accomplishment in itself, without making them feel defensive about receiving professional mental health help. Suggestions for dealing with this are offered below. Second, some school personnel feel subtle pressure or explicit direction from their schools and districts to NOT refer students and their families because of some fear for the school or district being potentially responsible for the cost of the referred service. This is a practical reality in the era of vastly declining financial support for education in general. The second barrier is extremely frustrating to deal with when a student needs outside professional mental health help. *Most children have health insurance that will pay for mental health services. If for some reason the child does not have health insurance, he or she is eligible for state programs that offer affordable health insurance to all children.* The U.S. Department of Health and Human Services (DHHS) provides contact information for these programs in each state online at http://www.insurekidsnow.gov/ or by phone by calling 1-877-543-7669 by voice. Public mental health services specifically designed to serve people with hearing loss are becoming more prevalent nationally (See Resources).

Why NOT wait before referring to outside professional help. If schools procrastinate in referring a dysfunctional student for outside professional help, eventually those involved become burned out, including the student. Often people need respite before work can be done. Further, the student's problems can become even more serious. Why put the student, his or her educational staff, family and yourself through this? Most often it can take one to six months to get outside professional services started due to the scarcity of qualified providers and getting approval from health insurance companies.

Finding mental health specialists in hearing loss. In either case, *it is best to refer the student for a behavioral health assessment and counseling from a local, outpatient mental health professional experienced in working with children with hearing loss and their families.* Frankly, such mental health specialists are still quite scarce, but usually can be found in many communities and states. The first place to seek such a referral is to contact the deaf and hearing support program supporting your school district. It's wise to cast a wide net when seeking out a specialized professional. This can be done by also contacting your state's office or commission for deaf and hard of hearing individuals, and specialized

vocational rehabilitation counselors (See Chapter 4). National directories of qualified mental health and substance abuse professionals who specialize in working with deaf and hard of hearing individuals are available on the Gallaudet Research Institute's and the Rochester Institute of Technology's websites (See Resources)

How to suggest seeking outside help without seeming to blame the student or the family.

1. Honestly assess and change your own attitudes towards mental health problems and mental illness. It just happens to some people like diabetes and allergies just happens to some people.

2. Provide well-targeted information to dispel negative attitudes towards mental health problems and seeking professional help. Help normalize the process of seeking this help. Just as the family seeks medical specialists to be their "expert consultants" with regard to their child's hearing loss, seeing mental health specialist in hearing loss is just another "expert consultant."

3. Collaborate with parents and mental health providers in the school and community and with supporting the student's recovery to mental wellness.

4. All key persons must take responsibility for helping the student and family obtain services and make positive changes.

5. Acknowledge the family's love for their child and their desire to help their child positively solve his or her problems.

When doing these five steps, the intervening professional should actively listen to the concerns expressed by the parents, offer support and encouragement. Frequently, the best intervention at this point is to be quiet and listen to the family. By the time the family agrees to talk to a counselor, they need to vent and have their grief acknowledged. Often, parents are comforted when the professional acknowledges the parents' love for their child and affirms the parent's deep wish that their child did not have the hearing problem, and if it were possible, the parents would take this condition on in their child's place. During such discussions, it is helpful to keep in mind the principles of "**ARCH**" (Kazak, Simms, & Rourke, 2002):

- **Acceptance:** of students, parents, families and staff as they are.
- **Respect:** the student and family's desire and ability to bring the situation to a positive
- solution.

- **Curiosity:** ask questions about how the student and family managed difficulties before. What worked? What didn't?
- **Honesty:** emphasizes that we use our honest reactions, be ourselves with students and families, and express our sincere concern, commitment, encouragement, and belief that positive change can happen.

Preparing for Transition to Life after High School

STAGE 4 INTERVENTIONS: AWARE PROBLEM EXISTS AND HELP IS AVAILABLE. INTERESTED AND READY TO ACCEPT PROFESSIONAL HELP.

This is the stage we hope to have students at as early in high school as possible. *It is important to emphasize to these students that obtaining **and completing** academic or vocational postsecondary training **is essential** to obtaining a livable future income.* Employers are looking for applicants with strong skills for teamwork, multitasking, communication skills, utilizing changing technologies, flexibility and to be a continuous learner (Punch, Hyde, & Creed, 2004). Professionals carefully indicate to the student and their family that this information exemplifies the major challenges post-secondary education in particular for students with hearing loss. Generally, people are uninformed about federal laws that provide reasonable accommodations that make career training in college much easier for these students.

Solutions for Successful Transitioning to Postsecondary Education

These recommended interventions for high school students for successful transitioning postsecondary training programs:

Create regular opportunities to meet peers in support groups.

Schools with students with hearing loss without IDEA support services are urged to contact the local deaf education program to establish peer support groups. A counselor or teacher who specializes in working with these students should facilitate such group's activities. Students who do not interact with similar peers should be encouraged to attend these groups to see that they are not the only teens with hearing loss. These groups can provide opportunities to meet successful, hard of hearing adults and college graduates. Such activities offer invaluable social outlets and psycho-educational support. For example, students can learn tips for socialization such as instant messaging, chat, text pagers, or finding a place to talk with

good lighting. Through these meetings, teens can be matched to adult role model with hearing loss to serve as a mentor for the student.

Effectively managing auditory, visual, and mental fatigue.

Auditory, visual and mental fatigue sometimes escalates, reaching "unbearable levels" for many high school students. Such a student must work to concentrate, listen to hear something, figure out what is heard, then decide what to do with the information once they understand it, while auditory input almost never stops. Another factor that contributes to this fatigue is the volume and speed of new information in a high school classroom tends to increase significantly over middle school. Moreover, high school teachers tend to encourage even more frequent class discussion. *Group discussions are extremely difficult for most hard of hearing students to follow.* Furthermore, these students change classrooms several times a day. *Typically, the classroom acoustics of most high school learning and meeting environments are fairly poor. Thus, handwritten or computerized note taking may be critical to the student's success.* If the student has experience with these supports in high school, they will naturally be more effective users of these services in college.

Students need to be trained on effectively managing their auditory fatigue. Most students unknowingly use "zoning out" as a coping strategy, which occurs when a student stops paying attention to what is happening around him or her and let their thoughts wander. "Zoning out" can provide respite for auditory and mental fatigue. Obviously, zoning out during test or homework instructions, or instruction on new or difficult topics can be detrimental. Students can be taught to make good decisions about when to use "zoning out" for respite and how to identify visual cues to return to paying attention. Handouts for students to promote this discussion are in the Resource section.

Actively develop and practice student self-advocacy skills.

Middle and high school professionals are urged to increase the self-advocacy skills of students with hearing loss. Self-monitoring skills are the pinnacle of any training effort, since a student with these skills can identify their own problems and solutions throughout their life. Precollege self-advocacy training is important because it prepares the student to take initiatives to obtain accommodations in college. In addition, this training prepares the student to more readily accept the major difference in the postsecondary setting, where responsibility for requesting accommodations shifts entirely to the student. *Parents and key educational staff should transfer this responsibility for obtaining needed accommodations to the student,*

preferably, at the start of the ninth grade while simultaneously developing the student's self-advocacy skills.

English (1997) provides an excellent curriculum to train high school students about their legal rights to help them successfully prepare and transition to postsecondary training and employment. The curriculum discusses the differences in their rights between high school and college and how to advocate for themselves in successive educational settings. Students must learn to self-advocate and be informed otherwise it is very unlikely that they will receive college support services since these accommodations are not an entitlement or parent driven as they are during K–12 schooling under IDEA.

Parents need help with transitioning too.

Parents are generally unprepared for transition and the immediate loss of the precollege services and "safety net" for their child to which they have become accustomed. It is important for parents and teens to stay abreast of the student's academic achievement and be connected to vocational rehabilitation, and college access services. Parents need to clearly understand that these services are not entitlements and postsecondary programs will deal directly with their hard of hearing offspring. Thus, it is imperative that these high school students be encouraged to inform their school support staff, parents, and teachers of what they need to succeed in high school. This provides opportunities to practice self-advocacy skills before commencing postsecondary training (see Chapter 5). Unfortunately, most hard of hearing college students are unaware of accommodations and services they need (Schroedel, Kelley, & Conway, 2002, 2003). Actions are needed to remediate this widespread lack of knowledge.

Introduce the student and family to assistive technology and common accommodations.

Identify assistive technology centers in your community that make their equipment available for review by those needing it. Demonstrate sample devices and services used by postsecondary students with hearing loss. *If available, invite postsecondary students to share their diverse experiences with these various devices and services. Allow less experienced students and their families to use the equipment and services so they can learn the utility of them.*

Arrange a visit to a local college's student access center.

Ask the Center Coordinator to inform students about the support services they offer to their students with hearing loss and how students should request assistive technology or accommodations. **College service professionals vary widely in their expertise in supporting the**

accommodation needs of these students. Some may have experience with signing deaf students and interpreting services, but few will have experience helpful to non-signing hard of hearing college students. In this latter case, the reader should review Chapter 5 and appropriate topics in the Resources section.

Introduce the student and their family to vocational rehabilitation and PEPNet services.

High school students with hearing loss need to be orientated to services available from their local vocational rehabilitation office and PEPNet services online. This introduction should be extended until they are confident in pursuing these invaluable transition resources independently.

Invite the specialized vocational rehabilitation (VR) counselor to the student's individual education plan (IEP) meeting.

When children have a disability that interferes significantly with their capacities to learn in a regular classroom, they are entitled to educational and communication accommodation supports. *At least annually, an interdisciplinary team including the child and their parents, should develop and update an individual education plan (IEP) that outlines the supports to be used throughout the school year. Section 504 plans, on the other hand, are developed for students who can progress adequately in regular education, but only with certain communication accommodations in place.* These students are guaranteed access to regular education through both Section 504 of the 1973 Rehabilitation Act and Title III of the Americans with Disabilities Act (ADA). *A VR counselor should become involved in a student's IEP or 504 process for academic and career planning by the ninth grade.* This is not the case in all states. For example, in Pennsylvania, VR counselors must wait until the student reaches the eleventh grade to initially meet with him or her, which can be too late. By participating earlier in student's life, the specialized VR counselor can communicate information on various postsecondary options, such as (see Chapter 4 for a more detailed discussion of State VR agency services):

- Educational requirements for institutions the student may be considering.
- Academic achievement requirements for various programs.
- The potential range of training options such as vocational schools, technical institutes, community and junior colleges, or universities.
- Positive behaviors and skills for these students to be successful in college.

Seek summer and part-time employment opportunities.

These opportunities provide hard of hearing adolescents with valuable real-world work experiences to learn about various careers and employer expectations. Optimally, these young wage earners should be placed at work sites where: (a) the employer is knowledgeable about the unique workplace accommodations these employees need and (b) a coworker or other work associate can mentor these teenaged workers. In turn, these workers should be assertive to improve their interpersonal communication and self-advocacy skills so that work colleagues understand their communication needs.

Successful High School Students as Role Models in Regular Education

Students and their parents can benefit from learning how their successful peers do so well in high school. Luckner and Muir (2001) interviewed 20 "successful" students with severe to profound hearing loss who attended regular schools who were nominated by their specialized teachers. These adolescents used a wide diversity of communication modalities. Their specialized and regular teachers as well as parents were interviewed. Even though this study focuses only on youth with severe or profound hearing loss and given the paucity of similar research on hard of hearing students, these research results are generally applicable to students with mild and moderate hearing loss.

These students attributed their success to working hard, paying attention, and asking questions when they didn't understand something. They viewed themselves as smart and having good communication and reading skills. Students acknowledged that their families provided constant encouragement, helped with homework, and set high standards for them. Many reported having friends in school who assisted as needed. Most indicated that they were using their hearing aids, FM systems, captioning, computers, and text telecommunication devices such as pagers and cell phones. These students were actively involved in sports both in and out of school.

Parents interviewed in the study credited their child's success partly to early identification and intervention, in addition to a lifelong emphasis on reading. They also recognized the contributions of skilled and caring professionals. Some pointed to their child's perseverance and involvement in extracurricular activities as other factors that led to academic success. These parents urged other parents not to allow their child's hearing loss to interfere with their original plans and dreams for their child. They stressed the importance of accepting their child's hearing loss or risk having the child endure a life-long struggle. These experienced parents recommended that parents become as informed as possible on various issues pertinent to children with hearing loss. They also advised other parents to regularly teach and communicate with them and help their child develop strong reading comprehension skills and a affinity for reading. Finally, parents suggest that parents should worry less, relax more and have more fun with their child.

The specialized educators identified additional factors that contributed to their students' success. Teachers punctuated the importance of a supportive family for the child. Teachers noted that their successful

students were determined, outgoing, and highly motivated. Teachers observed that these model students set high expectations and standards for themselves, and demonstrated as strong desire to be independent. Teachers reported that these high achievers had strong reading comprehension, organizational and study skills. They added that these teens used self-advocacy skills regularly. They described these students as competent in making and keeping friends.

These teachers then described the wide range of educational supports, accommodations, and assistive technologies their highly successful students used. Students benefited from pre- and post-teaching of material covered in their regular education classes by their specialized teachers to ensure comprehension and correct gaps in understanding. By contrast, specialized educators provided these students reinforced support around major concepts and vocabulary presented in their regular education classes. Teachers credited collaboration between specialized teachers, parents, and regular teachers as an important source of the child's success. The collaboration included regular consultation and training by specialists for regular teachers on strategies that enhance the student's learning. These specialists also regularly evaluated the listening environment of each of the student's classrooms. Teachers report that students used auxiliary aides including, professional note takers, tutors, and interpreters. Students also used accommodations of preferential seating in the classroom and extended test taking time. Teachers add that successful students also used captioning, FM systems, and overhead projectors.

Conclusions

Completion of postsecondary education frequently builds upon a student's successful academic and personal experiences during high school. For students with hearing loss, healthy adjustment to hearing loss is a key developmental process that occurs continuously over a lifetime, and in particular, every time a person encounters a new setting and developmental life stage. Understanding the evolutionary nature of psycho-social adjustment to hearing loss, especially the range of this adjustment seen in high school students, can help vocational rehabilitation counselors and student access center personnel evaluate where students are in this process upon entry to college.

GENERAL PROBLEMS

The vast majority of students with hearing loss (94%) are educated in regular schools and do not receive any special educational support services.

Frequently, their hearing loss is unrecognized and inadequately accommodated. Many have a mild hearing loss or hearing loss in only one ear. Yet, even a mild or unilateral hearing loss can be quite significant for a student. Approximately 37% of children with minimal hearing losses fail at least one grade and many have significantly more problems with their behavior, self-esteem, and social skills compared to children with normal hearing. An evaluation of 19 studies indicated that between 22% and 35% of children with unilateral hearing loss failed at least one grade and that 41% receive some educational support.

Effects of the hearing loss are often "misattributed" to negative characteristics of the students, or to teachers, parents, family or friends who "just don't understand" them. Few of these children have hearing aids and most have difficulties in understanding group conversations or at least some classroom instruction, particularly when background noise is present. Moreover, their emotional and psychological adjustment many times is especially difficult.

Although most will be promoted each year, some have significant gaps in their basic reading comprehension and writing skills. In general, these students are completely unaware of available vocational rehabilitation and postsecondary access services. Many of these students are at high risk for dropping out of high school or college before graduation due to the significantly increased burden they face just to comprehend their teachers and questions and discussions of their classmates.

FOUR STAGES OF READINESS TO ACCEPT HELP SUMMARIZED

Most students go through four stages on the way to becoming ready to accept help. In stage 1, a student is not aware of their hearing loss or of the likelihood that it contributes to problems with school, relationships, and their emotional state. The main intervention at this stage is to identify these students and alert them to it. Middle and high school counselors and administrators should be trained to routinely look for and rule out an undiagnosed hearing loss when children are referred for intervention due to inattentiveness, impulsiveness, academic achievement delays, poor grades or attendance.

In stage 2, a student is aware they have difficulty hearing, but do not know that accommodations exist that can improve their accuracy and ease of communication, which in turn can enhance their academic achievement, social relationships, self-esteem, and emotional state. The main intervention at this stage is providing accurate information about help available at regular intervals to the student and their family. Generally, high school teachers

know much less than elementary school teachers about their students' hearing loss and prefer to become more knowledgeable about the child from familiar information sources. Thus, the school nurse, counselors, and one or two administrative staff need to team together to share the responsibility for regularly informing the student's teachers. These core staff will then have regular access to student educational and health records, while building their knowledge and understanding about hearing loss while accommodating and teaching targeted students.

In stage 3, students often are actively grieving their hearing loss. They know they have a hearing loss and are aware of available help, but, are not interested or ready to receive it. Very often, children who are stuck, have parents who are likewise stuck. These parents are immobilized by their grief over the hearing loss and motivated by their longstanding, often desperate hope that their child's hearing loss will never interfere with their child's "normal" development, no matter what the cost to the child or family.

At this stage, acceptance and respect for the student or their family's decision not to pursue professional help should be offered as long as the student is able to function adequately at home and in school. Maintaining an open and trusting relationship with the student is paramount so they have a trusted source to which to turn when they are ready for help. At the same time, parents and core staff supporting the student need to consistently and closely monitor the child to ensure she or he does not academically fall behind, withdraw socially or experience serious emotional problems.

This chapter suggested information to prepare intervening professionals for this work and offered multiple strategies for assisting students who are functioning adequately or poorly through this most difficult stage for students, parents, and professionals. Because children with unmanaged hearing loss are at high risk for behavioral health problems, the chapter provides definitions of "mental health" and "mental illness." Basic mental health interventions for any caring educator involved with students with hearing loss were described. Recommendations were provided for making appropriate, timely referrals to outside mental health professionals.

In stage 4, students are aware of their hearing loss and available help, and are interested and ready to accept professional help. This is the stage we hope to help these students function on as early as possible. It is important to emphasize to these students that obtaining and completing postsecondary training is essential to obtaining a livable future income. The chapter concludes with describing many solutions for high school staff, parents, and students to successfully make the transition to postsecondary education. The four-stage framework and interventions suggested can be extrapolated to postsecondary students by taking a broader perspective. In place of the "core

team" for supporting students through high school described earlier, a vocational rehabilitation counselor, academic advisor, student access specialist and general counselor can become the key personnel. The significant differences at the postsecondary level include a shift from shared responsibility and involvement by both the student and their parents to the college student taking on full responsibility for her or his adjustment to hearing loss and campus challenges. Another major shift is from legally entitled education and supports available in high school through the Individuals with Disabilities Education Act (IDEA) to voluntary education with accommodations and educational supports required upon the postsecondary student's request and demonstrated need through the Americans with Disabilities Act (ADA).

Chapter Four

Vocational Rehabilitation Services and Hard of Hearing or Late-Deafened College Students

Patty Conway, Pat Tomlinson, Tim Beatty, and Heidi Adams

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Abstract

State Vocational Rehabilitation agencies vary widely related to their knowledge and skills in providing services to individuals who are hard or hearing or late-deafened, including students. This chapter will assist these agencies and postsecondary education programs to comply with the Rehabilitation Act mandate as it relates to consumers who are hard of hearing and late-deafened. The chapter will discuss the need for VR and postsecondary staff who understand the diverse and significant needs of these consumers and to assist them to make appropriate "informed choices" to become successfully employed in careers commensurate with their capabilities and interests.

Many Rehabilitation Counselors for the Deaf (RCDs) wrongly assume they know the issues and needs of consumers who are hard of hearing or late-deafened. The following questionnaire for VR counselors helps to illustrate this problem.

Self-Analysis Questionnaire for VR Counselors

(Answer True or False)

1. I recognize clients and students who are hard of hearing even if they do not self-identify.

2. I explore the extent to which these clients and students have accepted their hearing loss and how well they are coping with their personal, classroom, and work environments.

3. I discuss communication with my students and make appropriate adjustments to accommodate their preferred style, mode, or needs.

The complete questionnaire is included at the end of this chapter and is revised from part of the University of Arkansas Rehabilitation Continuing Education Program train the trainer model of vocational rehabilitation services to individuals who are hard of hearing or late-deafened (Tomlinson, 1992).

Student Profiles

The following stories exemplify diverse ways in which students cope with being hard of hearing while adjusting to the various demands of the postsecondary environment. These demands include achieving well enough academically to stay in college, adapting to campus social life, and learning the skills and knowledge for a future career. The communicative and psychological attributes associated with loss of hearing complicate meeting these demands. Each story highlights how a student responds to coping with these complications and how vocational rehabilitation professionals help them overcome barriers to success. These profiles were developed from adapted case histories reported by Schroedel, Kelley, and Conway (2002).

Gina

Unfortunately, Gina was not referred to VR until she was a high school senior. However, Gina's VR Counselor was also hard of hearing and had received specialized training about psychosocial issues of hard of hearing persons, technology, and other services needed by these individuals. When Gina first met her VR Counselor, she only had a vague idea of her plans after high school. Gina told her VR Counselor that she wanted to attend a small private school and "study Psychology for the Hearing-Impaired."

During the VR referral and application process, Gina's VR counselor revealed her own hearing loss and provided a wide variety of information. Gina seemed to "connect" with her VR counselor and told her she had trouble understanding conversations on the phone and hearing the phone ringing. She also admitted that she often misunderstands, responds inappropriately, and sometimes bluffs. Moreover, she had difficulty in groups with noise and misses a lot of class discussion. Even though Gina had a moderate to severe hearing loss, she did not wear her hearing aids because of auditory feedback and other problems with the aids. She had seen an

audiologist through the state clinic for years, but her mother was not satisfied with their specialists. Gina says she had never seen a FM system, but tried it with her VR counselor and liked it. Later, the school audiologist reported to the VR Counselor that Gina had been approached several times to use a FM system or a notetaker or to try different hearing aids, but Gina was not interested and did not follow through with appointments and recommendations.

During the assessment phases of the VR process, the VR counselor completed a wide array of diagnostic testing, including communication and functional assessments, updated audiological assessments and also gathered information about her intelligence, academic achievement, aptitudes, and interests. These results revealed Gina was of average intelligence, but her ACT score was only 13. She was also weak in reading comprehension and needed remediation in math. A new audiological exam was done by a different specialist. Gina told the audiologist she did not particularly want Behind-the-Ear (BTE) hearing aids, but the audiologist explained that BTE hearing aids best fit her hearing loss and she agreed to use them on a trial basis.

After several sessions with her VR Counselor, an Individual Plan of Employment (IPE) was developed with services to include hearing aids, other assistive devices, training, and job placement services. The technology services included the BTE hearing aids, a specialized cell phone that was compatible with her hearing aids, a personal FM system, and wakeup and alerting devices. Because of the need to improve her academic skills and receive support services in the classroom, Gina agreed to attend a local public community college with remedial classes. The VR Counselor and Gina also decided that she would attend part-time for the first year in these remedial classes. She received notetaking services in class and used her personal FM system with the instructors.

Gina made remarkable progress in her reading skills; however, she continued to struggle with her math classes. After further testing, it was determined that she had a learning disability in math. A tutor was provided by the college to assist her with required math courses. After the first year, Gina completed her remedial courses and moved into courses in her major. She completed the courses at the community college and transferred to another university to complete her Psychology degree. The road was not always smooth sailing for Gina as she sometimes had problems with her support services such as notetakers not showing up, or instructors reluctant to use the FM system. When she transferred, the university was not as proficient in providing needed support services. Her VR Counselor was involved with her transition and assisted with requests for support services. Some semesters, Gina's VR

Counselor allowed her to take reduced course loads to accommodate her disabilities. Gina is now a senior, scheduled to graduate after the next semester, and plans to work as soon as possible.

Margaret

When I first met Margaret she wanted more than anything to become a nurse and as her VR counselor I tried to tell her that with a hearing loss it will be hard but she insisted that she could hear everything. No mater what I said she wanted to become a nurse. So she went to the local community college (with DVR support) and started the nursing course. She did great until she entered the nursing courses with a nurse for a teacher, who was hard to understand. Margaret would come and complain to me, "I can't hear her." I told her, "Your hearing is down and you need to use an ALD." I showed her the pocket talker and she refused to use it. Then I told her, "You have to sit up front to hear the teacher. You have to tell the teacher you have a hearing problem, but in a positive way. Do not say, "Look I have a hearing problem, look at me." I taught her to say, "I need to explain that I have a hearing loss and here is how we can get along better in the classroom." At first the teacher was okay with it, but Margaret was frustrated because she could not hear other students. She would put her hand up and ask for help. Finally the teacher began to make Margaret feel like she was no good. The teacher would say to Margaret in the classroom, "Margaret did you get that? John please repeat that for Margaret. You know she can not hear. Speak louder for her since she seems not to hear at all today."

Finally Margaret came back to me and said she could use hearing aids, saying: "Buy the smallest one so no one will know I have a hearing loss. The hearing aids will help me hear perfectly." Again I tried to explain to her what the hearing aids can and cannot do, but she said, "I am different."

Then she decided to drop Nursing and take Computer Science courses. She still had a hard time understanding the teacher. At that time I was in a college class and told Margaret to come to my class to see the Computer-Assisted Real Time Translation (CART) process in action. At first she said no, but finally agreed. She loved the CART and concurred to ask the college to provide it for her, which it did. She had a lot of trouble with the CART recorder who made a lot of mistakes. Because it did not work out she transferred to another college where she had quality CART and changed her major to Social Work. She loves it and she loves the students and working with them. There everything went fine until one day the school demanded that she give her CART notes to all the students. So I had to go the school and explain that is against the law. I had the CART recorder there too, who backed me up. After awhile the school seemed to understand.

Margaret will be graduating in May. She now tells people she is hard of hearing and "just face me and I will hear." She has an amplifier on her phone. She recently got an internship as social worker in a reform school for children. She likes it very much and is hoping that they will hire her after she graduates. She likes the job because it is working with children and it is one on one, not in a group, which she knows she cannot handle. She hopes some day to get her Master's degree, as she knows that it is required to become a social worker.

The Evolution of VR Services for Hard of Hearing Consumers

Three decades ago Vocational Rehabilitation agencies in various states were serving consumers generally defined as culturally-deaf users of sign language. The nation had a number of University-affiliated long-term training programs preparing both VR counselors and sign language interpreters to meet the needs of these consumers. Simultaneously, as described in Chapter 2, colleges with special service programs expanded to educate these signing deaf students. Unfortunately, the relative effectiveness of this nationwide network of these diverse institutions resulted in the formation of a stereotypic model that these organizations could appropriately serve persons with any type of hearing loss. This was understandable because signing deaf persons are by and large visible, whereas most hard of hearing and late-deafened persons remain invisible. Subsequent actions were taken to modify this stereotype by raising public awareness of the special needs of non-signing persons with hearing loss and training Vocational Rehabilitation counselors to serve them. The next section of this chapter explains in-depth how this transformation in VR services occurred.

The Mandate of the Rehabilitation Act

The Rehabilitation Act Amendments of 1992, state that the Act's purpose is, "To assist States in operating a comprehensive, coordinated, effective, efficient, and accountable program of vocational rehabilitation services for individuals with disabilities, consistent with their strengths, resources, priorities, concerns, abilities, and capabilities, so that such individuals may prepare for and engage in gainful employment." The same section further states that, "individuals with disabilities must be active participants in their own rehabilitation programs, including making meaningful and informed choices about the selection of the rehabilitation services they receive." Furthermore, "Qualified vocational rehabilitation counselors, other qualified rehabilitation personnel, and other qualified personnel facilitate the accomplishment of the employment goals and objectives of the individual."

The federal Rehabilitation Services Administration (RSA) administers the funding and oversight of the vocational rehabilitation programs nationwide. The federal funding is typically a 79% allocation and states are expected to match the remaining 21% with state funds or other matches. RSA formulates how much each state will be allotted.

Historic Background

In the mid 1970s, Vocational Rehabilitation programs began to focus on accessing consumers who were culturally Deaf, with American Sign Language (ASL) as their preferred mode of communication, to its service delivery system. Counselors proficient in ASL were hired and an aggressive program to communication and culturally sensitive accessibility was launched with great success. Deaf-focused long- and short-term training and research programs were funded. Interpreter training programs were established. Community-based services accessible to signing Deaf individuals were developed. Many college bound students were sponsored at Gallaudet University or the National Technical Institute for the Deaf (NTID) where interpreters and other supports were available. However, some began to access the in-state colleges using free-lance interpreters.

Positive and wide spread recognition of the challenges and successes of VR in serving persons who are Deaf resulted in a "one size fits all" approach to serving persons with *all* degrees of hearing loss, with little regard to communication mode or cultural identification. Little attention was given to the very different service interventions needed by non-signing persons who are hard of hearing in order for them to persevere through the stresses of hearing loss and the accompanying adjustment process that must take place to enter or remain in the work force. *The majority of hard of hearing persons were viewed by VR counselors as needing only hearing aid provision, while their more complex and debilitating problems went largely undiagnosed and untreated*. Professionals and consumers alike were unaware of the myriad of communication enhancement strategies and services, coping skills, and technologies available to modify educational and work environments.

In the mid 1980s, self-help organizations for persons who are hard of hearing and late-deafened raised the consciousness of consumers and professionals. The Council of State Administrators of Vocational Rehabilitation (CSAVR) Committee on Services for the Deaf expanded its scope to include persons who are deaf blind and persons who are hard of hearing.

In 1991, the Rehabilitation Services Administration (RSA) funded the University of Arkansas Rehabilitation Continuing Education Center, to develop a training package for VR counselors. It is a how-to kit that guides the user through evaluation of their agency's current staffing and service

delivery for this population, and how to develop and implement a strategic plan to set a full, quality program for the target population in place. The materials were presented regionally in a train-the-trainer mode and were implemented in the states to varying degrees. Several states embraced the charge and have since developed comprehensive programs and services for consumers who are hard of hearing. Their models will be discussed later in this chapter.

Since the early 1990s, there has been a gradually growing national awareness that the needs of persons who are "hard of hearing" are very different from the needs of persons who are "Deaf." VR and postsecondary programs are looking for materials and training to assist them in program enhancement. Postsecondary programs, largely as a result of effective advocacy by VR counselors serving hard of hearing students, and the Postsecondary Education Network (PEPNet) programs, are also growing in awareness. Many are making CART, C-Print, Type-Well, and other supports available to non-signing students with significant hearing loss.

Although hearing loss is an old problem, knowledge of the intensive associated stresses and needs are just starting to emerge. There is still a critical lack of available qualified counselors and accessible services for persons who are hard of hearing and late-deafened. We are therefore essentially dealing with a new field.

Toward More Effective Services for Consumers who are Hard of Hearing and Late-deafened

There is a need to change common myths about serving hard of hearing and late-deafened consumers:

Myth: *Hearing impairment occurs on a continuum from most severe (persons with no useable hearing, who do not benefit from amplification) to least severe (mild hearing loss)—and if I can work successfully with people with the most severe loss, I can then work well with people with less severe hearing loss.*

Rather than thinking of hearing loss as occurring along this continuum, it is more profitable to think in terms of different groups of people who have hearing losses, each with its unique set of problems and unique treatment strategies to those problems. Ability to work with one group does not insure ability to work effectively with the others. Think in terms of three main groupings of people who have hearing losses: culturally Deaf, late-deafened, and hard of hearing. The diagram of these groups shows three overlapping circles in which areas included in the overlap indicate shared problems related to hearing loss whereas the areas that do not overlap depict issues and

problems unique to each group. *Working with each of these groups requires unique training and experience, and skill in working with one group will probably not transfer to the unique problems of the others.*
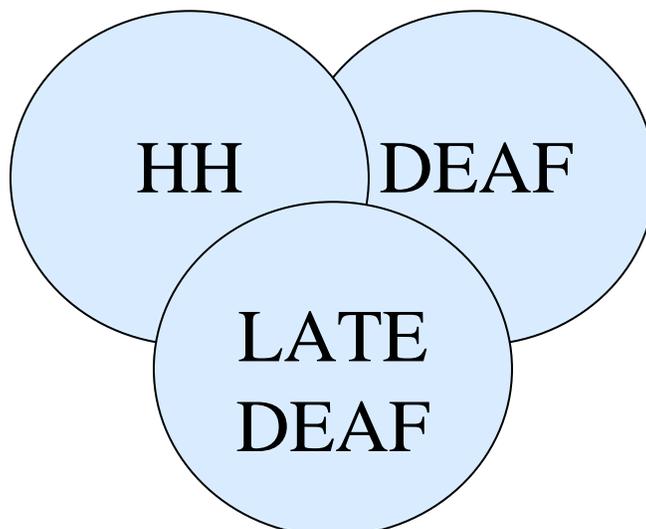
Myth: *People who are hard of hearing and late-deafened know what their educational and employment related problems are.*

Most of these persons are isolated from other people who have similar problems. They also tend to minimize or hide their hearing disability, especially on the job. They are usually therefore not positioned to learn about the nuances of hearing impairment, the technology, and other supports available to help them to cope with their diminished ability to hear. The counselor cannot assume that his or her client who is hard of hearing or late-deafened knows that personal or employment problems may be resultant of hearing-related stresses. *The counselor must know what questions to ask to elicit this information, and must know the full range of services that are available to modify the behavior, situation or environment. Knowing how to ask these questions is also vital.*

Myth: *People who are hard of hearing and late-deafened know what technologies, including assistive listening devices, are available.*

For the same reasons as stated above, in addition to rapidly changing technologies, most people who are hard of hearing and late-deafened are not aware of many of the devices available. Even if they are familiar with assistive listening devices, they may not be sure if they could benefit and often misconceive who, in fact, can benefit. Even if they have some form of assistive technology, it may be either not working or not appropriate for their loss.

Myth: *People who are hard of hearing know how to use assistive listening devices and hearing aids.*

Any new technology threatens new users until they become comfortable with its use. User manuals are often complicated and not easily understood. Few vendors provide instruction on the expected benefits the individual will receive. Many hearing aids and assistive listening devices are therefore purchased and not used at all, or, if used, not to the fullest benefit to the individual.

Myth: *If the counselor understands the consumer who is hard of hearing, the consumer will understand the counselor.*

Many people who are hard of hearing or late-deafened, especially those with adult-onset hearing loss, have very clear speech because the ability to speak was developed while they could still clearly monitor their own voice. Many hard of hearing individuals retain enough hearing to still be able to do this. It does not mean, however, that they are able to, through their ears, understand all, or even much, that a counselor is saying to them. It also does not mean that the consumer necessarily has a mild hearing impairment. Many persons with severe hearing loss acquired later in life can speak quite understandably. The counselor will need to initially discuss with the consumer how she or he communicates best and make appropriate adaptations. In some cases an assistive listening device, such as an FM system or an induction loop, an oral or sign language interpreter, or writing (possibly on a computer) may be preferred.

Myth: *Vocational Rehabilitation generally meets the needs of consumers who are hard of hearing and late-deafened.*

Audits and other studies indicate that the primary service being provided consumers who are hard of hearing is assistance in the purchase of a hearing aid. These cases come under fire by federal and state auditors and control agencies because they appear to be examples of people for whom the only need is for a check to be written for a single service. This is a service for which the consumer appears to need no counseling or other associated services to continue successfully in current employment. The case therefore appears to be not only non-severely disabled, but also deficient in meeting the "counseling and guidance" and "substantial VR services" mandates of the employment outcome requirements.

It is probable that many of these cases are to replace hearing aids for consumers who had been previously served, and may now have been better served under "post-employment services." It is also likely that many are first-time hearing aid users who are in need of a great deal of pre- and post-hearing aid provision counseling regarding expectations and use on and off

the job. It is also probable that other avenues to increasing personal and employment accommodations have not been explored, identified and dealt with. Moreover, many of these "easy hearing aid cases" involved functionally severely disabled consumers, but were not recognized as such.

General Actions Needed to Better Serve Hard of Hearing Consumers

There is a need for all State VR agencies to develop specialized programs that focus on provision of services specific to consumers who are hard of hearing and late-deafened.

In order for this to happen, all levels of agency staff must understand and agree that this is a different and underserved population for whom specialized staff and programming is essential. Without the commitment from the top down through all levels of supervision, it has been demonstrated that a quality statewide program for this population will have little chance of success. In most states, hard of hearing and late-deafened consumers could be served by either the Rehabilitation Counselors for the Deaf or by generalist counselors depending on the office or location and local policy, which is not optimal. To develop an effective program, and because of the multiplicity of issues involved, agencies must establish an initiative that has full agency support at all levels. A formal assessment of the current level and quality of services should be conducted, followed by development of a strategic plan to implement appropriate staffing, training, and service delivery.

There is a need for counselor training programs to infuse a comprehensive curriculum about this population into their programs.

Most rehabilitation masters degree programs and short- and long-term training programs include only "token" attention to counseling and supports needed by non-signing persons with hearing loss. Also, many of master's degree programs with specializations in deafness are disappearing due to reduction in grant funding. Currently there are no specific programs to train specialists to work with hard of hearing and late-deafened persons.

This population is underserved.

There is no question that these non-signing consumers are underserved populations, not necessarily in numbers, but in provision of comprehensive counseling and services they need to successfully complete education and training and to gain and retain employment. Corthell and Yarman (1992), in an Institute on Rehabilitation Issues report, used a model to determine

unserved and underserved populations of persons with disabilities and documented how persons who are hard of hearing meet almost all of the criteria for both of these categories. These consumers for the most part, do not know services and technology exist that can assist them. The majority of VR counselors and educators are also not aware. There is a very different counseling approach needed for these consumers who are reluctant to reveal their hearing loss. There is a dearth of training or training materials available specific to this target population for VR and postsecondary service providers.

Actions Needed by the State VR Agency

This section will walk through the vocational rehabilitation process from identification and referral to closure and post-employment services, emphasizing the unique issues and needs of consumers who are hard of hearing and late-deafened. It will also address administrative and policy issues impacting the target population.

THE VR PROCESS

Identification

Students who are hard of hearing and late-deafened are not readily identified because:

Many of the students are not "classified" or identified through the special education system. Or, these students may have another disability and the hearing loss may not be documented or addressed.

Some students may not be under an IEP or a 504 plan because their school performance seems "satisfactory." In reality, these students could benefit from intervention and accommodations to improve academically and prepare for postsecondary education.

These persons may hide their hearing loss due to stigma, and fear of loss of friendships, or jobs.

These persons do not realize that their school or employment problems are a direct result of the hearing loss, stress, fatigue, social isolation, or a combination of these factors.

These persons, along with their parents and teachers often do not know ways that they can be helped. These individuals, particularly students, do not know any other hard of hearing or late-deafened person like themselves.

Students and their parents, as well as K–12 school personnel do not know about VR and how to access it. If they are unaware about VR, they may be misinformed about available services to them beyond hearing aid provision.

These individuals may have had a negative experience because they were assigned to a VR counselor who is deaf and could not communicate effectively with him or her. Or, their VR counselor may not have been trained to recognize the specific problems of individuals with hearing loss and therefore, they were deemed "not deaf enough" and declared ineligible.

Few medical, social, educational, or vocational rehabilitation professionals are trained to recognize and understand the functional limitations and disabling behaviors that can stem from hearing loss and, therefore, fail to refer students to VR agencies.

Many physicians and other professionals do not know about VR and tell persons with a hearing loss, "You just have to live with it."

Referral Development

Existing referral sources will need to be educated to be able to recognize appropriate hard of hearing and late-deafened referrals to VR. Furthermore, it is essential to present the potential consumer's full range of employment-related problems and needs to the VR counselor in functional terms. Identification and education of new referral sources is also essential. In addition to education of referral sources, referrals of consumers who need immediate services to assist them maintain employment must have the VR process expedited to help them keep their jobs.

The VR counselor will need to do creative outreach to identify persons who are hard of hearing and late-deafened. Potential sources of appropriate referrals that the VR counselor should consider, cultivate and educate might include:

- Schools: Teachers, nurses, guidance counselors, special education team, school audiologists.
- Colleges: Faculty, other instructors, staff, and Student Access Center.
- Hearing aid and assistive technology dispensers.
- Healthcare agencies and programs, including physicians, nurses, audiologists, speech-language pathologists, hospitals, clinics, and mental health centers.
- Community service centers that serve persons who are deaf or hard of hearing.
- Hearing Loss Association of America (HLAA) and Association of Late-Deafened Adults (ALDA) and their local chapters.

- Employers, human resource personnel, and employer assistance programs.
- Professional groups such as: state chapters of the Speech, Language, and Hearing Association and state chapters of hearing aid dispensers.
- Unions
- A prototype Memorandum of Understanding (MOU)

Assessment for determining eligibility and vocational rehabilitation needs

The mandate to make eligibility decisions quickly—and to the extent possible, using existing information—makes it essential that the counselor determine specifically what information must be accessed in order to make a fair appraisal of the severity of the employment impediment and substantiality of services the consumer needs. For some individuals, many of the most debilitating problems are not visible or reported by the student, parents, or professionals. It is therefore extremely important that the counselor knows what to look for and what questions to ask (the consumer, significant others, and other professionals) to gain the needed objective (medical, psychological, and other formal assessments) and subjective (consumer or family reported and counselor observations) data. In many cases, the VR counselor is the only source for gaining information on the key needs related to factors impeding the consumer's employment outcome. The factors range from personal, educational, psychological, technical, and other communication impediments. To avoid screening out truly eligible individuals, the information must include, at a minimum:

- Documented nature and level of hearing loss.
- Communication mode (including amplification and communication strategies used), attitude and ability.
- Assessment of communication functioning in various environments, such as one-to-one, small and large groups, telephone, classrooms, social environments, and home surroundings. From a VR viewpoint, this is especially important in career training and employment settings.
- Personal and psychological adjustment to and acceptance of the hearing loss.
- Family, work, and social relationships.
- It is only with this scope of information that the disability and the related substantial impediment(s) to employment will be accurately considered and included in the eligibility determination.

Eligibility

Vocational Rehabilitation is not an entitlement program. This is very different to K–12 students and their parents who may be accustomed to entitlement services under the Individuals with Disabilities Education Act (IDEA). To receive vocational rehabilitation services, an applicant must be determined eligible based on specific criteria that the individual have a physical or mental impairment that is a substantial barrier to employment, requires VR services to become employed, and can gain from these VR services in terms of an employment outcome.

The most important and unique role of the vocational rehabilitation counselor is taking all this information, analyzing it as a whole, and determining what specific problems or impairments interfere with the consumer's ability to get or keep a job. This phase of the planning process is especially important because, by law, vocational rehabilitation services can be provided for only those disability-related problems that specifically inpact the consumer's employment or ability to gain employment.

Impediments to employment must be stated in functional terms whereby the impact on the current job or the consumer's current ability to get a job, are clearly understood. It is important to be lucid and specific, especially so this analysis can be shared with the consumer for a clear understanding of his or her specific difficulties. This will aid the consumer to understand and be informed why certain services are provided and what the anticipated result or impact on employment would be. This is the foundation for deciding what services will be included in the consumer's Individual Plan for Employment (IPE). Thus, the consumer becomes an active participant in the plan and has a vested interest in its successful outcome.

Eligibility and Order of Selection for Services

Recent emphasis has been on serving consumers who are the most significantly disabled as a priority. If a VR agency cannot serve <u>all</u> eligible consumers, they must by law enter into an Order of Selection for Services, under which consumers who are determined to be the "Most Significantly Disabled" (MSD) must be served before other eligible consumers. Such applicants must have one or more severely limited functions, need multiple services over a prolonged timespan, and have one or more mental or physical disabilities.

As more and more state VR agencies enter into an Order of Selection for Services, concern is being expressed about where consumers who are hard of hearing or late-deafened fall on this priority list. Many times the mandate to serve consumers who are significantly disabled before other eligible consumers is incorrectly interpreted to mean that only persons who are deaf

and use sign language qualify as MSD under an Order of Selection. This is a misnomer. *The functional limitations of each applicant must be accurately identified and considered, instead of automatically assuming individuals who are deaf are more significantly disabled than individuals who are hard of hearing or late-deafened.* Vocational Rehabilitation has moved from a medical viewpoint using audiological criteria to focusing on functional limitations terms of defining disabilities for purposes of eligibility and order of selection. An example of functional limitation is any impairment or health problem that limits the kind or amount of work to be performed (Ries, 1994).

It is left to each state to determine how they prioritize, define, and apply criteria to designate eligible individuals as most significantly disabled. It is incorrect for them to develop priorities that exclude hard of hearing or late-deafened individuals on the basis of a medical, rather than a functional diagnosis. It is therefore, extremely important that state VR agencies understand that the functional impediments to employment of these individuals are very severe and vocationally debilitating and that they are not associated with the level of their hearing loss.

In order for states to develop priorities for MSD applicants, they will have to start with the mandated definition for "individual with a severe disability." Many consumers who are hard of hearing and late-deafened meet this definition if their severely limited functional capacities in areas of communication, self-direction, interpersonal skills and work tolerance are recognized. In addition, numerous vocational rehabilitation services over an extended period of time are often required to benefit these individuals in terms of an employment outcome. This must be absolutely understood and taken into consideration by the agency when developing priorities for an Order of Selection.

Comprehensive Assessment to Identify Rehabilitation Needs and Develop the IPE

Once eligibility has been established, additional information must often be obtained to pinpoint the full range, scope and options of services needed to overcome employment impediments identified at the time of eligibility determination.

The VR counselor must explain to the consumer the full scope of service needs and options available to address identified impediments and maximize job opportunities. The consumer then can make informed choices in concert with the counselor on what services, objectives, and vocational goal should be included in the IPE.

Examples of additional information to consider in the comprehensive assessment include:

- Basic medical evaluation: To check for secondary problems.

- Otologic evaluation: To determine need for any medical intervention and get a future prognosis.

- Additional communication assessments: Should begin at the first contact between the counselor and the consumer and continue throughout the VR process to accurately identify and address relevant issues. A variety of assessment tools are available, including family and significant other surveys that the VR counselor can use and share with the audiologist (see listing of assessment scales in the Resources section).

- Comprehensive audiological evaluation: Including hearing aids evaluation and recommendation and how they should interface with ALDS, as well as the need for speech therapy and aural rehabilitation.

- Ophthalmalogic or optometric evaluation: Including visual fields testing to rule out any eye disorders such as retinitis pigmentosa (RP) and gain the best possible visual correction because of the reliance on *visual input* for communication.

- Psychological or psychosocial assessment: Aside from needed intelligence, academic achievement, aptitude or vocational interest testing, it is important to verify any emotional problems to be remediated, especially those related to employment.

- Rehabilitation technology assessment: This technology can be used throughout the rehabilitation process. The trained VR counselor can explore the need for technology at school, home and at work and especially assist with telephone use. Rehabilitation Technologists or Assistive Devices Specialists may also be consulted for technology recommendations, including job site assessments.

- Job site assessment: It will often be necessary for the VR counselor to visit the work site to determine the communication demands on the job and recommend needed modifications or accommodations.

- Specialty evaluations: If any secondary disability is indicated, additional specialists should be consulted.

Individual Plan of Employment (IPE)

After the comprehensive assessment is completed, the VR counselor and consumer together determine employment goals and needed services that are the basis for the IPE.

The IPE planning session must by law be conducted in the consumer's preferred mode of communication in order that she or he can fully participate in planning to fully understand options for employment and related services. Maximum efforts must take place to achieve effective two-way

communication directly with the consumer. The VR counselor must make available whatever communication enhancement techniques and devices that the consumer can successfully use to be fully involved in his or her own planning. This may include speech reading techniques, oral interpreters, correct lighting, no background noise and other distractions, ALDs, or computer-assisted techniques.

Scope of Services

In addition to the previously discussed assessment services, hearing aids, assistive listening devices and other technology, many of these consumers can benefit job wise from a variety of non-traditional services including:

Confidence building—Low self-esteem is a frequently noted problem among our target population. Asking people to alter their environments or change their communication behaviors involves taking a risk and people with a low self-concept, may therefore, need confidence building counseling, preferably before or while tackling communication issues in a career training program or at work.

Regular counseling and guidance sessions—A VR counselor trained about the psychosocial needs of these consumers can provide some general assistance for the individual to learn more about their hearing loss and the resources available to assist them. Resources that may be useful for these sessions include articles on specific topics such as T-coils, or communication at work. This information is absorbed better by the consumer if it is provided piece meal instead of all at once. Also, guidance, counseling and information need to be provided as the consumer starts to utilize hearing aids and other assistive devices to help adjustment and trouble shoot difficulties. This is a service that may not be readily available from sources other than the local VR office.

Therapy—Difficulty coping, adjustment to the loss and the grieving process frequently need to be dealt with in these consumers. These problems may require assistance of a specialized counselor or therapist.

Coping skills support groups—Led by a competent professional, support groups can be very successful in assisting consumers to learn to cope with communication problems and stresses encountered while in training or on the job.

Relaxation training—Can help consumers to overcome tension and fatigue that often interfere with paying attention and contribute to misunderstanding.

Assistive listening and alerting devices (ALDs) —Communication and job site assessments can help determine which accommodations are needed in the home, in training, and at work. For students who are VR consumers

engaged in career training, consideration should be made to obtain assistive devices that can later be used on the work site.

Speechreading—Individual and group speech reading classes can, for some students, often contribute to augment understanding.

Consumer support groups—As already noted the HLAA and the ALDA are helpful, particularly if the consumer does not know other people who are hard of hearing or late-deafened and feels isolated or misunderstood. Sometimes, providing a short-term subscription to a support group magazine can help familiarize consumers to information and resources available and help them learn about other persons like themselves.

Communication skills training—Teaches specific strategies for preventing or reducing communication problems related to hearing loss.

Worksite assessment—While the VR counselor is often trained to do worksite assessments, the communication demands of the jobs often need to be assessed with specific communication strategies, accommodations and technology recommended to preserve an existing job or obtain new employment. An assistive device specialist may be able to facilitate this examination and recommendations. Rebecca Morris (2006) has developed a resource book, describing specific on-the-job accommodations.

Advocacy training—VR Counselors can refer their consumers to consumer organizations to learn how to advocate for needed services or communication accessibility.

PEPNet resources—Many valuable educational, training, and employment resources and tools are available from the Postsecondary Education Programs Network http://www.pepnet.org/.

Finding local referral sources, competent to work with consumers, for the foregoing services is not an easy task in most states. The VR counselors and the State Coordinator of Services for Deaf and Hard of Hearing Services (SCD and HH) will need to identify existing resources and develop and educate a cadre of professionals to fill service gaps. In addition, the Rehabilitation Act provides for services for the benefit of groups of individuals. This should be considered for use of telecommunications systems, captioned videos, and other technical assistance including consultation to education programs in planning for the transition of targeted students from school to post-school activities.

Closure

 Significant contact between the counselor and consumers is recommended after suitable job placement to ascertain that the consumer has achieved a

satisfactory vocational adjustment. Since it is not the consumer's inability to perform the work tasks that interferes with his or her successful employment, VR counselors must verify the following:

- Is the employment suited to the consumer's educational and aptitudinal abilities?
- Is the employer aware of the consumer's hearing loss? Accepting of it?
- Is the workplace environment arranged to best facilitate communication?
- Are assistive listening devices used and does everyone know how to operate them?
- Are consumers' supervisors and co-workers comfortable and successful in communicating with the consumer?
- Are staff meetings and training appropriately accommodated?
- Do the consumer and the employer understand that post-employment services may be available from VR?

Post-Employment Services

At the time of case closure, the VR counselor must inform the consumer about potential post-employment services. While the need for these services for the consumer may not be known at the time of case closure, there are some considerations if post-employment needs arise. If the consumer requests additional services after closure, the VR Counselor must determine whether it is better to provide services in the post-employment stage of the current case or open a new VR case. If extensive job issues are to be addressed or if the consumer is starting a new job, a new case may be more feasible. If the consumer needs minimal assistance to correct on-the-job difficulties, post-employment services are more appropriate.

Some post-employment services possible for these consumers are:

- Consultation or technical assistance to supervisors.
- Assessment and recommendations for accommodations if the work site changes.
- Replacement or repair of hearing aids. The consumer should be advised before case closure about the amount she or he may have to pay for these instruments, depending upon personal income and other conditions.
- Trouble shooting and problem solving in work conflict situations.
- Interpreter services where appropriate and requested.

ADMINISTRATIVE AND POLICY ISSUES

Statewide Needs Assessment. A comprehensive assessment of the rehabilitation needs of individuals with disabilities, especially those with most significant disabilities, is legislatively mandated to be included in each agency's State Plan. Since individuals who are hard of hearing or late-deafened are frequently not thought of in terms of "severely disabled," they are often excluded from this study. In addition, these persons are not usually considered as a separate category compared to persons who are culturally Deaf. These individuals tend to be under-identified.

States must assess the needs of individuals who are hard of hearing and late-deafened in their comprehensive statewide needs evaluation. Unless focused on as a disability group separate from "deafness," the currently underserved needs of this target population will continue to be unmet.

State Rehabilitation Councils. The Rehabilitation Act mandates that each state maintain a State Rehabilitation Council (SRC) with representation from a wide range of disabilities, including individuals with physical, cognitive, sensory, and mental disabilities. At least one representative of the state educational agency responsible for the public education of students with disabilities eligible to receive services under VR and part B of the Individuals with Disabilities Education Act must be represented on the SRC.

Since individuals who are hard of hearing represent such a huge percentage of individuals who have sensory impairments, it seems incumbent upon the state agency to include an individual from this specific disability group on the SRC.

Meetings of the State Rehabilitation Councils must provide appropriate assistive listening devices, captioning, or other technology to enable hard of hearing or late-deafened council members and visitors to fully participate.

Personnel Development and Standards. The Rehabilitation Act Amendments of 1998 require the state agencies to describe in the State Plan procedures and activities that will establish and maintain a comprehensive system of personnel development (CSPD) to ensure an adequate supply of qualified rehabilitation personnel. Policies and procedures must be in place specifying standards to ensure personnel are properly prepared and trained. Staff development must be provided to ensure all personnel receive relevant and sufficient training. Personnel must be trained to communicate with consumers in appropriate modes of communication or obtain the services of individuals who can provide this communication access.

Intensive training is needed for vocational rehabilitation counselors and supervisors assigned to work with individuals who are hard of hearing or late-deafened to sensitize them to the needs of these target populations and to

increase knowledge of service options available. Currently, most master degree programs in Rehabilitation Counseling are ill equipped in the area of instruction concerning effective interventions and services to these populations. The few Rehabilitation Counseling for Deaf and Hard of Hearing programs tend to heavily focus on acquiring sign language skills and serving deaf individuals. Even these programs are dwindling as funding for specialized training is reduced. State VR agencies need to explore all options, including online training, to meet the mandate of staff development for counselors serving these groups. The California VR agency has developed core professional competencies for their "RCDs," which includes information about skills needed to serve these consumers (See the end of this chapter for the CA competencies.) Also, the Kentucky VR program is now further refining these competencies to differentiate skills needed to serve consumers who are hard of hearing or late-deafened from other persons with hearing loss.

Transition Services. Transition is a coordinated set of activities for a student that promotes movement from high school to postsecondary education, vocational training, or integrated competitive employment. Transition services must promote or facilitate the achievement of the employment outcome in the student's Individualized Plan of Employment (IPE). The IPE must be developed early, but at the latest, by the time each student determined to be eligible for VR services leaves the school setting.

Hard of hearing and late-deafened students are often difficult to find in the school and are unaware of VR services. Every effort should be made to locate these students as soon as possible to determine any necessary communication, vocational, or technology assessments that will be needed and used in the transition planning process. Information and assistance should be provided to the student, parents, and school personnel about postsecondary training programs that have established services for persons with hearing loss. Required interagency agreements for coordinating transition services between secondary education and VR agencies should be reviewed to address specific causes of under-identifying students. PEPNet offers a variety of information and resources available to all personnel involved in this process. PEPNet's organization, including state contacts, offers many services aimed at bringing all the players to the table to coordinate transition services.

CONSUMER RIGHTS

Client Assistance Program (CAP)

If a consumer encounters problems with the services provided by a state VR agency or by independent living centers funded under the Rehabilitation Act, they may request assistance from the Client Assistance Program (CAP). A CAP advocate can provide him or her with information, advice, representation, and or other appropriate remedies to protect their rights and to facilitate access to appropriate services. CAP advocates are not employees of the state agency and work for independent contractors. They serve as independent advocates. If a resolution to concerns is not reached at the local level, CAP may help a consumer request, prepare for, and/or represent them at a mediation meeting, administrative review, or a fair hearing. CAP advocates are required to work with a wide range of disabilities and thus may not have the specific skills and knowledge to work effectively with hard of hearing and late-deafened consumers. They are required to make their services communicatively accessible. In California, and perhaps other states, CAP advocates are encouraged to attend state Vocational Rehabilitation agency training provided to all counselors, permitting them to experience and learn the same information as the counselors. It would be advisable to encourage CAP advocates in all states to join specialized training to learn about this specified population.

The Grievance Process

 It is recommended that if a consumer encounters a problem as a client of a state VR agency they try to resolve the problem first with their counselor or their counselor's supervisor. A client may request assistance from the CAP at any point during the vocational rehabilitation process. It is always the consumer's right to bring a family member, representative, or CAP advocate to meet with the agency staff. If a client is dissatisfied, with a decision made by the state agency a fair hearing can be conducted by the state's Appeals Board or similar process. This is a consumer's opportunity to present their case to the Appeals Board for a resolution. However, it may be to their benefit to first work through the administrative review or mediation processes before coming to the Appeals Board. This way many problems can be resolved informally and more quickly.

Mediation

Mediation is another option for resolving disputes with the state agency. Mediation is a voluntary problem-solving process, assisted by qualified, impartial mediators. The goals of mediation are to fully describe both sides of the conflict, explore options for resolving the problem, and reach mutually

satisfying solutions. This service is free to applicants, eligible individuals, and consumers who can bring a representative for support during mediation.

Information and Referral Services

As mentioned previously, state VR agencies may be operating under an Order of Selection process. Subsequently, some individuals who are determined eligible for services based on their disability, in these cases their hearing loss, may be placed on a wait list due to their determined category in the Order of Selection process. The Rehabilitation Act provides that eligible individuals, who do not meet the Order of Selection criteria, shall have access to an information and referral system. The State plan shall include an assurance that the designated State VR agency implements such a system adequate to ensure that these individuals will be provided accurate information in appropriate modes of communication to assist them with their employment needs. This may include referrals to other federal and state programs (other than the vocational rehabilitation program), including other components of the statewide workforce investment system. These may be the one-stop career centers, state employment agencies, or local specialized programs that can be utilized in the absence of VR services. However, staff in these programs may not be knowledgeable or trained in the specific needs of persons who are hard of hearing or late-deafened.

The VR Program as Part of the Workforce Investment Act

One-stop career centers were the key element in the 1998 Workforce Investment Act (WIA). The goal was to establish networks of programs and providers in co-located, integrated, and accessible settings. Vocational Rehabilitation is a required partner among other adult workforce services. The WIA focused on collaboration and partnership and is mandated to comply with the Americans with Disabilities Act (ADA).

During 2002, the Department of Labor (DOL) and the Social Security Administration (SSA) launched a demonstration project to place Disability Program Navigators in one-stop centers. The goal of the "Navigators" is to assist individuals with disabilities to access available programs and link them to available supports. In other words, navigate the system. It is inferred that VR counselors would serve those with the most severe disabilities, while Navigators help those who need less direct and informed supports to connect to available resources (California Development Department, 2003); Pennsylvania Rehabilitation council (2006, February 1).

People who are hard of hearing or late-deafened, especially those with recent hearing loss, may be at risk in this system. The degree of hearing loss is not directly related to the severity of the impact the loss has on an individual's

life. These individuals may be wrongly perceived by Navigators as minimally disabled and therefore are deprived of available services, including vocational rehabilitation. In addition, these persons may not be aware of, know what to ask for, or know how to use assistive technologies effectively, creating further barriers in communicating with all one-stop center personnel. They may need substantial assistance such as help in knowing if and when to disclose the disability in the job-seeking process and how to address needed on-the-job accommodations.

Services from a VR counselor trained in the above areas would address these issues in addition to providing support through adjustment counseling and advocacy training. Navigators are encouraged to work with youth in transition, whether they are in or out of high school. Overall, the picture for people with disabilities at the one-stop centers is mixed. The conclusion reached in the Urban Institute—Johns Hopkins study is that the Disability Navigator initiative "offers a promising model for general capacity-building purposes," especially in dealing with individuals with less severe disabilities (Holcomb & Barhow, 2004). However, serving those with the most significant disabilities will be best accomplished through strong relationships with the public VR program.

Individuals with Disabilities Education Act (IDEA) and Transition

For an individual who is hard of hearing or late-deafened schools are challenged to identify them early enough to refer to the state VR agency's joint transition program with the school system. As mentioned previously, these students are more likely to be mainstreamed and not part of typical special education programs or schools. Many state VR agencies have set up formal programs through cooperative agreements which allow for VR counselors, school counselors, and teachers to work together to establish transition programs for eligible students. Typically these programs include career exploration, interest and aptitude testing, and information or referrals, in addition to work experience either on the job training, volunteer work, or actual employment. As a result consumers have an IPE completed prior to graduation and plans are set for post graduation goals. The challenges for the state VR agency and the school are to identify appropriate programs and services for these students.

National Activities Supporting Development of Services for Individuals who are Hard of Hearing and Late-Deafened

THE COUNCIL OF STATE ADMINISTRATORS OF VOCATIONAL REHABILITATION (CSAVR)

The CSAVR members are administrators of Vocational Rehabilitation general and blind agencies in the 50 states and various territories. These administrators, key staff, and representatives from partner programs, agencies, organizations, and consumer groups attend annual national meetings in the spring and fall. The Committee on Services for Individuals who are Deaf, Hard of Hearing, Late-Deafened, and Deaf-Blind is the only CSAVR standing committee devoted to a specific disability group. The purpose of this committee is to identify and resolve issues and barriers to the employment of these targeted consumers. The committee develops policies and proposes changes in the federal-state VR program to achieve this objective.

More specifically, the committee has developed Memorandums of Understanding (MOUs) with Gallaudet University, the National Technical Institute for the Deaf (NTID), Hearing Loss Association of America, and the Association of Late-deafened Adults (ALDA). MOUs in progress are with the National Association of the Deaf (NAD), the Association for Late-Deafened Adults (ALDA), and the Registry of Interpreters for the Deaf (RID). State VR agencies are encouraged to develop MOUs with these organizations at the state level and have been provided a prototype for such use. (See end of chapter). Moreover, the committee is assessing the existing counselor training materials for rehabilitation of targeted populations to determine how these may be used to enhance VR services and practices. The committee plans to make this information available to state agencies. They further will identify critical training topics for which no training program has been identified and explore potential resources for developing new curricula. The committee is surveying state staffing patterns, issues, training needs, and related outcomes for the target populations and will make results available for future staffing and CSPD considerations.

Members of the committee are assisting the University of Arkansas Research and Training Center on Deafness and Hard of Hearing to update the *Model State Plan* for rehabilitation services for individuals with hearing loss (MSP). This new MSP will call for improving VR services for an equal focus on deaf, hard of hearing, and late-deafened consumers. Finalized MOUs, position papers and other CSAVR documents are posted on the website available at http://www.rehabnetwork.org/.

STATE PROGRAMS WITH SPECIALIZED VR SERVICES FOR INDIVIDUALS WHO ARE HARD OF HEARING OR LATE-DEAFENED

Kentucky VR

In 1994, the Kentucky Office of Vocational Rehabilitation (KY VR) decided to review existing services to persons who are hard of hearing or late-deafened using materials obtained from the University of Arkansas Rehabilitation Continuing Education program's short term training model on VR services to individuals who are hard of hearing or late-deafened (Tomlinson, 1992). The KY VR workgroup then developed a strategic plan to improve services to these consumers. Recommendations focused upon staffing, training, accessibility of offices and facilities, as well as other programs, services, policies, and procedures. Thirty-five Communication Specialists were designated to assist these consumers in most of the main KY VR offices across the state. In 1996, these counselors received specialized training to serve this population. Existing staff positions were used by combining the Communication Specialist function with other general caseload responsibilities as appropriate. Rehabilitation Counselors for the Deaf (RCDs) were designated to only serve consumers who are deaf and use sign language, which resulted in reducing these positions by almost half. Communication Specialists were designated to serve other consumers who are hard of hearing or late-deafened and did not use sign language.

Caseload statistics for employment outcomes have been reviewed annually since the implementation of KY VR's enhanced programmatic changes. Since federal fiscal year 1995, the agency significantly increased successful employment outcomes of consumers who are hard of hearing or late-deafened by almost 300%. It should be noted that in 1995 the number of favorable case outcomes of these consumers comprised only 6% of the total for KY VR. Steadily increasing during each successive year, the proportion of successful case closures for hard of hearing and late-deafened (non-signing) consumers increased to 16% of KY VR's total of favorable job outcomes for all consumers with disabilities by 2005. *However, the most important measure of programmatic success is consumer satisfaction.* KY VR continuously receives positive feedback and testimonials from consumers who are hard of hearing or late-deafened. These consumers often report that services from KY VR exceeded their expectations and that they received information and assistance that was not available elsewhere.

Also, KY VR Communication Specialists report increased job satisfaction. They report that the training they receive to provide these specialized services is extremely helpful and appreciated by the consumers. Other

benefits of the statewide staff changes are that deaf persons who use sign language are receiving better quality services. More RCDs who are deaf themselves and fluent in sign language have been hired and enjoy focusing on these consumers. This has also allowed KY VR to further refine specializations in serving the other consumers such as those who are deaf-blind or deaf at risk, otherwise known as low functioning deaf persons (LFD).

An administrator functions as the State Coordinator of Hard of Hearing and Late-Deafened Services. She is responsible for providing technical assistance to the Communication Specialists and their supervisors as well as managing the overall program and coordinating training for new and current counselors.

Kentucky is currently reviewing and re-evaluating information to update and refine it's VR services. It has been learned that more of the hard of hearing or late-deafened who are employed at the time of application need services to maintain employment compared to VR consumers with other disabilities. These consumers might be at a "crisis" point when contacting VR and need expedited services to keep their jobs. Obviously, if timely services can be provided that allow these wage earners to maintain employment, this is much more effective than if she or he loses that job and has to find a new one. Also, guidance and counseling about a variety of topics about hearing loss provided by a Communication Specialist is critical to the success of many of these consumers. This may require more frequent and regular contacts with these consumers, which can put further time constraints on serving large caseloads. These invaluable findings will help change policies and practices to better serve these individuals.

Texas VR

The Texas Department of Assistive and Rehabilitative Services (DARS) supports a Regional Specialist program that assists various public and private organizations to make their services more accessible to individuals who are deaf, hard of hearing, or late-deafened. For 2006, priorities for projects receiving these funds include providing:

- Outreach services to groups and dissemination of information about assistive equipment, and communication strategies.
- Outreach, education, and prevention strategies to workers who are at high risk for occupational hearing loss.
- Training to professionals who serve hard of hearing persons.
- Hearing screening and assistance and provision of reconditioned or low-cost hearing aids or listening devices to those who unqualified for any other assistance programs.

- The Hard of Hearing Specialist will conduct training on hearing aids, assistive devices, available state and local resources, and communication strategies.

In addition, Texas DARS has VR specialists serving consumers who are hard of hearing or late-deafened. Texas DARS has developed an excellent video, "Let's Make it Clear," that illustrates the daily difficulties posed by hearing loss and offers clear and useful tips for effective communication (http://www.dars.state.tx.us/dhhs/index.shtml).

California VR

The California Department of Rehabilitation (CDOR) has not implemented a formal service delivery program specifically for hard of hearing and late-deafened consumers. However, as part of their legislative mandates, they have done the following:

- Ensured equal representation of these persons on the CDOR Deaf and Hard of Hearing Advisory Committee. This committee will be asked to develop competencies and training needed by specialists working with hard of hearing and late-deafened consumers.

- Provided specialized training on assistive technology, resources, employment development and placement, and other services to the 48 counselors for the deaf and hard of hearing (RCDs).

- Implemented initial efforts for designated counselors to work specifically with this population in certain areas instead of the RCDs. This effort is currently under review with agency field administrators for possible expansion.

- Mandated the availability of real time captioners, oral interpreters, FM systems for all public meetings and events hosted by CDOR.

Alabama VR

After seeing positive results from Kentucky VR with services to persons who are hard of hearing or late-deafened, Alabama VR decided to initiate similar services. Specially trained VR counselors have subsequently increased services to these individuals by 27%. Alabama VR also hired an audiologist to assist VR Counselors and consumers by offering audiological services and consultation about technology and other employment needs. Reported success with this service stimulated plans to add three more audiologists as rehabilitation consultants. These audiologists deliver direct services to VR consumers and work with VR counselors related to the recommendations made by other audiology vendors.

New Jersey VR

In the New Jersey Vocational Rehabilitation agency, a special program to serve consumers with hearing loss was initiated in 1975 with the hiring of counselors fluent in American Sign Language and with expertise in serving individuals who are culturally deaf (RCDs). It was not until the mid-1980s that the differing needs of persons who are hard of hearing and late-deafened became recognized. In the early 1990s, RCDs received training in serving these consumers and were expected to serve consumers with all levels of hearing loss regardless of their communication preference. This practice was continued until 2003 when a formal re-evaluation of the program was conducted with results and recommendations discussed with agency administrators. Based on their feedback and commitment, a short- and long-range Strategic Plan was developed with these following goals to serving consumers who are hard of hearing and late-deafened:

Staffing: Appoint "back-up" counselors to RCDs in large offices to assist non-signing clients with hearing loss and in cases where the RCD is deaf and has speech that is difficult for a hard of hearing person to understand.

Human resource development: Conduct quarterly statewide training meetings for specialists, back-ups, RCDs, and their supervisors.

Policy, practices, procedures & fees:

- Develop CART and C-Print procedures, vendors and fees.
- Develop transitioning procedures.
- Update audiological and hearing aid policy, fees, and forms.

Accessibility:

- Include CART and C-Print in MOUs with higher education.
- Provide Technology Kits to all offices.
- Loop agency training rooms.
- Make counseling rooms "hard of hearing friendly."
- Identify technology device loan programs.
- Explore alternative communication options such as Captel, an assistive listening device.

Pilot initiatives:

- Independent Living Specialist (an Employment Support Specialist) to work in coordination with RCDs and other specialists.
- Train field office secretaries in C-Print.
- Develop a worksite technology assessment tool.
- Develop "coping skills" groups.

The State Coordinator for the Deaf and Hard of Hearing (SCD/HH), who does not have line authority, was challenged by middle managers who saw no need to expand the program and train specialized counselors. Underlying this mind-set was that for many years hard of hearing consumers were seen as only needing a hearing aid and were easy case closures spread among all the field offices. All levels of agency managers had to be sensitized about the requirements to have specialized and knowledgeable counselors.

The current SCD, who implements the Strategic Plan, is herself hard of hearing, and as an RCD developed a caseload of hard of hearing consumers which grew rapidly once her services "beyond hearing aids" became recognized in the high schools and in the community. She monitors program development, coordinates staff training, provides case and service resource consultation, and serves as a role model.

COLLABORATION BETWEEN VR AND POSTSECONDARY PROGRAMS

Establish cooperative/collaborative relationships with postsecondary programs in your state. Some specific activities or initiatives to enhance these relationships include:

Recruitment and Transition: Include Student Access Center (SAC) Coordinators in transition and recruitment activities for targeted students in high schools. Ideally, these students should be identified and VR involvement started by their junior year. Student Access Center Coordinators can help to explain the differences between access in high schools, which is required by IDEA, versus access in postsecondary programs, which is requested. Early exposure to these SAC Coordinators through activities such as career fairs and summer programs can assist these students learn about available programs and services.

Shared Outreach and Cross Referrals: With permission from the VR consumer, contact the SAC Coordinator on the postsecondary campus and arrange a joint meeting with the student to discuss needed accommodations and share information. Information from the VR case files, such as audiological and communication assessment reports can be shared with the SAC Coordinator for use in determining needed accommodations. Students not identified in high school but who become known to SAC personnel should be referred to VR as soon as possible. It is helpful if the SAC staff can provide office space for the VR Counselor to meet with their student consumers. If possible, transferring these student VR cases to a local VR counselor while they are attending college may be beneficial. VR and Student Access Centers should have designated trained staff to work with these students. These staff persons need to have good communication skills.

Cross Training and Joint Training: Focused training about targeted college students can be given to SAC and VR staff. This training should especially cover the psychosocial issues of hearing loss and contrast differences of students who are culturally deaf. Joint training can also enhance relationships between VR and postsecondary programs. VR and Student Access Centers can also develop awareness training to be used with other professionals and programs. The *Connections* package workshop materials available from PEPNet are a resource for this purpose. This training kit is currently being updated (NTID, NETAC, n.d.).

Memorandums of Understanding (MOUs): As previously stated, VR and colleges should develop MOUs to specify postsecondary support services and how these support services are funded. These agreements should also include support services for students who are hard of hearing or late-deafened. Some sample MOUs on the NETAC website at *www.netac.rit.edu* might be helpful. NETAC is the PEPNet North East Technical Assistance Center based at NTID/RIT.

Conclusion

Establishing appropriate VR services for college students who are hard of hearing or late-deafened will ultimately require state agencies to review their existing services to this population. Staff to serve these consumers will need to be found and trained to meet their unique service needs. VR agencies will need to recognize that these unique consumers do not fit the culturally deaf service model. VR professionals working together with postsecondary service providers can assist students to obtain training and become successfully employed.

Chapter Five

A Model Program to Provide Accommodations to College Students Who Are Hard Of Hearing

Debra C. Brenner

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Abstract

Disability Support Services (DSS) is a name traditionally used to represent a postsecondary program responsible for the provision of academic and support services to qualified students with disabilities. Although this name is prevalent, it has been suggested by various authors of this book, that schools consider using a name that is more welcoming to students. In the spirit of change, for the purpose of this chapter, the program will be titled Student Access Center (SAC.) Their mission is to create a comprehensively accessible environment. To accomplish these goals, professional staff members provide direct services to students and serve as catalysts for promoting disability awareness and advocacy for students, faculty, staff, and the community, in affirmation of the philosophy and spirit of the Americans with Disabilities Act. It is often within this program that a student who is hard of hearing first learns to identify appropriate academic accommodations, is introduced to new assistive technology, and gains knowledge of how to advocate for her or his needs and rights. You will read about the responsibilities of the Student Access Centers for the determination of student eligibility, adherence to legal mandates, as well as an offering of a variety of accommodations for these students.

Students who have hearing loss are typically referred to as Deaf (purposely capitalized to represent connection to the cultural of Deafness) or hard of

hearing. The distinction between the two populations is traditionally associated with the degree of hearing loss as demonstrated by the student's audiogram, or hearing test, which is detailed in Chapter 7. It is useful to be familiar with the degree of hearing loss; however, this information alone is not enough to determine appropriate accommodations.

The authors of this publication emphasize the importance of focusing on the individual's preferred mode of communication, not the degree of hearing loss, in order to determine appropriate accommodations. For the purpose of this publication, the term "hard of hearing" defines the population of individuals who have a hearing loss and do not communicate with sign language. Their preferred mode of communication is to utilize their residual hearing, speech, speech-reading, and speech-to-text accommodations. They include students who have lost their hearing at birth, after language has developed, and as adults (referred to as late-deafened.) These students may use hearing aids, assistive listening devices, have cochlear implants, or they may not utilize any hearing assistive technologies. Further information about cochlear implants is discussed in Chapter 7.

Student Access Center personnel usually have less experience and information about the characteristics and needs of these students than about students who are deaf. Some service providers are under the impression that students who are hard of hearing don't really need much in the way of services since they "appear" to communicate well with hearing people when in a one-on-one situation. Service providers as well as students are "confused by the diverse effects of hearing loss…they may be able to hear and understand speech in some conditions but not others" (Schroedel, Kelly, and Conway, 2002). It is the author's intent that the information in this chapter will further clarify the needs of this population and shed light on appropriate and necessary accommodations.

Self-disclosure

Chapter 1 pointed out that of the 16 million students who attend postsecondary institutions in the United States, over 400,000 are hard of hearing or late-deafened. These students have unique stories that include their age at onset of the hearing loss, mode of communication, level of acceptance of their hearing loss, preferred accommodations, and strategies for functioning in the hearing world. Each person is impacted by the choices they make and the information and support that is available.

There is a tremendous range of awareness and acceptance of hearing loss within this group of students who are eligible for services from the Student

Access Center. Some individuals prefer to remain invisible and are reluctant to self-disclose. One student wrote,

My fear of letting the world know that I was hard of hearing—that I was different from all those around me—deterred me from … exposing myself. It was easier to be the "hearing" girl who just couldn't hear well all the time rather than the hard of hearing girl. (Probst, personal communication, n.d.)

Some students will choose not to register for services from the Student Access Center. Some students will not be aware that they are eligible for accommodations. Of those who do register for services, some individuals may be accustomed to services they received in high school and not wish to experiment with additional accommodations that may be available at the college. The Student Access Center may encounter a few students who may over-zealously demand services and not understand the definition of appropriate accommodations.

In extreme cases, a student who decides not to identify themselves with the Student Access Center may later realize that the lack of accommodations impacted their grades, as a consequence of missed or misinterpreted information. If the impact is severe, the experience may act as a springboard for coming to the SAC and requesting assistance. In most cases, the student would then realize the benefit of using academic accommodations and begin incorporating them the following semester. In extenuating circumstances, it may be appropriate to take the impact of their disability into consideration and pursue administrative remedies based on the disability and to allow the student to retake coursework with appropriate accommodations.

It is also helpful to understand that the term "hard of hearing" is not universally used or accepted by students and may cause misunderstanding or alienation. To some, hard of hearing is a term that applies to elderly people, not college-age students. Instead, they may use terms such as hearing loss, hearing impaired, or "uses a hearing aid" to describe themselves. Although the multiplicity of terminology associated with this population may cause confusion, "hard of hearing" is the term used by most professionals in this field. The authors of this book have used the term to describe a population of individuals who have a hearing loss and may communicate using speech and residual hearing, use amplification with hearing aids and assistive listening devices, cochlear implants, or speech to text. The one similarity is that these individuals do not use sign language as their primary mode of communication.

HOW IS COLLEGE DIFFERENT FROM HIGH SCHOOL?

There is much inconsistency in students' awareness of the differences regarding the legal mandates that applied in K–12 and those that apply to

postsecondary education. In high school, the Individual with Disabilities Education Act (IDEA) governs disability services. In college, Section 504 of the Rehabilitation Act of 1973 and the American with Disabilities Act (ADA) governs disability services.

Table 5-1. Comparison of K–12 and Postsecondary Regulations

K–12	Postsecondary
Disabilities Education Act (IDEA) and the Americans with Disabilities Act (ADA)	Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act (ADA)
Free and appropriate mandatory education	Optional education
Identification	Self-disclosure
Evaluations provided	Documentation required
Individualized educational plan developed for student	Appropriate accommodations determined based on documentation and with student input
Advocacy provided by educators	Advocacy by students with assistance as necessary
Outcome oriented, successful learning	Equal access, not equal outcomes

The dilemma for students and their families is that under IDEA accommodations are based on entitlement, while the Rehabilitation Act and the ADA services are provided if requested and if the student is eligible. It is the student's responsibility to seek assistance from the Student Access Center. This can be confusing to new students and their families as they automatically received services during the student's K–12 years. In addition, some services provided in K–12, such as individualized instruction, are not available at most postsecondary institutions.

TRANSITION

The Student Access Center plays a large part in tapping potential to positively impact success and retention of students who have sensory impairments. In an effort to facilitate a smooth transition from high school to college, it is advisable to develop relationships with all stakeholders: parents, teachers, guidance counselors, resource-itinerant teachers, and Vocational Rehabilitation (VR) counselors.

Be easily identified

Conduct outreach to schools and VR to introduce the Student Access Center as an approachable entity. Identify the SAC in all college materials. Include an email, website, and phone number. Put information about the SAC in a prominent place for incoming students to see in resources such as the college bulletin, catalog, orientation, phone book, and other hard copy and web materials. Request a link from the college's main page to the SAC home page. To make students feel less apprehensive, post pictures of the SAC support staff. Encourage faculty to include a statement on their syllabus (examples provided in faculty section) inviting students who have disabilities to identify themselves then refer them to the Student Access Center.

Encourage student participation

Incorporate a process of self-disclosure in your school's acceptance process by including a self-disclosure form to be mailed to the Student Access Center or incorporate a web contact in your college acceptance packet. The Student Access Center should follow up by contacting these students and arranging to meet with them prior to or during orientation. Participate in your school's orientation program.

Be recognizable

Attend college fairs. Visit high school programs. Invite students who are hard of hearing to visit your campus. Partner with your state Department of Education to provide information to students and parents. Conduct awareness activities on your campus. Set up a display in a well trafficked location on campus.

Establish a presence with Vocation Rehabilitation (VR) in your state

Contact the State Coordinator of Deaf and Hard of Hearing VR Services to determine how best to establish a connection between your college and the VR agency. With the student's written permission to do so, contact VR counselors and discuss shared students. Suggest that a meeting take place with the Student Access Center, VR, and the student. Inquire if one VR counselor can serve all the students at your school who are hard of hearing and offer space on your campus for that counselor to meet with these students. This collaboration provides consistency of services and ease of communication. Encourage referrals between the SAC and VR personnel.

Be proactive

Partner with VR, other postsecondary institutions, and other state programs to participate in transition activities. Deaf Extreme, conducted in Georgia, is

one example of a statewide collaborative effort to present transition options to students, parents, and teachers. Annually, representatives from two- and four-year colleges, including Gallaudet University, and the National Technical Institute for the Deaf, as well as work-transition programs, offer information to groups of stakeholders. According to event evaluations, the most popular segment of Deaf Extreme was the presentation of a panel of current and graduated students who shared their transition experiences and highlighted what has been successful for them.

Offer academic credit

William Rainey Harper College in Palatine, Illinois, offers a course entitled Orientation 101. One component of this class is an Accommodations Expo designed to expose students to the variety of accommodations to support students who communicate through speaking and listening. Other components of the course focus on diversity, time management, and interaction with instructors.

IDENTIFICATION AND ELIGIBILITY

Legally mandated access and accommodations are available to any student who registers with the Student Access Center and provides appropriate documentation regarding a disability that causes a substantial limitation of a life activity. The 1990 Americans with Disabilities Act states that in order to receive services from a postsecondary institution, a person with a disability must first disclose his or her disability to the institution.

Even if your institution has done an excellent job of including information about the Student Access Center in all their printed and Web materials, there will be students who realize they need accommodations but do not know where or how to ask for the assistance. It is recommended that a process for identification of students with disabilities be initiated in conjunction with the college acceptance or orientation process. During the admission period, it is illegal to require students to disclose information about any disabilities they might have. Once the student is admitted, however, it is in the best interest of the school, the student, and other stakeholders to ask the student about his or her disabilities and how their needs may be accommodated. The college's letter of acceptance should include a statement instructing the student with a disability to contact the Student Access Center or other designated office on your campus. A phone number and email address should accompany this statement. Some schools include a self-addressed postcard, mail-in form, or instruct the student to complete a web form. Upon receipt of this initial contact information, SAC staff next needs to schedule a meeting with the prospective student in order to discuss eligibility and accommodations. Many colleges also have nontraditional students who have either returned to school

to change careers or simply chosen to attend at a later age. They too can be identified through this process.

There also needs to be an emphasis on orienting faculty and staff to identify and refer students who are hard of hearing to the SAC. Faculty and other instructional personnel can assist in identification and are often considered to be the college's first "radar screen." To encourage referrals, it is helpful to share general characteristics that a student with hearing loss might demonstrate in the academic setting. The North East Technical and Assistance Center at NTID provides free and useful Tip Sheets, one of which lists the warning signs of hearing loss.

Some of the characteristics to assist in identification include:

- Responses that are 'off-topic' or unrelated to questions or comments
- Comments delivered with volume that is either too soft or too loud
- Multiple requests for information to be repeated
- Appearance of watching class discussion, without actual participation

If faculty or staff would like to refer a student to the SAC, they are encouraged to communicate with the student in a private and quiet environment. Inclusion of an access statement on faculty syllabi is another excellent means of referral. Examples of access statements are listed in the Resources section appended to this handbook.

As stated before, it is imperative that your school establishes the means for students with disabilities to register with the Student Access Center. However, it is the student's responsibility to disclose his or her hearing loss and any other disabilities. The student retains the right not to identify him or herself.

DOCUMENTATION AND ASSESSMENT

For hard of hearing students, documentation must be from a licensed audiologist. Documentation of a hearing loss usually appears in the form of an audiogram that charts the hearing loss in terms of frequency of the sounds and decibel level or volume. This is well defined and covered in more detail in Chapter 7. This examination can indicate the presence of a hearing loss and its scope. The hearing test will report a person's responses within a controlled environment, unlike the actual classroom and campus situations. This information alone will not represent the impact that the hearing loss may have on obtaining information in diverse postsecondary settings. If the Student Access Center specialist is unfamiliar with interpreting an audiogram

and the testing audiologist has not provided a summary report, they may want to outsource for further information. It may be helpful to request additional information from the audiologist regarding the impact of the hearing loss in a postsecondary setting. Some colleges and universities have speech and hearing clinics on their campuses that can serve as a resource.

To further assess and determine appropriate accommodations, an interview with the student about accommodations they may have used in high school is a good place to begin. The intake process involves helping each student figure out the range of communication technologies and strategies that may benefit him or her in a variety of situations. There are assessment tools that can be used to broaden the amount of information regarding the hard of hearing person's communication skills. See http://www.mcpo.org/greg/index.htm for information about assessing the communication needs of hard of hearing persons.

The initial intake interview also serves as an opportunity to begin to establish rapport and discuss the student's accommodation needs. It provides an opportunity to become familiar with the student's preferred mode of communication in a one-on-one situation. Once you have established the student's communication needs, make sure that you provide what is needed, such as appropriate lighting, clear view for speechreading, assistive technology, or typing back and forth, for examples. Ask open-ended questions to make sure that the student understands the communication. After you listen to their story, introduce them to a variety of accommodations, and explain your department's policies and procedures. At this point, the student may feel overwhelmed by too much information and, as a result, fail to remember all that you have shared. Provide the student with information available in print or on the web so they can review the information you have communicated as well as the program's policies and procedures.

The importance of follow-up meetings with the students needs to be stressed. At these meetings, review accommodations, re-introduce ideas you think might be beneficial, and continue to develop rapport. Bear in mind that many hard of hearing students will be reluctant to utilize accommodations including assistive technology. In addition, a student may be struggling with identity issues, for example, who am I, a hearing or a hearing-impaired person; what does this mean? As you continue to meet with the student, they may become more comfortable to try something new. The situation may also change with time after the student has experienced the classroom setting.

POLICIES AND PROCEDURES

Policies and procedures for service provision must be developed to address the method students must follow in order to obtain appropriate accommodations. The SAC policies and procedures should provide a step-by-step plan that students can refer to as they adapt to college life.

In regards to accommodations that require a service provider, such as speech-to-text captioning or oral interpreters, it is important to consider what the policy will be regarding lateness or no-shows. Policies regarding the loan of equipment as well as a systematic method to keep track of loaned hearing assistive technology are imperative given the cost of these units. Create a user-friendly policy that allows equipment to be loaned for a semester if necessary. Work with your college's media department to encourage the institution to develop a campus wide policy that requires all new media contain captions. The National Technical Institute for the Deaf has such a policy. Although it may not translate into 100% success, it will go far to encourage an increase in the purchase of accessible media (http://www.netac.rit.edu/). Students need to be aware of a procedure for corrective action if they are not satisfied with the service provider at any time during the semester as well as have an opportunity to evaluate their service provider at the close of the semester. This information can be used to improve services.

The Postsecondary Educational Program Network (PEPNet) has developed free templates that can be downloaded and adapted for use by your institution. These policies cover captionists, faculty responsibilities, notetakers, students, and parents. They can be located at the PEPNet Resource Center and are listed in materials that can be downloaded. Their website is: http://www.pepnet.org/default.asp. Other valuable resources for policies and procedures can be found on the websites of other postsecondary programs—see the list of a few exemplary programs at the end of this chapter. Conversations with other SAC personnel are also valuable when developing these documents. As technology changes, updating policies and procedures becomes necessary. Make sure that all policy and procedure documents are available and easily accessible on the SAC website.

When meeting with students, refer to these documents whenever requests for services are made. Have students review the documents and sign an agreement that they understand the policies and procedures and will follow them regarding access to Student Access Center accommodations. This agreement will also serve to protect the institution should a student fail to meet their responsibilities. For example, a school's policy and procedure may require that a student register during early registration and submit their course schedule in order to receive realtime captioning in their classrooms.

This policy is in place due to the high demand and low supply of service providers. If a student fails to register early, but rather waits until the week or day before classes begin to submit his or her schedule and make the request for a realtime captionist, the school will still need to work on filling the request, but due to the lateness of the request and the written policy, the college may let the student know that it may take a few weeks until the accommodation is available. This does not mean that the accommodation can be ignored. It means that there are timelines to follow in order to put the service in place by the beginning of classes.

Accommodations—Determine what is Appropriate

Appropriate accommodations, also referred to as auxiliary services, differ from student to student and vary by classroom situation. They must remain flexible based on the academic environment. There are numerous resources available to assist SAC units. The Postsecondary Education Programs Network (PEPNet) who's "goal is to assist postsecondary institutions across the nation to attract and effectively serve individuals who are deaf and hard of hearing" (PEPNet, 2006) provides free materials. Their website at http://www.pepnet.org/default.asp will be extremely helpful.

Keep an open mind when establishing accommodations for new students. Remember that your students may not be familiar with accommodations that are available at the postsecondary level. The SAC needs to be proactive and introduce the hard of hearing student to accommodations and technologies that may be new to them. It is essential to expose students to the advantages and limitations of accommodations and how to maximize their use. Recognize that it may be a maturation process for learning to use and value some accommodations.

The accommodations listed below are presented in order from low tech to high tech. The list begins with descriptions of services that do not require significant (exorbitant) funding or the hiring of certified practitioners. Farther down, the list describes services that require some form of adaptive technology as well as bringing in qualified service providers. The order does not reflect an order of appropriateness, preference or critical need. This can only be determined in partnership with the student because each student will have unique needs.

INITIAL MEETING WITH STUDENTS

The initial meeting with a student who is hard of hearing should be held in a quiet environment. The first order of business is to determine the student's

preferred mode of communication and make sure that their communication needs are met. This may require writing or typing back and forth or attention to appropriate lighting. Glare, for example, makes it very difficult to speechread someone who is sitting in front of a bright window. You may want to introduce assistive technology devices as a method of improving communication. Be cautioned, however, that many students may not be familiar with this type of technology, or they may find the idea of assistive technology too invasive as it usually makes them readily identifiable. Work together with the student to determine how to provide a "safe" and communication-friendly place for your students to come to in order to discuss their disability-related needs. Build rapport then move on to services.

If the student uses speechreading as their mode of communication, be aware that it is not possible to see and recognize all of our speech. Approximately thirty percent (30%) of the English language is formed within the oral cavity, without specific visible lip formations. Sounds such as "pan," "man," and "ban" look similar. Therefore, the student who is hard of hearing is relying on context to understand the meaning. One student reported,

> People like me perceive bits of sounds separated by holes of silence. While you're talking, I'm doing two things at once: listening and trying to fill in the holes. I usually need time to figure out what you've said before I can answer. Following a conversation requires intense concentration.

> (M. Sacks-Botto, personal communication, n.d.).

The ability to speechread may be affected by a faculty member who has a strong accent, facial hair that obscures their lips, room acoustics, size, lighting, lecture vs. discussion format, and a student's familiarity with the topic, technology used in the classroom such as projectors and overheads, and students' speechreading skills. Each classroom situation often presents a unique environment for communication. Therefore, what works for one class, may not be appropriate for another.

Clarify your role as a SAC specialist and describe accommodations that are available as well as how to request and use them. Introduce the student to technology and resources that are available on your campus. Inquire if they have contacted VR, if not give them referral information. Communication requires intense concentration and the student may tire, hence missing more information as the conversation time drags on. Provide information in writing so they can review it when they are away from your office. Before the student leaves, make another appointment to meet with them. Be prepared to review the information again at the next meeting.

Be patient. Take the time to get to know each student, their communication preferences, and their past history. Familiarize yourself with the institutional responsibilities. This information will serve as the groundwork for developing an appropriate plan of accommodations and may open the portal to an enriched college experience as well as impact student success and retention.

ONGOING MEETINGS WITH STUDENTS

Encourage students to meet with you on a weekly or biweekly basis for at least the first part of the semester. This is a crucial time to get to know the student and determine if accommodations are working. *Rapport is a crucial element in development of trust so the student feels comfortable coming back to you if they have any questions or concerns.* Exemplify advocacy for students who are transitioning from high school. These students have probably had neither the opportunity nor the need to advocate for themselves. The student can learn from the SAC specialist how to request assistance from professors regarding their accommodations. Make phone calls while the student is in your office to model appropriate way to ask for help, explain the impact of hearing loss, or to gather other information.

As issues arise, you can refer students to college and community resources such as tutoring, speech and language center, mental health, or other appropriate programs. It may be helpful to have collaborative meetings with a student, Student Access Center, and the VR counselor if a need arises. *At some point, it would be extremely helpful to introduce students to other students who are hard of hearing. More experienced students can discuss the benefits of technology in the classroom. On some campuses, social organizations have formed to give these students a sense of community and reduce isolation and loneliness.* Consider developing some orientation procedures for new hard of hearing students, in conjunction with other orientation or transition efforts on campus.

PRIORITY REGISTRATION

Student Access Center personnel may need to work in conjunction with the registrar's office in order to arrange for these students to have permission to register early. Registering early affords students the benefit of making wise choices in their course and teacher selection. It is inherently easier to plan for accommodations if the SAC specialist knows about a student's schedule as far in advance as possible. This affords the SAC staff to arrange for captionists, oral interpreters, and to work with faculty in providing captioned videos. By registering early, a student also has more control over their schedule. The fatigue factor involved when speechreading may be compensated for by scheduling breaks between classes. Careful selection of

teachers based on information can be garnered from SAC staff, other students, and by interviewing faculty. Some faculties have a history of doing an excellent job of incorporating accommodations into the classroom. Others, though willing, are difficult to understand due to accents, raspy voices, or facial hair covering their lips even when they enunciate.

Sometimes the physical environment of a particular classroom is not suitable for a hard of hearing student. The class may be situated near an air conditioning compressor that periodically produces a low frequency rumble that interferes with the student's ability to comprehend the teacher. The SAC needs to keep information about classrooms that are impacted by environmental noises so that courses can be relocated to more appropriate locations. Early registration also allows time to work out situations that might affect support from Vocational Rehabilitation or financial aid, for example, such as the need for a reduced course load.

HOW FRIENDLY IS THE COLLEGE TO STUDENTS WITH DISABILITIES

It is important to work within the campus system to integrate students who are hard of hearing into the college mainstream to promote inclusion. The goal of the college, not just the Student Access Center, is to integrate accommodations and focus on the normalization of services. Instead of focusing on the student's differences and what they cannot do, focus on making the campus accessible via accommodations. This will 'level the playing field' and encourage inclusion.

Administrations need to understand that students with disabilities do not belong solely to the Student Access Center. They are students who met admissions standards and enrolled at the college. Successful SAC programs cannot exist in a vacuum. They work hand-in-hand with administration, admissions, and financial aid, in addition to academic and student affairs. Their work permeates the entire campus and builds a more inclusive environment. It is imperative that students who have disabilities are considered students first and remain the responsibility of the entire college. These students utilize services at the Student Access Center just as students without disabilities utilize services at financial aid.

EDUCATING FACULTY AND STAFF VIA LETTERS DESCRIBING ACCOMMODATIONS

An excellent method to improve the climate for inclusion of student with disabilities on your campus is by educating students, faculty, and staff. This can be done, for example, by requesting time to speak at departmental or division meetings, one-on-one emails or phone calls with individuals

working with your students, articles in school newspapers or greenmail, setting up awareness activities on your campus, and working through your institution's training and development department.

 Tips for Faculty and Students and other useful resources are available through PEPNet from the Northeast Technical Assistance Center (NETAC), which is listed as a resource at the end of this chapter. These are provided free online. If Student Access Center staff do not have the expertise to conduct orientations regarding the needs of students who are hard of hearing, contact one of the resources listed in the appendix such as state resources, PEPNet, or one of the exemplary programs listed in the resources. It is important that faculty encourage students to identify themselves. This can be accomplished by including an accessibility statement on their course syllabus. Several sample statements to include on class syllabi to inform students of the procedures for obtaining disability accommodations are as follows:

> Any student with a documented disability (such as physical, learning, psychiatric, vision, or hearing) who needs to arrange appropriate accommodations must contact the instructor and the Student Access Center at
>
> _____.
>
> Your success in this class is important to me. If you have a disability and may require some accommodation or modification in procedures, class activity, or instruction, requirements, please contact me early in the semester so we can refer you to the Student Access Center who will discuss and arrange for appropriate accommodations. The Student Access Center is located in Building _____, phone_____, email_____.

The SAC specialist needs to prepare letters written to faculty describing the accommodations that may be used by the student enrolled in their class. Depending upon the accommodation, additional information may be included such as knowledge about using or obtaining captioned videos and testing. Templates for these letters can be found at the PEPNet website which is listed in the references. Students are usually responsible for picking up their accommodation letters from the SAC and delivering them to their faculty on the first day of class. Because some accommodations require additional personnel to attend classes, such as oral interpreters or captionists, it may be helpful for Student Access Center to communicate with faculty prior to the start of classes.

PREFERENTIAL SEATING

The preferred seating location depends on the individual's hearing loss, as one ear may have more residual hearing than the other. Some students prefer to sit near the front or side of the classroom to easily monitor who is talking by a simple turn of the head. Preferential seating is a decision the student will make and the Student Access Center only needs to be involved should there be a difficulty.

NOTETAKING

Notetaking is a useful accommodation because a student who speechreads or relies on captioning cannot take notes and watch the instructor or laptop screen simultaneously. Notetakers may be either paid or volunteer. The Student Access Center may wish to incorporate a training element. There are materials available regarding the training of notetakers and can be found at the PEPNet resource location listed in the references.

A notetaker, whether volunteer or paid, is typically a classmate recruited by the student or the instructor. In the event that a classmate cannot serve as notetaker, it may be necessary to hire someone from outside the classroom. This might occur in a learning support situation where the students enrolled in the class may not have good notetaking skills. Notetakers in this situation can be recruited from students who have previously taken the class, upper-level students, or a part-time or full-time staff member at the college. The Student Access Center is responsible for determining a fee and processing payments according to the college's payroll rules. Pay rates usually range from hourly, at five dollars per hour, to a contract fee or stipend of eighty-five dollars per semester. By thanking notetakers, letting them know that their services were useful, and by providing incentives such as bookstore discounts, the college will be developing a pool of reliable and effective notetakers who can be asked to provide services in other classes.

The skills required to be a notetaker include, but are not limited to, regular attendance in class, ability to determine and record the important ideas from a lecture or discussion, legible handwriting, and provision of notes in a timely manner. Students should be encouraged to wait until the second or third class meeting before they identify a notetaker. By looking around the classroom, they can determine who is paying attention and recording information onto their notes. If comfortable, the students might ask if they could review the notes before making a selection. The teacher may be able to offer assistance as well, especially if they are familiar with students in their class.

The Student Access Center provides pressure sensitive paper or carbonless paper for this use. This is the quickest way for a student to receive their

notes. The notetaker keeps one copy of the notes and gives a copy to the student who is hard of hearing. If preferred, arrangements can be made to photocopy the notes at the SAC or email them directly to the student. In some instances, notetakers prefer to rewrite or type up their notes. If that is the case, notes should be provided electronically or at the very latest, at the next day of class. Alternate arrangements would need to be made on the last day of class prior to a test.

If the student is not satisfied with their notetaker, they should contact the Student Access Center immediately. At that point, the SAC specialist should contact the notetaker to thank them for their time, and then assist the student in locating another notetaker. Sometimes, it is helpful to designate more than one volunteer notetaker for each class. This provides a safety net in case of absences of notetakers and assists in obtaining more accurate notes. There are valuable training materials offered through the PEPNet website, which are listed in the Resource section of this handbook.

TUTORING

Although students may have received tutoring in their high school, it is not required for the Student Access Center to establish this as an accommodation. If tutoring is provided by other departments such as Academic Assistance or Instructional Support Services, refer students who are hard of hearing to them. Provide appropriate accommodations to ensure communication access. If tutoring is not provided by the college, the Student Access Center, though not obligated, may want to consider providing this accommodation.

TESTING ACCOMMODATIONS

Determining if a hard of hearing student is eligible for testing accommodations should not be generalized. Some students may demonstrate difficulty with reading comprehension, especially on multiple-choice exams. These exams are often laden with questions that are purposely designed to propose two very similar choices, often incorporating sentence structure that is difficult to decipher. Unlike their hearing peers, the nuances of written language may be missed. If the Student Access Center recognizes a disability-related need, then there are various accommodations that might be utilized.

Extended time is provided when a student has difficulty processing the written language on the test, thereby requires additional time to read and comprehend the questions.

The Student Access Center may encourage the student to take the test within the faculty's department in order to have access to faculty. If this is not

feasible, however, the Student Access Center should work with faculty to arrange an alternative location.

The testing environment needs to be free of distracting movements and noise.

Occasionally, a test is written in a format that is extremely difficult for a student to comprehend. Some multiple-choice formats, for instance, require students to select answers that have double negatives woven throughout the selections. In unusual circumstances, providing an alternate test format such as an oral or essay exam could be a reasonable accommodation.

HEARING ASSISTIVE TECHNOLOGY

There are various types of hearing assistive technology that may be useful for students who are hard of hearing. A detailed description of these is presented in Chapter 8.

Assistive Listening Devices (ALD) utilize wireless technology to amplify the faculty's voice via a lapel microphone and may be effective for students who have residual hearing. Because, students may not be familiar with this type of equipment; you may need to introduce them to the options for their use. Equipment loaned to students should be in excellent working condition, and it is essential that the student be taught how to operate and maintain their ALD. Staff at the Student Access Center must be proficient in demonstrating the various technologies as well as perform routine maintenance. Because the microphone is worn by the teacher, ALDs are not effective in amplifying speech from anyone other than the faculty member. It is necessary for faculty to repeat questions and comments from students in the classroom. This technology, unless the room is amplified with additional microphones, is not effective for classes that utilize interactive class discussions.

Residential facilities are responsible for purchasing and installing visual fire and smoke alarms in residence halls. Additionally, a door bell may be installed that connects to a lamp in order to signal that someone is at the door. A peephole in the door is necessary for safety as the hard of hearing student may not be able to identify a visitor by asking for verbal identification.

The technology available to access communication via phone lines is rapidly developing and changing. These include, but are not limited to, video relay, voice carry over, handset amplifiers, written captions via Cap Tel, as well as TTY/TTDs. Detail regarding equipment, services, and accessory options are described in Chapter 8. It is important to place signage at strategic locations to notify students where this equipment is located on the campus.

It is also helpful to educate faculty and staff regarding the different ways to communicate with hard of hearing students. There are numerous technologies available that provide communication to the general population via instant messaging both via computer or wireless equipment such as a Side Kick or Blackberry. These services opened a powerful communication network for people who are hard of hearing. They are now on par with their student peers who use cell phones.

Oral interpreters/cued speech

An oral interpreter may be a useful accommodation for a student who relies on speech reading. The oral interpreter positions themselves directly in front of the student, and 'mouths' the speaker's output without emitting audible speech. The oral interpreter will generally be a few words behind a speaker and may rephrase or substitute a word or phrase to provide more visibility on the lips for added comprehension. Natural body language and universal gestures contribute to the meaning of the message. Just because a sign language interpreter has state or national certification, do not assume they are trained to do oral interpreting. Oral interpreters are not always readily available, much less so than sign language interpreters. This is another example of the need for early registration, planning, and establishing policies.

Some individuals rely on Cued Speech which is a visual phonetic alphabet defined by hand shapes and location by the throat, chin, mouth, and jaw. These handshapes are used in combination with speech reading to identify specific sounds of spoken language. Qualified cued speech providers, as well as students who use cued speech as an accommodation, are not common. Additional information can be found at http://www.cuedspeech.org/default.asp .

SPEECH-TO-TEXT OPTIONS, QUALIFICATIONS, AND WHERE TO FIND SERVICE PROVIDERS

Speech-to-text is an accommodation that converts auditory stimuli into text format useful for individuals who relies on printed English to understand what is being said. Detailed information about this accommodation is located in Chapter 8. Computer Assisted Real-Time Captioning (CART) utilizes a transcription system like that used in the courtroom to prepare a verbatim transcript of what is said in the classroom as it is happening, in real time. A qualified transcriptionist, is either located in the classroom or is connected via the Internet. Their responsibility is to type the verbal stimuli verbatim so that the student can read the text. The text output can be provided on a laptop or can be broadcast for several viewers to see, such as on an overhead screen using a projector.

There are other software programs developed for the purpose of real time captioning that focus more on capturing meaning-for-meaning, although a truly skilled provider may be able to accomplish word-for-word. Two of these programs are C-Print http://www.ntid.rit.edu/ cprint/index.php and the Typewell Educational Transcription System http://www.typewell.org/home.html . Both rely on software that is based on a system of learned abbreviations that the provider types onto a laptop computer as speech is presented in real time. The provider must be able to rephrase information in order to type in the meaning, rather than every word.

Copies of transcripts may be given to the student via hard copy, saved to the student's flash drive, or sent electronically. Some contractors charge an additional fee for providing a copy of a transcript. The technology and training are fairly new, therefore, there is a lack of qualified captionists. Regardless of what form of captioning is provided, it is sometimes advantageous for the service provider to be informed about the course before it is captioned. This may be in the form of a textbook, teacher's notes, extensive glossary, and syllabus.

In-class captionists may be contracted by the hour or hired as full- or part-time employees, depending upon the number of students needing this accommodation. Due to the shortage of qualified speech-to-text providers, the Student Access Center may want to consider cross-training a Student Access Center support service provider in C-Print or Typewell. Contact these companies directly for more information about criteria and length of training. Some postsecondary institutions are offering flexible part-time positions, based on student schedules, with full benefits in order to make the position more attractive. This permits those wishing to continue their contract business outside of their hours with your college while providing stability and the opportunity to purchase reasonably priced health insurance.

Remote CART, C-Print, or Typewell services can be delivered to a college from anywhere in the world to any location that is equipped with either an Internet line or phone line. Service providers utilize a software program, receive the spoken stimuli over the Internet via a microphone, and then transmit the text back. A list of providers is appended in the Resources section of this handbook. However, by listing the agency, the author is not making a recommendation. Although the hourly charge for remote services may be more costly than in-class service providers, there is no billing for travel time. In addition, there usually is not a two-hour minimum service, which is often the case with face-to-face providers.

Remote services work well for lecture situations. However, depending upon the strength of the microphone used, the captionist may not be able to hear all student comments or questions. This can be by-passed if the faculty,

wearing a lapel microphone, consistently repeats all spoken comments and questions. Setting up remote services on campus requires cooperative support from Information Technology (IT) professionals to guarantee quality services. Prior to the class beginning, the site must be tested to ensure connectivity. Then, training and support needs to be made available to the student. They will need to borrow a laptop computer with appropriate software and learn how to connect to the remote site. If problems arise, the IT department may need to be involved whenever necessary.

Because the field is so new, there are not yet standards for assessing skills and quality of services. The Speech to Text Service Providers Network (STSN) at http://www.stsn.org/index.html is an organization established to focus on development of qualifications of service providers. Contact STSN and your state resources to find out about training and evaluation. It is important to encourage current staff and contract employees to take on this new emerging technology.

There are some actions that you can adopt in order to retain interpreters and captionists. Welcome them into your center, do not keep them isolated. This can be done with periodic phone calls or emails as well as inviting them to a meeting each semester to get their input on service provision. Provide them with textbooks as needed to help familiarize them with new vocabulary and concepts. Perhaps most important is to assure that your fees are competitive. Investigate what other colleges in your region are paying for captionists. See if you can offer them any perks on your campus such as access to the gym or leisure activities, tuition remission, discounts at the bookstore, or free parking.

Captionists are usually working on a contract basis; however, some may be interested in a part-time position with benefits. Consider negotiating with your Human Resources Department to establish a position that offers captionists benefits and some degree of flexibility so they can continue their contract work with other agencies. Northern Essex Community College, in Haverhill, Massachusetts, offers full benefits to part-time staff interpreters and captionists (http://www.necc.mass.edu/). The minimum number of hours necessary to qualify for benefits is 18.75. These positions can be established as one-year contracts on a nine-month basis and provide continuous health benefits which make the positions attractive to freelance captionists. Hiring staff provides a cost savings as compared to hiring contract captionists, provided a Student Access Center needs this magnitude of services.

Captioned Media

It is important to provide text captions for media, online coursework, and events sponsored by the college. The Captioned Media Program (CMP) provides a free-loan media program comprising over 4,000 open-captioned titles (videos, CD-ROM, and DVD). Deaf and hard of hearing persons, teachers, parents, and others may borrow materials. There are no rental, registration, or postage fees. Several hundred titles are also streamed on the CMP website http://www.cfv.org/ .

When purchasing professionally produced media, an icon will be displayed to denote that the product contains captions. In order to broadcast the captions, it is necessary to utilize a captioning decoder, which is imbedded in all televisions, thirteen inches or larger, manufactured for use in the United States after 1993. The captions can be turned on via the television menu. If a monitor, rather than a television, is displaying the media, it may be necessary to attach a decoding device. To ensure that the captions will project, test it before using in the classroom. Work with your Office of Instructional Technology to arrange for necessary equipment.

Faculty can utilize programs they have personally taped from captioned television broadcasts. These captions will be retained. Appropriate equipment is still needed to broadcast them. If captions are not embedded in the media, faculty can be encouraged to browse the CMP library and select an alternate product that covers the same material and is captioned. Although they may balk at this, often they find similar, but updated materials. Student Access Center personnel can be a resource to the faculty.

Even the best speech reader most likely will be challenged to understand media that is not captioned. This occurs often due to the popular technique of "voice-over," when the speaker is not present on the screen. Sound distortion may also contribute to the difficulty of understanding, even for students who have a mild hearing loss. Do not be tempted to consider a brief media presentation as insufficiently important to obtain in a captioned format. An educator, who is hard of hearing, reported that he attended a meeting which began with a viewing of a video tape which was not captioned. He expressed concern regarding the lack of access, and the hearing presenter told him, "Well, it's not very long and it's not really important." The hard of hearing participant replied, "Is it me or the information that's not important?" (R. Collins, personal communication, December 1, 2006). Ideally an institutional policy should require personnel to purchase and utilize captioned media.

ACADEMIC WAIVERS AND SUBSTITUTIONS

There may be some classes inaccessible to a hard of hearing student. For example, a student may not be able to meet the requirements of a foreign language because he or she is unable to acquire pronunciation of the

language. Each college should have a printed policy on how a student can go about requesting a waiver or substitution in such cases. If the Student Access Center or the student feels that a request for a waiver or substitution is necessary, the student should follow the approved process. These requests should be carefully considered and can be based on the student's written appeal, recommendation from their SAC specialist, and input from faculty. Some students will be able to participate in adapted courses for foreign language, perhaps not being graded on their pronunciation or their ability to transcribe dictation. Some students will have no problems doing either of those. Others may require testing accommodations and additional repetitions of dictation. It is recommended that instead of a waiver, turn to the college's educational standard's committee to determine, based on the purpose of the core requirement, what other courses could be substituted and provide equivalent coursework. For example, if a school requires a foreign language for three semesters in order to provide a broad introduction to world culture, then perhaps anthropology, sociology, religion, or history courses might be an appropriate substitutions. Clearly, due to meeting a wide variety of needs from such students, numerous and flexible options are necessary.

Depending on the degree and age at onset of the hearing loss, a student may have difficulty with written English grammar. A hearing student, for example, can identify an error in grammar by realizing that it just doesn't sound right. A student who is hard of hearing, however, may not hear the possessive or plural forms, verb endings, as well as prefixes and suffixes. Often this is common because the sounds are higher pitched or are at the end of a word, therefore, the volume of speech decreases. Colleges must uphold their standards, but may need to take this disability-related impact under consideration. Some colleges choose to offer various types of instructional support and remediation that are above what is required as an accommodation, to enhance greater student success and retention. For classes other than English, it may be appropriate to focus on content knowledge rather than penalize for these grammatical errors.

Working with Administrators—Costs and Benefits

To many Student Access Center directors, the cost of services is an ongoing administrative and budgetary battle. College administrators do not want to hear that a single student may cost the college thousands of dollars per semester to provide accommodations such as oral interpreters or realtime captionists. Attempt to keep costs reasonable by hiring full- or part-time staff when appropriate. Compared to hiring fee-by-hour practitioners, there is a cost savings.

It is also important to present cost information to administrators that reflects the total number of people affected by provision of accommodations. This requires a new model regarding the college's understanding of who requires, utilizes, and benefits from these services. *Students who are hard of hearing are NOT the sole beneficiaries of services.* Consider the population impacted by accommodations. Faculty and staff receive assistance in communication making it possible to teach all students. Students who are not disabled can communicate with their peers who are hard of hearing. They can work together on class projects as they broaden their understanding of disability and differences. In some instances, all students in a classroom received copies of the captionist's notes, which was a great benefit.

Spreading the cost of services over faculty, students, and the college at large puts this funding in a new perspective. Students with disabilities are an integral part of the student body and responsibility for their success and retention needs to be accepted by all aspects of the institution. Although these perspectives do not diminish actual costs, they help present the expenditures as more palatable. Lastly, it is important to remind administrators that access is legally mandated.

Fees for services differ based on geographic area, qualifications of service providers, and whether the position is contractual or staff. A recent national survey was conducted by the Midwest Center for Postsecondary Outreach reflecting salaries and hourly fees for sign language interpreters and captionists. This information is helpful when determining costs and can be found at http://www.surveymonkey.com/DisplaySummary.asp?SID=918554&U=918 55478570. Some states have developed agreements to cost share with their state Vocational Rehabilitation agencies. Kentucky, for example, has a working relationship between postsecondary and Vocational Rehabilitation. Minnesota has a higher education-funded cost-sharing plan with their colleges and California has a comprehensive funding system for its community colleges. Creative cost sharing is becoming more popular. The University of Wisconsin, Milwaukee, "loans" their staff service providers to other nearby colleges when they are not directly serving UW students. This is an excellent use of professional time and promotes collaboration between institutions.

To reiterate, the critical concept regarding cost embraces the philosophy that delivering accommodations are not solely for the student who is hard of hearing. Rather, they facilitate communication between student and faculty, student and professional staff, and among students themselves. Portraying information of costs by spreading out the cost among the larger academic population, administrators may view the cost with new perspective.

RETENTION

Retention is a key concern to postsecondary administrators and is addressed within the Student Access Center by assuring provision of comprehensive accommodations that reach all aspects of college life. As discussed in Chapters 1 and 2, there are four aspects of student retention that need to be considered. First, students must have appropriate academic abilities as set by the school's admissions criteria. Second, students need a clear career goal. Referral to a college unit that offers counseling regarding selecting a major and career can assist students. Third, students require appropriate and complete support services. Finally, retention increases when a program is comprised of a critical mass of students with a minimum of fifteen to twenty students who are hard of hearing. This provides opportunities for a supportive community to develop. With growth of this population, based on solid services and friendly and knowledgeable staff, services will become more cost effective as contract service providers are replaced with full or part time staff. Many colleges and universities have experienced variance in the numbers of students who are hard of hearing. These numbers may vary from year to year or may change over a period of time.

Student Leadership and Self-Advocacy

Develop leadership opportunities for students by inviting them to be involved in the education and orientation of faculty, staff, and the community. Students with various disabilities at The University of Georgia created a student-led organization called Leadership, Education, Advocacy, and Disability (LEAD). Members interviewed each other to gain experience and were coached by Student Access Center staff. When ready, LEAD members attended faculty meetings and college-wide programs and shared their experiences. They helped faculty better understand student needs and how to work cooperatively augmenting access to instruction. Self-advocacy training was given at LEAD meetings, opportunities to educate faculty and staff were abundant, and LEAD members gained increased confidence. As a result of LEAD efforts, members were invited to speak to the Georgia state legislators advocating for the needs of students with disabilities throughout the state.

In 1996, two University of Georgia students who are hard of hearing formed another student-led group focused specifically on communication and peer support. Hearing loss affects communication and socialization. The group founders felt empowered by opportunities to discuss their experiences with each other. The student co-founders wanted to establish an environment where true peers could understand the experiences and challenges associated with hearing loss. Members of Sound Off are primarily individuals who are

Deaf and hard of hearing. Hearing peers are welcome only if they have a comprehensive understanding of the impact of hearing loss. Members are encouraged and coached in leadership activities for the organization. Although Sound Off is primarily a social support system, some members became mentors to public school students who were Deaf or hard of hearing.

Humor was often shared at Sound Off meetings, including this story, which arose from an incident of miscommunication. Humor provides a wonderful outlet and promotes group cohesiveness. The story was told by Sound Off member Carly. When she was in high school she had a crush on a handsome 17-year old male student. He often waved to her in the noisy hallway as they passed each other on the way to class. One day, he stopped her and began speaking to her amidst the roar of the hallway. The noise was too great for her to rely on her residual hearing, but she didn't want to let him know that she was having trouble understanding what he was saying. So, she smiled when he smiled and nodded her head when he did. She wasn't sure what the conversation entailed, but she did her best to "fit in" and get by. To her surprise, he appeared at her home later that evening. She still did not know why, but she chatted and accepted his offer to go for what she thought was a short ride in his brand new car. About fifteen minutes later, she found herself at a high school basketball game. She was safe enough, but had not realized that she had been invited out on her very first date!

Movie night was another favorite activity of Sound Off members. Captioned DVDs or videos were rented, popcorn popped, and the group made themselves comfortable at the Student Access Center conference room watching a movie on the large silver screen. Potluck dinners were also held at student or staff homes. *Getting to know more experienced students provides opportunities to exchange information about adaptive technology, get advice regarding cooperative faculty, and share knowledge about general life experiences.* Students had opportunities to experience leadership positions in a comfortable and supported environment. One student was a member of both Sound Off and LEAD. He shared his feelings when he said,

> I have also been privileged to be a part of Sound Off and
> LEAD. I realize some of [the Student Access Center staff]
> may, at times, become frustrated because of low
> participation in [student] groups. However, these groups
> were vital to my ability to learn about myself and gain much
> needed confidence; and I am certain I was not the only one
> to benefit." (D. McPherson, personal communication, 2006).

There are numerous activities that can involve students and promote retention. Bring in successful students who have graduated and are in the work force to share their experiences and serve as role models. Pair upper

level students with incoming students as mentors. Spotlight students in your program newsletter. Know the resources on your campus and connect students with appropriate assistance as needed. Introduce students to college and community resources. There are many organizations that would be excellent resources such as Hearing Loss Association of America, formerly Self Help for the Hard of Hearing, and the Association of Late-Deafened Adults, ALDA. Attend events sponsored by these organizations and invite a speaker to address students. Regularly communicate with students via email, instant messenger, face-to-face meetings, and invitations to student meetings. Ask your Student Activities Office for assistance. The opportunities are many.

EXEMPLARY PROGRAMS AND RESOURCES

There are several postsecondary programs and resources serving students who are hard of hearing that are worthy of mention. They include, but are not limited to, Georgia Perimeter College, Harper College, Jacksonville State University, and the PEPNet and the regional technical assistance centers. Details and contact information is included in the reference list.

A STUDENT THANK YOU

This message was written by a student who graduated with undergraduate and graduate degrees from the University of Georgia. Upon leaving, he thanked the service providers from whom he had learned so much about appropriate accommodations and about himself.

While I do not know some of you as well as others, I wanted to thank each of you for the roles you have played in my success and the success of so many other University of Georgia students. As many of you know, I did not have accommodations in high school and I had decided I was not going to use them at the community from which I transferred or at UGA. While my grand plan ultimately failed, I was able to use [Student Access Center] services and encouragement to transform my grades from failing to 3.8 in my last five semesters as an undergraduate. I simply could not have made this turnaround without someone, you guys, there to offer all I have been given. (R.D. McPherson, personal communication, 2006)

Conclusion

Establishing appropriate services to students who are hard of hearing requires a keen and intuitive sense of the circumstances surrounding communication. This chapter introduced and discussed various accommodations that may alleviate some of the obstacles preventing access to postsecondary education. *The student is your first and best line of inquiry*

of what would be appropriate to 'level the playing field' so that she or he can participate more fully in a comprehensive postsecondary endeavor. Numerous resources, of which only a portion of have been referenced at the end of this chapter, are available. The goal is to put these resources to good use to enhance inclusion of students who are hard of hearing into the mainstream of college life.

EXAMPLES OF A FEW EXEMPLARY PROGRAMS:

Jacksonville State University, Jacksonville, AL
http://www.jsu.edu/depart/dss/index.html
Retrieved July 17, 2006.

Harper College, Palatine, Ill.
http://goforward.harpercollege.edu/page.cfm?p=991
Retrieved May 1, 2006.

Georgia Perimeter College, Clarkston, GA.
http://www.gpc.edu/AC/Mission.html
Retrieved May 1, 2006.

University of Georgia, Athens, GA.
http://www.dissvcs.uga.edu/index.html
Retrieved June 21, 2006

Chapter Six

Enhancing Communications Outside the Classroom

Larry Sivertson

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Abstract

This chapter examines the process of ensuring that students with hearing loss have access to the complete postsecondary experience. We discuss a wide variety of postsecondary situations, considering how accessibility requirements may differ in various types of programs and institutions, and how many situations outside the classroom can be made accessible. We discuss the various elements that comprise an accessible experience—including training, attitudes, environment, services, and technology—and how elements of these components are selected and combined to meet specific situations. We encourage the adoption of universal design wherever possible; we believe that the best accommodations are those that are integral to the infrastructure.

The academic community has made remarkable strides in accommodating many of the academic needs of students with hearing loss. The advent of appropriate technologies and the availability of appropriate services make the postsecondary experience much more accessible than it was just a few years ago. Institutions that want to provide classroom access to students with hearing loss will find a plethora of tools from which to choose. *Accessibility to nonacademic portions of the postsecondary experience has not received the same level of attention.* Some institutions may provide access to some

extracurricular activities. But where such efforts exist, they are generally far from comprehensive. Indeed there has been little attention directed to many of these questions. How, for example, does a university make a pep rally accessible to students with hearing loss? We are also cognizant of the need to consider accessibility across the spectrum of postsecondary institutions, including accredited two-year colleges, four-year universities, and technical institutes

This chapter consists of three parts:

- Discusses available resources from which administrators assemble an accessible environment.
- Examines a typical day in the life of a student with hearing loss and how the appropriate application of technology makes the various events and situations accessible.
- Examines several "special situations" which contribute to the university experience and considers appropriate accommodations.

Resources

A variety of resources are available to the postsecondary institution in its efforts to provide an accessible environment to students with hearing loss. It seems that people naturally think in terms of such accommodations as note takers, CART, or FM systems. These and other services and technology are important resources in the delivery of an accessible environment. But they are not the only ones, and possibly not even the most important!

"LIVING WITH HEARING LOSS" CLASS

We encourage every postsecondary institution to offer a class that focuses on the issues faced by students who are hard of hearing. As baby boomers age and our noisy civilization takes its toll on our hearing, knowledge of hearing loss, its effects, and how to deal with it becomes increasingly important for all. Certainly anyone considering a career in social services, education, business, or any other profession that includes interaction with people will benefit from this understanding.

This course will be especially important for people with hearing loss. Many students find the transition from the sheltered high school environment to the more independent postsecondary environment to be a daunting one. Those who have never been responsible for managing their hearing loss will find the transition especially troublesome. This class will equip hard of hearing

students with the knowledge and self-confidence that will enable them to maximize the benefit they receive from their postsecondary experience.

The class format should be selected to meet the resources and needs of the institution. Some may choose to offer it as a standard academic course, perhaps within the Sociology Department. It may be in-person, or it could be offered online. The Student Access Center may offer this information in a series of lunchtime brown bag workshops. Colleges with only a few identified students with hearing loss might make arrangements with a local audiologist or hearing loss service agency to provide the information to the students. The format of the course is not nearly as important as its existence. The information provided in this course is critical to the academic success of many students with hearing loss, and important to the vocational success of students in a variety of fields. Our recommendation is to encourage as many people as possible to take the class, including students, instructors, administrators, and staff.

Discussion topics should include the following. (See the Resource list for additional information on these topics.)

Psychosocial aspects of hearing loss—Withdrawal, depression, effect of hearing loss on relationships, and coping strategies.

Hearing loss acceptance—Importance of accepting hearing loss, five stages of grief, and developing reasonable expectations.

The importance of self-advocacy—Taking control of your hearing loss, assertion versus aggression, and negotiation training.

Rights and responsibilities of students with hearing loss—Federal and state laws, rights they bestow, organizations that enforce laws, what to do if rights are violated, and what responsibilities students have in connection with provided services.

Hearing aids—Various types, options, what they can and cannot do, and the importance of telecoils.

Hearing assistance technology (assistive listening devices) —What types of devices are available, situations in which each is appropriate, and what the institution provides.

Telecommunications devices —What's available, applicable federal, state, or local programs, what the institution provides, and include demonstration of devices as appropriate.

Alerting devices—What is available, what the institution provides, where to get them, and include demonstration of devices as appropriate.

Emergency planning for students with hearing loss—What is the institution's plan for emergency situations? What support can the student expect in approved shelters?

Hearing loss organizations—National and local organizations that support people with hearing loss, and encourage students to get involved in local organizations.

Communications strategies—The importance of good acoustics and lighting, communications tips for speakers and listeners, and where to take a speechreading class.

Institution's resources for students with hearing loss—A complete and detailed list and description of all resources the institution provides for students with hearing loss.

Instructor and Staff Orientation

An instructor who understands and applies good communications principles will solve a lot of accessibility problems before they occur. Hearing loss advocates have long produced "tip sheets" (See Appendix for an example) that discuss what both a speaker and listener can do to enhance communications. All of these "tips for communicating with people with hearing loss" are basic, common sense suggestions that enhance communication in *any situation* and with *any audience*. Of course, they're especially important when communication involves a person with hearing loss. An instructor who speaks with his or her back to the audience, for example, will be impossible for a student with hearing loss to understand. But you can be sure that many students with normal hearing also have a more difficult time understanding such an instructor.

The first challenge in providing an environment accessible to students with hearing loss is to fill that environment with sensitive and caring persons who are knowledgeable about hearing loss and how it can be accommodated. Appropriate orientations for instructors, administrators, staff, and students ensure that everyone has access to appropriate information. We suggest that all orientations include information on accommodating students with hearing loss and that annual refreshers be encouraged or required.

Universal Design

Your institution almost certainly has a number of students diagnosed with hearing loss who are actively dealing with it. Most of these students will probably do pretty well in the postsecondary environment because they use available accommodations. Chances are you also have more students with

undiagnosed hearing loss. Because hearing loss often occurs gradually, people tend to not notice it for an extended period. Many people first become aware of their hearing loss when a friend or family member comments on it. Many of these students are at risk of poor performance in the postsecondary environment, because they do *not* take advantage of available accommodations, except those that are universally available. Your institution probably also has many students who are aware of their hearing loss, but choose not to accommodate it. Chapters 1 and 2 discuss the characteristics of hard of hearing college students and offer some insights into why they might not want to take action to improve their ability to communicate.

Universal design refers to the practice of designing an environment to be as broadly accommodative as possible, so that people need make no special effort to be accommodated. Applying universal design principles to your environment optimizes accessibility for everyone, regardless of his or her hearing status or how he or she chooses to deal with it. For an interesting look at universal design principles in the postsecondary environment and suggestions for particular situations, please point your browser to

http://www.washington.edu/doit/Faculty/Strategies/Universal/

Acoustics and lighting

A first step towards implementing a universal design strategy is to adhere to appropriate guidelines for acoustics and lighting. If your state or local governments has mandated these standards, you must comply with them. If not, or even if they have, and you'd like to examine other standards, you might want to work to meet the acoustic requirements described in the ANSI Classroom Acoustic Standard (http://asastore.aip.org/). Additional acoustic and lighting websites are included in the resources section of this document.

Sound Field Systems

A relatively inexpensive and extremely effective contribution to an accessible classroom is a sound field system, which can be thought of as a high-quality, well-engineered public address system. It consists of a microphone (worn by the instructor), an amplifier, and loudspeakers. The system is designed to ensure that the instructor's voice is clearly audible from anywhere in the room. The basic system works well for lecture format and optional microphones extend the system's capabilities to include group discussion formats. Sound field systems, like other universal design components, assist everyone. They are especially effective for the student whose hearing loss is undiagnosed or who chooses to not seek accommodations. They also benefit the instructor, who doesn't have to strain

to speak loudly enough. Teachers at all levels in classrooms that incorporate sound field systems report dramatic increases in student attention and performance. See, for example,

http://www.heraldtribune.com/apps/pbcs.dll/article?AID=/20060203/NEWS/602030395

Common Equipment

Your college has a plethora of common equipment to which universal design principles can readily be applied. Almost any equipment that relies on audible signals to communicate with the user can be upgraded for accessibility. Upgrade strategies consist of ensuring that a device supplies a corresponding *visual signal* and/or ensuring that a device is located in an acoustically friendly setting. Consider these contributions to an accessible environment:

Television captioning—The Television Decoder Circuitry Act requires every television set with a screen at least 13" produced since 1993 to support closed captioning. Many restaurants, bars, health clubs, and other organizations leave captioning on all the time. Doing so is a simple and effective application of universal design principles and it benefits everyone.

Telephones—Telephones with volume controls are readily available and should be standard equipment in all environments. Telephones should be situated in a quiet location. Any bank of public telephones should include a TTY.

Alarm systems—Any alarm system that relies on an acoustic alerting signal should include a visual alerting signal. In addition, any alarm installed in sleeping quarters should accommodate remote bedshakers and other types of remote alerters.

Computers—Computers provided for general use should be configured to include visual equivalents of audible alerts. The TRACE Center at the University of Wisconsin-Madison (http://trace.wisc.edu/) has an excellent discussion of computer accessibility for people with disabilities.

Lighting, wiring, devices—Hearing aids and assistive devices used by people with hearing loss are susceptible to interference from a variety of sources, including lighting, wiring, security systems, paging, and emergency communications systems. Good design practices can prevent interference in new construction. Localized shielding or isolation techniques can eliminate or significantly reduce interference problems in existing facilities. See http://www.access-board.gov/research/interference.htm for more information.

Electronic Announcement Boards—"Electronic bulletin boards" are emerging all over and they are a very effective way to deliver messages to everyone on campus. A few strategically placed boards with scrolling messages benefit everyone. They are especially helpful to people with hearing loss who often do not have access to information that is passed primarily by word of mouth.

Signage

Your campus may provide wonderful resources, but they are of little value if no one knows about them. Signage is an easy and inexpensive way to make the environment more accessible. Post signs to indicate that areas such as your theater have assistive listening devices, that your public computers have visual alerts as well as audio alerts, the location of the nearest TTY, and that a classroom is looped.

Accommodations

Adhering to the principles of universal design meets many of the communications requirements of students with mild to moderate hearing loss. However, those students with more severe hearing loss will require accommodations beyond those dictated by universal design principles. Chapter 8 provides an extensive discussion of the various technologies and services applicable to the task of ensuring communications access to students with hearing loss. Application of these resources to the classroom has become commonplace as institutions have embraced their responsibility to accommodate students with disabilities in the academic setting. Many of these resources are also appropriate outside the classroom, and will enrich the postsecondary experience for the student with hearing loss.

A Typical Day in the Life of a Student with Hearing Loss

Tom is a fairly typical State University student, except that he has severe-to-profound hearing loss and wears two behind-the-ear hearing aids. He was mainstreamed throughout his public school career and was fortunate to attend a school that provided notetakers for class. Extra-curricular activities were a struggle, however, because the noise and activity generally made it impossible for him to understand what was going on. He missed out on much of the richness of the total high school experience.

Having had hearing loss since birth, Tom has pretty well come to terms with it and is willing to do whatever he can to optimize his ability to hear and

understand. State University is quite enlightened about hearing loss and has worked with Tom to help him integrate as fully as possible into campus life. They encouraged him to take the "Living with Hearing Loss" class and to join the student hearing loss support group that the program sponsors. Tom is very happy that he acted on both suggestions. Let us spend a day with Tom and see how he manages his hearing loss.

Waking Up

The first challenge Tom faces each morning is waking up. This was never an issue in high school, because his mother was always there to be sure he got up on time. In fact, it had always been such a non-issue that it never occurred to him that he would need a new method of getting up in the morning. After arriving late for his early class several times, Tom went to the Student Access Center office to discuss the situation with Mr. Cartwright, State University's hearing loss specialist. He explained that the college doesn't provide *personal devices* like alarm clocks, but does have a few devices on hand to help students determine what solution might work for them. Tom selected an alarm clock with a bed shaker, and ordered it from an online store on the list Mr. Cartwright gave him. Tom still is not crazy about early classes, but now he's at least confident that he can get up on time!

History Lecture

Tom's first class is a history lecture in a large auditorium with hundreds of students. Tom was familiar with FM systems and expected he would be using one in this class. He does have that option, and has checked out an FM system for the semester. But Mr. Cartwright explained to him that most of the lecture halls and classrooms have inductive loop systems, and anyone whose hearing aid includes a telecoil can hear the lecture by simply activating the telecoil. Tom was unaware of this technology, and it sounded like magic. But it worked as advertised. The loop system provides the same sound quality as the FM system, but has the advantage that it requires no special equipment that identifies Tom as a person with hearing loss. He simply flips a switch on his hearing aid and hears the lecture. Note that all assistive listening systems require the instructor to use the microphone and the system electronics to be on and in working order.

After taking advantage of this wonderful system for a while, Tom was shocked to learn that many of his friends with hearing loss could not access the induction loop directly, because their hearing aids do not include telecoils. They can still use the loop system, but must use a receiver to pick up the loop signal, a requirement that eliminates one of the major benefits of

an inductive loop system. Either the FM system or the loop system allows a person to hear the lecture from anywhere in the auditorium. Some of the students with less severe hearing loss can sit in the back and understand every word. Because of the severity of Tom's hearing loss, he also depends on speechreading, so he sits near the front of the class .

Figure 6-1. Math Class Cartoon
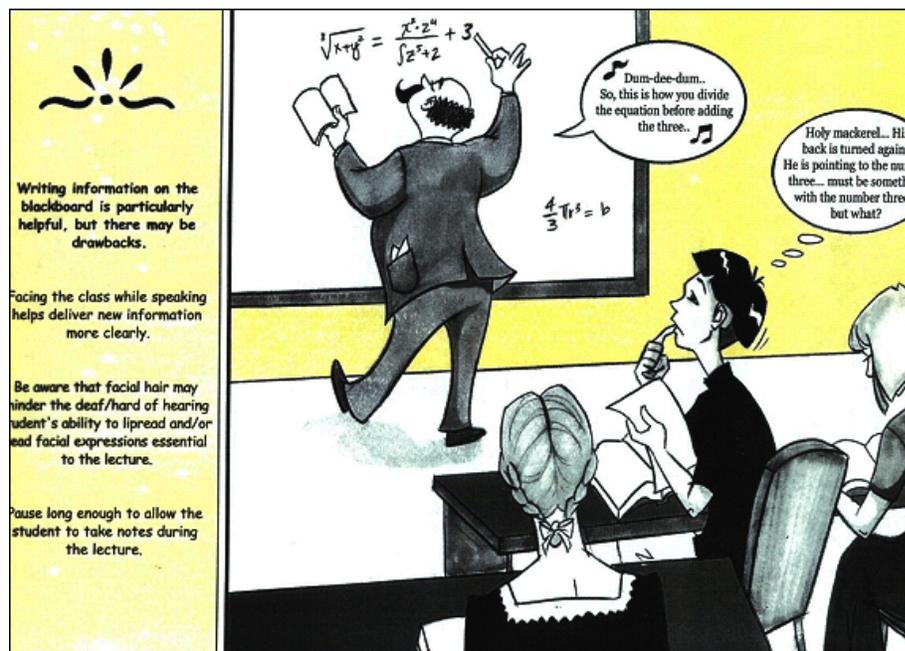
His reliance on speechreading also prevents him from taking good notes because he must be constantly looking at the instructor. So State University provides a trained and experienced note taker to assist. The university would also provide one of the speech-to-text systems if Tom requested it, but he chose the accommodations that suit him, and is very satisfied with them. Tom is also grateful that the instructor has attended a hearing loss sensitivity training session required of all instructors at State University and practices good communications techniques. He repeats students' questions before answering them so everyone knows what the question is, and he does not speak while writing on the board so students can speechread him.

Chemistry Lab

Chemistry lab initially presented a real challenge. Students work in pairs to complete lab assignments, and everyone is talking and clinking equipment. Tom is normally able to understand others in a one-on-one conversation in a

quiet environment, but had trouble communicating with his lab partner when things got noisy. The FM system saved the day Mary, Tom's lab partner wears the lapel microphone and transmitter, and Tom wears the receiver and a neckloop. Tom prefers using a neckloop and the telecoils in his hearing aids; others may choose headphones. Tom explained the equipment to Mary and also explained that he needs to see her lips to be sure he understands what she is saying numbers, which are spoken often in chemistry lab, are especially difficult. Happily, Mary was interested in learning about the equipment and how to communicate with Tom. She does forget on occasion, and starts reading off numbers while looking down at the equipment. But a gentle reminder from Tom gets her to look at him and start again. Mary is also sensitive to the fact that Tom misses most of the "casual" discussion that occurs in the lab. Much of it is just unimportant chatter, but sometimes a student will remind that class that a project is due next week, or that a special event is coming up. Mary tries to let Tom know when something important is said in this casual discussion.

Figure 6-2. Computer Class Cartoon

Lunch in the Cafeteria

The main cafeteria is a communications nightmare. Everyone talking and dishes are clattering. Trying to understand someone who is speaking with food in his mouth and a glass in front of his lips is impossible. Tom brought this situation to Mr. Cartwright and Tom was genuinely surprised to learn

that even Mr. Cartwright could not provide a good solution in every situation. Mr. Cartwright explained that placing his FM transmitter and microphone in the center of the table and using his receiver and neckloop might help a bit; it did—a tiny bit. He also told Tom about the small quieter rooms off the main cafeteria, where he would be able to converse with other students if anyone else chose to eat there.

But Mr. Cartwright's best advice was that not every challenge has a perfect solution, that it is important to evaluate situations and establish realistic expectations, and that a person will be a lot happier if he focuses on what he can enjoy rather than what he is missing. Tom can choose to eat in the main cafeteria. If he does so with the understanding that he would not be able to communicate very well, he can enjoy the energy and vitality of the cafeteria environment. Or he can choose to eat in one of the small rooms and enjoy the peace and quiet. Or he can arrange with a friend to meet in one of the small rooms and enjoy a conversation. Even when confronted with a communications nightmare, Tom has several good options.

Calling His Credit Card Company

Tom looked over his credit card statement last night and noticed a $50 item that he did not charge. So he has to call them. Tom has always dreaded talking on the phone and pretty much avoided it throughout high school. But now that he's on his own, he sometimes has to make a call, regardless of how difficult it is. All the public phones at State University have volume controls, and students with less severe hearing loss can use any of them. Tom even uses them on occasion to call a good friend for a simple conversation. But for a call like this, where he will have to navigate a voice menu and possibly try to understand a bunch of numbers, a voice call is unworkable. Fortunately, the "Living with Hearing Loss" class he took introduced him to some technology that makes this odious task more palatable. He could use one of the TTYs scattered throughout the campus. But this call could take awhile and those little seats are uncomfortable.

So Tom heads to the library, where he will use one of the computers to access an IP relay operator to assist with this call. One of the very cool things Tom learned in his "Living with Hearing Loss" class is that he can use any computer that's connected to the Internet to make a phone call. Another useful tip from that class is that he can tell the operator what he wants to do and instruct the operator to navigate the voice menu for him, and then he picks up the conversation once the operator has the correct person on the line. Tom still does not enjoy making phone calls. But he also no longer dreads them.

Chemistry Study Group

A few students from Tom's chemistry class are getting together this afternoon to study for the midterm. Tom was never able to take advantage of situations like this in high school because he just could not understand what people were saying. But his FM system and a supportive friend enable him to benefit from this study group. Tom places the FM transmitter and microphone in the center of the table and he uses his receiver and neckloop. Unlike the cafeteria environment where the microphone picked up and transmitted all the background noise, this room is quiet and the system transmits only the participants' voices. Having the group in a circle allows Tom to see everyone's face. Moreover, Tom's friend Mary assists by encouraging people to speak one at a time, ensuring that Tom is aware of topic changes, and sharing her notes.

Attending a College Board of Trustees Meeting

Tom's friend Susan is a Political Science major and has an assignment to report on the quarterly meeting of the university's Board of Trustees. She invited Tom to accompany her, and he agreed. Tom was happy to see that the Board Room contained both an FM system and a loop system. When he asked about it after the meeting, he learned that both systems had been installed because two of the Board members are hard of hearing. And neither of them knew anything about either of those technologies until the technicians at State University talked to them about it. On the way home from the meeting Tom and Susan talked about how terrific it is to be attending a school that is obviously very motivated to accommodate the needs of people with hearing loss. Tom wondered, how many other institutions provided similar Board Room access for hard of hearing Trustees. How many institutions provide that accommodation for Board members, but refuse to provide similar accommodations for students? Susan guessed that many organizations are much more willing to accommodate Board members than students.

Watching TV in the Dorm

Tom has used TV captioning for many years. It is far from perfect, but it is much better than nothing. And these days almost all new programming is captioned. All the TVs at State University support captioning, and everyone is encouraged to leave captioning on all the time. Some of the students grumbled at first, but now many of them actually prefer having the captions on and the volume down a bit. Tom also uses a pair of wireless headphones while watching TV. These are very helpful, because they deliver clear audio directly to his ears and he can control their volume separately from the TV

volume. These headphones would have eliminated the arguments over TV volume when he was living at home, but he did not know about them until his "Living with Hearing Loss" class.

Making the **Rest** *of the University Experience Accessible*

The previous section demonstrated that it's possible, with some effort and expense, to make virtually all of a typical day accessible for a postsecondary student with severe-to-profound hearing loss. The postsecondary experience also includes a variety of special events that can and should be made accessible to students with hearing loss.

Field Trips

Tom's personal FM system and some group leader training are perfect resources for most field trips. The guide wears the transmitter and lapel microphone while Tom wears the receiver and his neckloop. The leader has been instructed in good communication techniques, and Tom's "Living with Hearing Loss" class has given him the confidence to gently remind the leader if he or she forgets.

Sporting Events

College sporting events are often characterized by high levels of excitement, energy, and noise. In such an environment a person with hearing loss will generally be unable to understand the announcements and commentary being broadcast over the public address system. For that matter, many fans with normal hearing will miss a lot as environmental background volume rises. This is another situation in which the presentation of acoustic information in text format helps everyone. Captioned scoreboards provide for text display alongside scores, statistics, game information, and replays.

School Athletics

Providing access to student athletes is a large and diverse topic, and appropriate accommodations depend on a variety of factors. For complete coverage of this topic see "Time out! I didn't hear you" by Palmer, Butts, Lindsey, and Snyder, 1999.

Registration

Any event or activity that includes many people in a large room presents a communications challenge for people with hearing loss. The issue, of course,

is background noise. In these situations hearing aids are virtually useless, because they amplify the background noise just as much as they amplify the voice one is trying to understand. The *only* solution in these situations is to get a microphone as close as possible to the speaker's mouth to increase the volume of the speaker's voice relative to the background noise and transmit that signal to the person's ears or hearing aids. Any of the standard assistance technologies such as infrared, FM, or induction loop will handle the transmission portion. As always, an induction loop offers the advantage when a person whose hearing aids include telecoils needs no additional equipment to use the technology. Another option and a great example of universal design is online registration. Students with hearing loss will probably seize whatever online opportunities are offered. Schools must ensure that videos if provided are captioned to make the online experience truly accessible.

Graduation

Graduation is much like a lecture, except that there are many more people in the audience and it may be held outdoors. Because there's typically only one person speaking at a time and no questions from the audience, an FM system and standard speech-to-text technology will work quite well. We recommend CART for such an important event, because of its word-for-word capabilities. Multiple large screens will ensure good visibility. If the audience is very large, organizers may want to encourage people with hearing loss to sit in particular sections from which captioning is most easily visible. If sunlight is an issue, a light-emitting diode (LED) message board may be a better choice than a traditional presentation projector and screen.

Pep Rallies

All postsecondary students should have the opportunity to experience the energy and excitement of a pep rally before sports events. FM systems and speech-to-text technology will make these events accessible to students with hearing loss.

Socials, Dances, Parties, etc.

These events challenge students with hearing loss. High-volume background noise and low lighting combine to produce a very unfriendly communication environment. Some students may benefit from a personal amplifier with a lapel microphone attached to their clothing. By ensuring that the microphone is pointed towards the desired sound source and using his or her body to shield the loudest background noise source, such a student can improve his or her ability to understand speech. The knowledgeable student can also use

existing lighting to maximize the effectiveness of speechreading. These techniques are taught in the "Living with Hearing Loss" class. For many students with hearing loss these events exemplify another opportunity to establish realistic expectations and to appreciate what they can enjoy, rather than focus on what they are missing.

Movies

Movies can be made accessible through the use of assistive devices or through captioning. Most assistive devices used in movie theaters use infrared technology, but otherwise work much like the FM systems discussed earlier in this chapter. By providing the moviegoer with a clear audio signal and allowing her or him to control the volume, these devices perfectly accommodate many people with hearing loss, especially those with less severe losses. People with more severe losses may require captioning, which provides a text representation of the spoken word, similar to television captioning. Captioned movies are now readily available, and in a variety of formats. Organizations can choose from the following options:

DTS Captioning—A system in which the captions are projected onto the screen using a separate projector. See the DTS captioning website http://www.dts.com/cinema/dtsaccess.

Open Captioning—A system in which the captions are burned directly onto the film print. See Insight Cinema http://www.insightcinema.org/.

Rear Window Captioning—A system in which captions are projected on a display on the rear wall of the theater. The moviegoer checks out a black plastic screen attached to a gooseneck and a device that fits in the seat's cupholder. The moviegoer adjusts the screen so he or she can easily read the captions and view the movie. See WGBH's MoPix site http://ncam.wgbh.org/mopix/.

Live Theater

Live theater can accommodate patrons with hearing loss by providing assistive devices and captioning. Appropriate assistive devices are like those considered in the Movies discussion above. Captioning for live theater fulfills the same need as movie captioning, but uses different technologies. Organizations may choose from the following options:

Personal Captioning System—A system in which a theatergoer checks out a handheld device on which captions are displayed. See the Personal Captioning System website (http://www.personalcaptioning.com/) for additional information.

Sound Associates I-caption system—Similar to the Personal Captioning System. See the Sound Associates website (http://www.soundassociates.com/products/icaption.jsp) for additional information.

LED display—Captions for live theater can also be provided using an LED display, such as those from Caption Display (http://www.captiondisplay.com/html/systems.html).

Foreign Study

Foreign study is an increasingly common part of the university experience and one that students with hearing loss might consider. Communications is an issue, of course, because hearing loss makes learning a second language much harder. Also, people with hearing loss can expect that the difficulties they have understanding spoken English will be compounded when trying to understand a second language. These issues can be minimized by undertaking foreign study in a country in which English is spoken, although the accents in these countries may cause difficulties, at least initially. Those who decide to study abroad can take advantage of a variety of scholarships for foreign study by students with hearing loss, many of which are described at http://www.uni.edu/neuhaus/sertoma/scholarshipshearing.html.

Internships

Students on many career paths will be expected to complete an internship during which they will have an opportunity to experience some of the realities of working in their chosen profession. Getting hired for a first "real" job can be intimidating for any student. Those with hearing loss face all the normal stress, but also must contend with the issue of how to deal with their hearing loss during the interview process. A variety of strategies have been used by people with hearing loss, from "never disclose" to "disclose immediately." We encourage advisors to acquaint students with a variety of opinions on this topic and to discuss with the student what strategy he or she might like to adopt. The 'References and Resources' section includes articles to help with this process.

Chapter Seven

Audiological Considerations for the Management of College Students with Hearing Loss

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Abstract

This chapter provides readers with an overview of the audiological considerations necessary for successfully assisting college students with hearing loss. This chapter is divided into three broad sections. The first section provides a summary of the auditory system and hearing loss. The second section covers the role of hearing professionals, and as an example, recommended best practices by audiologists. The final section is an overview of hearing aids and implantable auditory devices. This chapter was written primarily with college students in mind, and serves as a companion to Chapter 8. All specified terms will be defined throughout the chapter for clarity.

Dave's Story

Dave was a pre-med sophomore who one afternoon in class noticed that his professor's lecture began to sound fuzzy and nearly inaudible. A short moment later, he began to feel dizzy and sick to his stomach. Dave put his head on his desk until class was over. After class, Dave went straight to the Student Health Center where a medical examination was conducted and he was immediately put on a course of steroids to preserve and/or restore his hearing. While the symptoms of dizziness and nausea subsided, Dave's

hearing did not return to previous levels. The campus physician referred Dave to Dr. Anne Clark, an audiologist, for a hearing evaluation and suggested that he also visit the Student Access Center. The hearing evaluation revealed that Dave had a sloping, mild to severe sensorineural hearing loss in both ears. From there, Dr. Clark made two recommendations: First see an Ear, Nose, and Throat (ENT) physician in order to try to pinpoint the cause of the hearing loss and determine whether or not it could be recovered. If the hearing loss could not be recovered, then Dave was strongly encouraged to obtain a hearing aid evaluation. The ENT did not see any abnormalities, so a CT scan was ordered. The CT scan revealed that Dave had a temporal bone abnormality in both ears. When it became apparent to Dave that there was little chance for hearing recovery, he took a hard emotional hit. Determined to complete college and see if a career in medicine was still a feasible option, he returned to Dr. Clark for a hearing aid evaluation and visited the campus Student Access Center.

Before services can be provided by vocational rehabilitation and the Student Access Center, students must have documentation of their hearing difficulties. From this documentation, recommendations can be made on how best to manage their hearing loss. Whether students come with a long history of hearing loss or are dealing with late-onset hearing loss (as in Dave's case), many of them discover for the first time that their hearing health and the search for related services falls squarely in their laps. Therefore, it benefits both these students and service providers to learn about common characteristics associated with hearing loss and the hearing healthcare professionals with whom they may come in contact. This information will serve to empower these students, prepare rehabilitation specialists to manage cases dealing with hearing loss, and provide guidelines for both groups for working with hearing healthcare professionals.

Characterizing Hearing Loss

OVERVIEW OF THE AUDITORY SYSTEM

The auditory system can be divided into four major regions: outer ear, middle ear, inner ear, and auditory nervous system (Figure 7-1). The outer ear is made up of the auricle (visible fleshy extension on both sides of the head) and the ear canal. The outer ear primarily serves to catch sounds and funnel them through the ear canal towards the eardrum. By natural design, the outer ear provides amplification to the sounds in the human speech frequency range. The middle ear is an air-filled compartment that contains the eardrum and ossicles (three middle ear bones). The normal eardrum is sealed at its edges and effectively separates the outer and middle ears. As the name suggests, the eardrum moves as sound waves strike it. The ossicular

chain includes the malleus, incus, and stapes, which transmits the movements of the eardrum to the inner ear, or cochlea. The cochlea is a fluid-filled organ containing two types of hair cells responsible for the transmission of sound to the brain. There are approximately 12,500 outer hair cells and 3,500 inner hair cells in each ear. When the ossicles transmit the vibrations of the eardrum to the cochlea, pressure waves are set up within the structures of the cochlea. These pressure waves cause the inner hair cells to fire signals to the hearing nerve. The expansion and contraction of the outer hair cells in response in pressure waves allows for the amplification of soft sounds. Most descriptions of the auditory system stop at the inner ear; however, the ability to hear does not stop there. Healthy hearing also depends on working neural circuitry from the hearing nerve to the hearing centers of the brain, called the auditory nervous system. After inner hair cells fire, the hearing nerve sends signals to various cell groupings in the brainstem and brain. When sounds reach the brain, this is considered the site where a person is first aware of having heard sound.

Clearly, any disturbance along the auditory system pathway can result in hearing loss and/or auditory processing difficulties. The characterization of hearing loss begins with identifying the type, degree, and configuration of hearing loss, which can be readily captured by an audiogram. From the audiogram, we can begin to imagine the impact of hearing loss. All of these topics are described below.
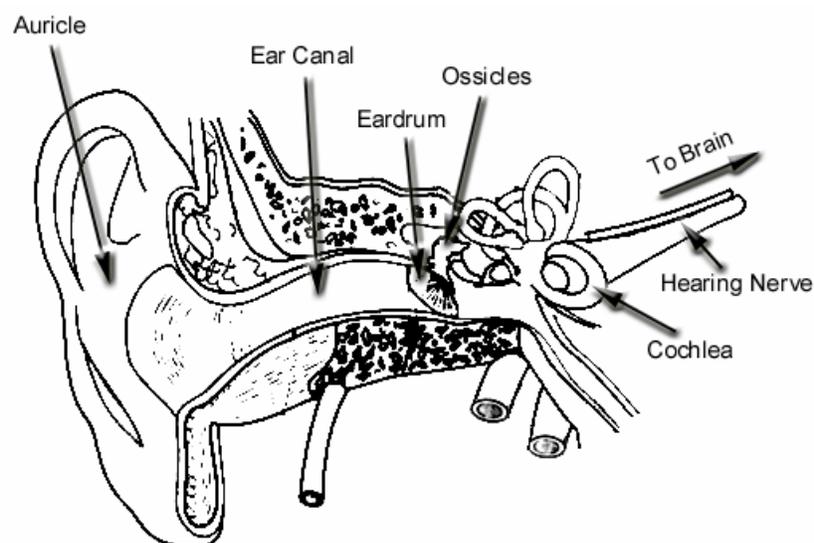
Figure 7-1. Anatomy of the Auditory System

TYPES OF HEARING LOSS

Conductive Hearing Loss. Conductive hearing losses (CHL) are characterized by a reduction in hearing ability despite a normal functioning

cochlea. This type of hearing loss is caused by impaired sound transmission through the ear canal, eardrum, and/or ossicular chain. Conductive hearing losses are frequently temporary and/or fluctuating in nature. Ear infections and ear wax impaction are two common causes of this type of hearing loss.

Sensorineural Hearing Loss. Sensorineural hearing losses (SNHL) are characterized by decreased hearing ability due to disorders involving the cochlea and/or the auditory nervous system. This type of hearing loss is usually irreversible. Sensorineural hearing losses can be further divided into sensory and neural losses. A sensory hearing loss occurs when the damage to the auditory system is located within the cochlea. Noise-induced and age-related hearing losses are typically sensory in nature. A neural (retrocochlear) hearing loss occurs when the damage to the auditory system is beyond the level of the cochlea, ranging anywhere from the hearing nerve up to the brain. A tumor on the hearing nerve can be one cause of a neural hearing loss.

Mixed hearing loss. Mixed hearing losses occur when both conductive and sensorineural components are present. As in conductive hearing losses, the conductive component of a mixed hearing loss may be temporary and/or fluctuate.

DECIBELS AND FREQUENCIES

When talking about sounds, we often use the terms decibel (dB) and frequency (Hz) to describe them. The term decibel refers to the loudness of sounds. When a sound is low in dB, it is perceived as soft, and when it is high in dB, it is perceived as loud. Loudness of sound is typically measured in sound pressure level (dB SPL). Therefore, it is common to see the output of hearing aids and assistive listening devices displayed in dB SPL. When measuring thresholds for an audiogram, however, they are measured in hearing level (dB HL). Why are they different and why is this important? Hearing thresholds obtained in dB SPL will vary depending on the frequency that is being tested. For example, the average normal hearing threshold at 250 Hz is about 26 dB SPL while at 1000 Hz it is about 7 dB SPL. In order to facilitate interpreting an audiogram, the thresholds obtained in dB SPL are converted to 0 dB HL at all test frequencies. Therefore, it is recommended to check with audiologists to be sure that devices such as amplified telephones, amplified stethoscopes, and other assistive listening devices are appropriate for the individual's hearing loss.

The perceptual correlate of frequency is pitch. As frequency increases, so does pitch. During a hearing evaluation, pure tones of specific frequencies are used. However, in the real world, we often encounter complex sounds containing many frequencies. Examples of low frequency (low pitch) sounds

include drums and bass guitars, while high frequency (high pitch) sounds include flutes and violins. Speech sounds tend to fall in a region between 250 and 8000 Hz.

INTERPRETING THE AUDIOGRAM

An audiogram is a simplified graph of symbols representing the softest sounds that a person can hear across a defined range of pitches (Figure 7-2A). Specifically, auditory thresholds (softest detectable sounds) are plotted between 10 and 110 dB HL at octave or mid-octave intervals from 125 to 8000 Hz. The normal hearing listener can typically hear sounds as soft as 0 dB HL and when sounds are above 100 dB HL they are generally considered to be uncomfortably loud.

From the audiogram one can determine the type, degree, and configuration of the hearing loss. Types of hearing loss, as describe above, include sensorineural, conductive, and mixed. The degree (or severity) of hearing loss can be calculated by taking the average of air-conduction pure tone thresholds obtained at several different frequencies and then matching that number to a category of severity. The frequencies most commonly used are 500, 1000, and 2000 Hz. Some entities may prefer to include higher frequencies (e.g., 3000 or 4000 Hz) in the average in order to encompass the higher frequency speech areas. Moreover, it is more common for hearing losses to be reported based on the configuration (see below). Figure 7-2A shows Dave's audiogram (O = right ear, X = left ear) and his pure tone average of approximately 57 dB HL for each ear. The degrees of hearing loss include: normal (< 25 dB HL), mild (26 to 40 dB HL), moderate (41 to 55 dB HL), moderately severe (56 to 70 dB HL), severe (71 to 90 dB HL), and profound (> 90 dB HL) (Figure 7-2B). Using a pure tone average (PTA) at 500, 1000, and 2000 Hz, Dave has a moderately severe hearing loss. More specifically, Dave has what some would call a mild sloping to severe sensorineural hearing loss. Sometimes, the PTA is converted to a percentage in order to estimate the degree of hearing handicap.[1] Unfortunately, it is difficult to estimate the degree of hearing handicap using pure tone thresholds alone; therefore, it is not recommended that percentages be used.

Figure 7-2C shows an audiogram depicting on average where speech and other common sounds fall. Notice the distribution of vowels (a, e, i, o, u) and voiced consonants (e.g., z, v, j, d, and b) in the low and middle frequency range and voiceless consonants (e.g., ch, sh, k, f, th, and s) in the middle to high frequency range. Superimposing Dave's thresholds over the speech

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[1] The World Health Organization (2000) suggests that the terms "disability" and "handicap" be changed to "activity limitation" and "participation restriction."

banana audiogram would suggest that, without hearing aids, he will have difficulty picking up many mid- to high-frequency speech sounds. The low frequency speech sounds, are likely going to be heard, but at very soft levels. The final way to use the audiogram is to determine the configuration (or shape) of the hearing loss (Figure 7-3). Some individuals may have a "cookie-bite" audiogram suggesting that their low- and high-frequency hearing is much better than their middle-frequency hearing.
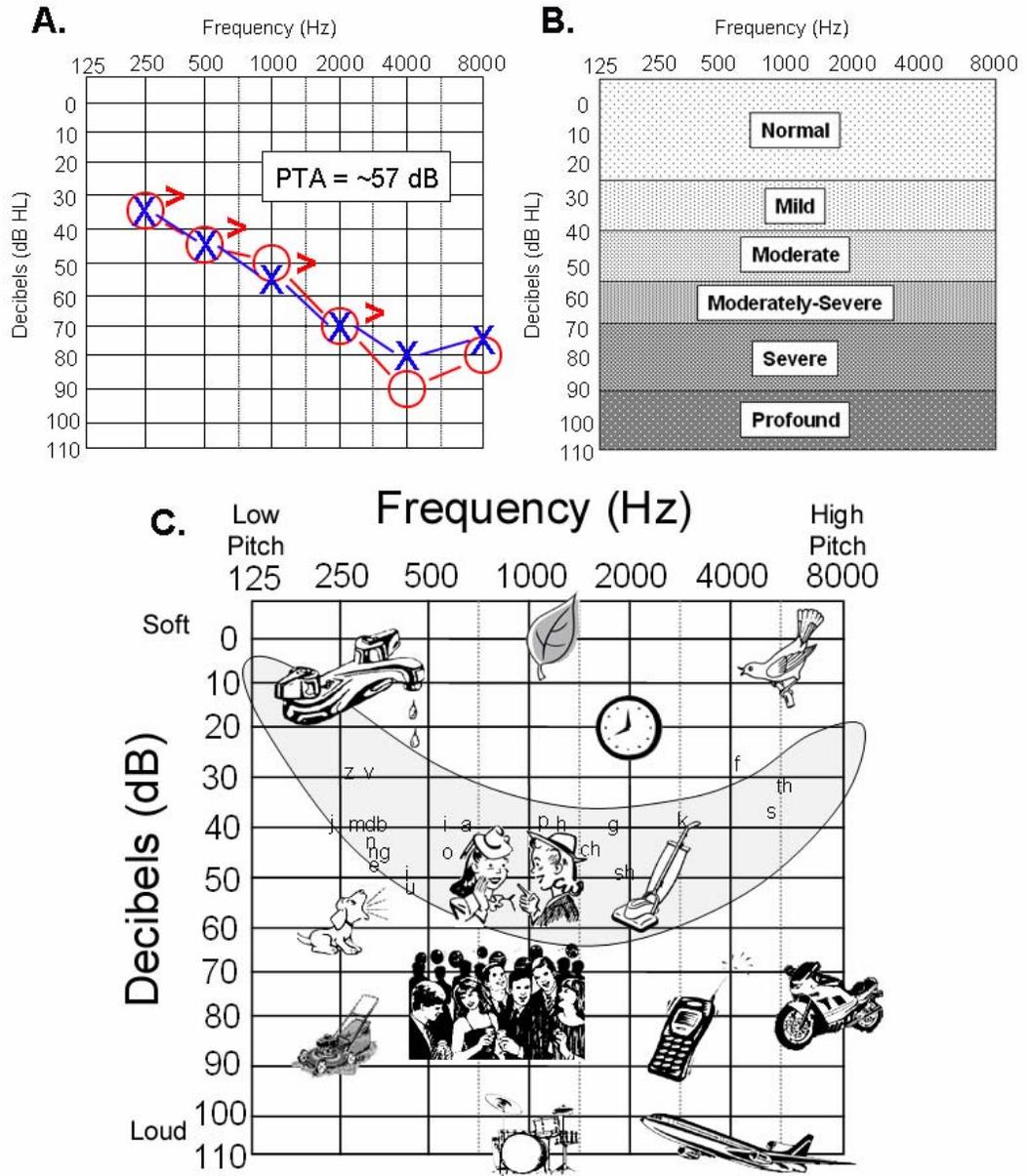
Figure 7-2. A. Dave's Audiogram, B. Degrees of Hearing Loss, and C. Common sounds Audiogram with Speech Banana.
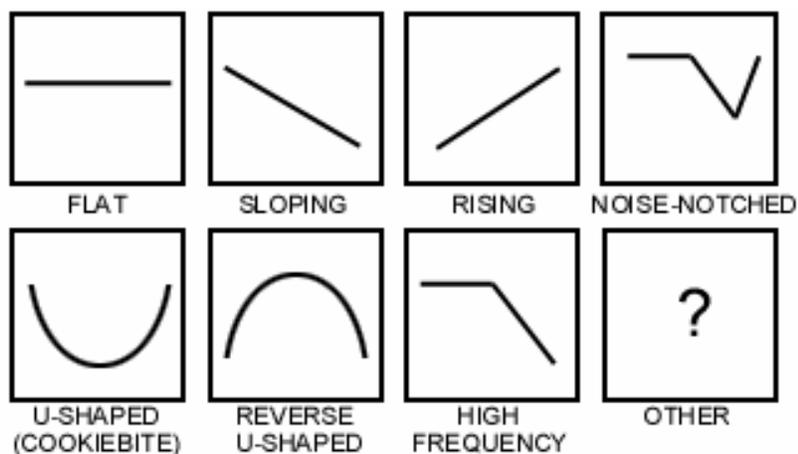
Figure 7-3. Configurations of Hearing Loss

LIMITATIONS OF THE AUDIOGRAM

By itself, the audiogram cannot tell us how a student will perform in the real world. For example, two students with identical audiograms may perform very differently from one another. One may be a successful hearing aid user utilizing both auditory and visual cues for communication, while the other may receive too much auditory distortion from amplification to use them successfully for speech communication purposes. While tests of speech perception in quiet and in noise can greatly enhance the diagnostic value of the audiogram; the results obtained in a sound booth do not always translate directly to how an individual will perform in the real world. Behavioral outcome measures such as hearing handicap or performance questionnaires often help to shed light on the student's real world complaints, perceived handicap, needs, and wants. These supplements to the audiogram are briefly discussed in the section titled "Best Practices in the Evaluation of Hearing and Rehabilitation."

The foregoing discussion is not meant to undermine the importance of the audiogram. Rather, the audiogram must be taken as a small piece of the entire picture of the student with hearing loss. Age at onset of hearing loss, duration of hearing loss, specific impairment of parts of the auditory system, use of hearing aids (or lack thereof), background experience, family dynamics, and personality profiles, for example, all contribute to behavioral differences among individuals with hearing loss. Consequently, the various hearing technologies[2] presented in this and Chapter 8 have the potential to

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[2] The term "hearing technology" is a broad term that encompasses hearing aids, implantable devices, and assistive listening devices. This chapter covers hearing aids and auditory

benefit the individuals with hearing loss though their actual needs may differ greatly.

IMPACT OF HEARING LOSS

Hearing involves the use of many auditory skills in a single or combined fashion. The sounds that we hear can be characterized by their intensity (loudness), frequency (pitch), and timing. Auditory impairments have a detrimental affect on how we perceive sounds, particularly those of speech. Thus, hearing loss is not just the inability to detect soft sounds. With hearing aids or cochlear implants, for example, some of these skills may be restored, but others may not. Therefore, it is unacceptable to assume that once fitted with a hearing aid or cochlear implant hearing is normal again. Also, the impact of hearing loss is not limited to just loss of certain skills. Hearing loss may have non-auditory effects as well.

Audibility. Perhaps the most debilitating affect of hearing loss is reduced audibility. Reduced audibility means that sounds will either be too soft or completely undetected. With an absence of audibility, a student can feel cut off from the world. Students who can benefit from hearing aids will have partial and sometimes full restoration of audibility depending on the degree and configuration of their hearing loss. Unfortunately, an improvement in audibility does not always mean improved speech understanding.

Let's take a look at an example of reduced audibility. Vowels such as /i/ in "feed" and /u/ in "food" are important speech sounds and they are characterized as having multiple bands of energy (called formants) at different frequencies. Speech sounds /i/ and /u/ share a common formant at around 300 Hz, but their second and third formants are higher in frequency and differ widely. Thus, a student who is unable to hear the second and third formants, because of reduced audibility, may confuse the words "feed" and "food" when heard in isolation.

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implantable devices, while Chapter 8 covers many other devices that may help students with hearing loss.
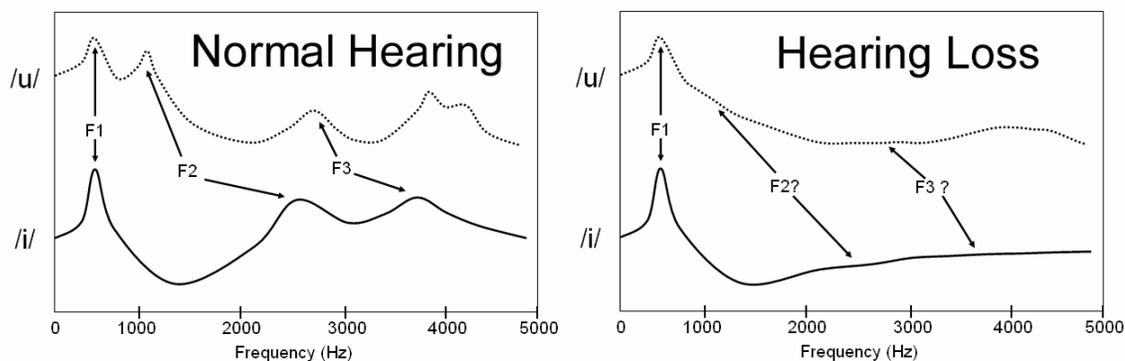
In the Normal Hearing figure, formants F1, F2, and F3 are clearly seen for the vowel sounds

/u/ (dotted line) and /i/ (solid line). In the Hearing Loss figure, a middle to high frequency hearing loss can have the effect of making formants F2 and F3 inaudible, thereby making vowel sounds /u/ and /i/ indistinguishable. Note: vowel /u/ is in the word "food" and vowel /i/ is in the word "feed."

Figure 7-4. Effect of Hearing Loss on Formants in Vowel Sounds

Audibility of sounds is affected by distance between the sound source and the listener. As a general rule, sound levels in dB SPL drop by half for every doubling of distance from the sound source. Students with hearing loss may put themselves at a significant disadvantage for audibility if they choose to sit far from their professors. A final aspect of reduced audibility is limited dynamic range and loudness recruitment. For students with hearing loss, loudness grows rapidly from their threshold to the point of their loudness discomfort level. This is known as loudness recruitment. Thresholds are often elevated (poorer) in students with hearing loss, but their tolerance for loud sounds is about the same as would be expected for individuals with normal hearing. Therefore, the window of audibility (or dynamic range) is reduced. The effect of reduced or limited dynamic range and loudness recruitment become important issues in hearing aid fittings and cochlear implant programming.

Frequency Resolution. Students with hearing loss may have difficulty discriminating sounds of different frequencies. This is a result of reduced frequency resolution. On the one hand, students may not be able to tell the difference between two sounds of similar frequency such as two adjacent keys on a piano. On the other hand, they may not be able to participate in small group discussions when there are many other group discussions going on simultaneously. Also contributing to loss of frequency resolution is that intense, low frequency sounds can cover up or mask out weaker, high frequency sounds. This masking effect causes difficulty for both normal hearing listeners and students with hearing loss and can be appreciated when trying to communicate in the campus cafeteria or at a collegiate ballgame.

Temporal Resolution. The sounds that we hear, although can be reproduced, have a finite presence. In other words, we hear them and they quickly fade away. Thus, sound has a time component. A reduction of temporal (time) resolution is evident in three ways. First, students with hearing loss may be unable to differentiate "bad" and "dad" when the overall durations of the two spoken words are identical. What differs between these two sounds is the duration of a short period of silence between the production of the initial consonant (/b… and /d…) and its vowel (Phillips, 1999). This period of silence differs by only a few milliseconds, but these few milliseconds are critical to our ability to understand speech. Secondly, speech sounds and noise have rapid and ever-changing fluctuations in intensity. Speech and noise often co-exist so there may be moments in time when they overlap and other times when they do not. Because of the co-existence, students with hearing loss may be unable to catch the sounds of speech when noise levels become too high, even for brief moments of time. Lastly, reduced temporal resolution can be appreciated in highly reverberant conditions. Reverberation refers to a persistence of sound in an enclosure (e.g., gymnasium) as a result of the sound's reflection off hard surfaces (e.g., bare walls, windows, ceilings, and floors). Reverberant rooms have the effect of creating multiple copies of the same sounds. It has been shown that individuals with sensorineural hearing losses have poorer speech perception scores in reverberant conditions compared to those with normal hearing (Irwin & McAuley, 1987).

Binaural Hearing. Having two ears with comparable function has been shown to provide several advantages over one ear alone. In general, these advantages often translate well to the use of two hearing aids, two cochlear implants, or having assistive listening device input to both ears rather than one. First, an identical input at both ears can result in the perception of sounds being twice as loud when compared to having the same input in one ear alone. The perception of sound doubling as the result of using two ears is called binaural summation. Second, sound localization, or the ability to identify from where a sound is coming, requires two ears. The brain uses differences in sound intensity, frequency, and timing to determine the source of a sound. Finally, because speech and noise often co-exist, binaural hearing can permit an increase of 2–3 dB of speech (signal) over the noise (or signal-to-noise ratio). Thus, students with significant hearing loss in one ear, or those who choose to use only one hearing aid for example, may be putting themselves at a greater disadvantage than they would if they had input to both ears. Bess and Tharpe (1984) have reported that children with unilateral hearing loss are more likely to fail a grade level than children with two normal hearing ears. An evidenced-based literature review on the effects of unilateral hearing loss suggests that there is a 22% to 35% rate of students

repeating at least one grade (Lieu, 2004). In addition, Lieu (2004) reports that between 12% and 41% of students with unilateral hearing loss receive some form of educational assistance and many students often exhibit speech and language delays. This suggests that college students with unilateral hearing loss may have difficulty despite the fact that they have one good ear.

Psychosocial Aspects of Hearing Loss and Related Health Issues. Hearing loss has the potential to reduce psychosocial functioning that can lead to increased feelings of isolation, depression, loneliness, anger, fear, frustration, and disappointment (Bess, Lichtenstein, Logan, Burger, & Nelson, 1989; Crandall, 1988). When psychosocial function is reduced, a student's physical health may also be affected (Lichtenstein, Bess, & Logan, 1988; Mulrow, Aquilar, Endicott, Tuley, Velez, Charlip, 1990). Evidence for improved psychosocial functioning, quality of life, and health status can be seen in numerous reports of the use of hearing aids and cochlear implants (Cohen, Labodie, Dietrich, & Haynes, 2004; Mo, Lindbaek, & Harris, 2005).

Fatigue. Any difficulty hearing can lead to a greater reliance on vision and increased listening effort for speech understanding. When visual cues are supplemented with auditory cues for the purpose of understanding speech, it is called speechreading. Unfortunately, speechreading does not come easily to all students with hearing loss, and some may never reach fluency. Whether a student with hearing loss speechreads well or not, listening becomes more of an active process. An incredible amount of energy is expended in listening alone and it is common for students with hearing loss to feel physically drained by the end of the day. Students who speechread in class may need preferential seating (e.g., front row seating or side seating) in order to have communication access. It may also help these students to have long breaks scheduled in between their classes to curb fatigue.

Tinnitus. When the sensory hair cells of the cochlea are damaged, sometimes the student may perceive tinnitus. Tinnitus is perceived as a ringing, roaring, clicking, or chirping sound that originates from somewhere in the head. It may be fluctuating or constant, and it may be in one or both ears. For most students, tinnitus is not a problem. However, for some, tinnitus may be so severe that it affects their quality of life (Brown, 2004; Møller, 2000). Students with severe tinnitus have complained of inability to concentrate, inability to sleep, and loss of motivation. Severe tinnitus has torn families apart and, in rare cases, has led to suicide. Tinnitus may also be a sign of a significant medical problem. Therefore, if tinnitus is ever bothersome, the student should see an audiologist or otolaryngologist (see below).

THE ROLES OF HEARING HEALTH CARE PROFESSIONALS

Hearing health care professionals play key roles in the management of students with hearing loss. It is important that a professional perform a comprehensive hearing evaluation on any student who has concerns about his or her hearing. Hearing evaluations should also be performed annually or anytime a change in hearing is noticed in students in order to monitor their hearing levels. When hearing changes, accommodations needed may also change. The hearing professional will be able thoroughly explain the hearing evaluation results and recommendations to the student as well as to vocational rehabilitation and the Student Access Center. The hearing evaluation is the first step in the aural rehabilitation process; therefore, it should be performed by a qualified professional.

Audiologists

Audiologists are independent healthcare providers who are specially trained and qualified to provide a comprehensive array of services to individuals with hearing and balance disorders. These services include the identification, assessment, diagnosis, treatment, and prevention of hearing and balance impairments. Many audiologists specialize in specific areas of the field and partake in research related to their area of expertise.

As part of helping students with hearing loss, audiologists select, fit, and dispense hearing aids and other assistive listening devices. Audiologists also program implantable devices and provide aural rehabilitation to students receiving these devices. Audiologists work very closely with other medical professionals including primary care physicians, otolaryngologists, neuro-otologists, oncologists, speech-language pathologists, occupational and physical therapists, and psychologists. When the hearing or balance problem requires medical or surgical evaluation or treatment, audiologists refer patients to physicians.

Audiologists hold masters or doctoral degrees in audiology. Audiology is currently transitioning to a doctoral-level profession. In fact, effective January 1, 2012, all new audiologists entering the workforce will be required to have an earned doctoral degree. All fifty states regulate audiologists via licensure or registration requirements.

Audiometrist/ Audiometric Technicians

Audiometrists are technicians trained in the use of an audiometer to establish hearing thresholds who work under the supervision of an audiologist or otologist.

Hearing Instrument Specialists

Hearing instrument specialists (HIS) also known in some states as Hearing instrument dispensers (HID) or Hearing aid dispensers (HAD) are individuals who dispense or fit hearing aids. The practice of dispensing hearing aids involves assessing hearing solely for the purpose of selecting, fitting, and selling hearing aids which are intended to compensate for impaired hearing. Individual states have different entry level requirements for licensing fitters or dispensers of hearing instruments. However, the nationally accepted credential for hearing instrument specialists is certification by the National Board for Certification in Hearing Instrument Sciences (NBC–HIS).

Otolaryngologists

Otolaryngologists are commonly referred to as ear, nose, and throat (ENT) physicians. ENTs hold medical degrees and are specially trained in the medical and surgical treatment of patients with diseases and disorders of the ear, nose, and throat as well as related structures of the head and neck. ENTs are able to prescribe medications and perform surgery including cochlear implantation. Otologists and neuro-otologists are otolaryngologists who have received advanced fellowship training in diseases and disorders of the ear.

Vendors

Vendors provide consumers with communication products in a retail environment. Communication equipment including TTYs, amplified telephones, signalers and vibrating clocks, personal FM systems, hearing protection devices, and hearing aid accessories are commercially available from a variety of companies. The products available through vendors do not require a prescription from an audiologist, hearing instrument specialist, or physician making them very convenient to the public.

Mail Order or Online Hearing Aid Sales

Students should be cautious of both mail order and online hearing aid sales. In most cases, purchasing hearing aids in this manner does not provide any of the essentials needed for the successful management of hearing loss. In fact, some mail order and online companies do not require so much as a hearing test prior to purchasing. When working directly with hearing health care professionals, students receive appropriate evaluation, referral for medical treatment if and when necessary, instruction in the proper care and use of hearing aids, follow-up service, as well as other rehabilitation services. Unfortunately, these crucial aspects of hearing healthcare may be eliminated when purchasing mail order or online hearing aids.

It is important that students do their research if they plan to purchase an amplification device in this manner. In many situations, there is no time or money saved due to the additional (sometimes hidden) charges for necessary options including an extended warranty, directional microphone, telecoil, or power aid. Students should also be aware of the fact that many audiologists and hearing instrument specialists may not adjust or service hearing aids that were purchased through the mail or online as they may be inappropriate for the student's hearing loss.

Regardless of where hearing aids or other amplification devices are purchased, it is important that students see a hearing health care professional first. In addition, the importance of proper follow-up care with such a professional cannot be stressed enough. These things should not be overlooked when purchasing mail order or online hearing aids.

Best Practices in the Evaluation of Hearing and Rehabilitation

Dave returned to the audiologist with feelings of grief. A mini counseling session with Dr. Clark was conducted to assess how Dave was handling the news of his hearing loss. Dave admitted being greatly upset, but with a big sigh, said that he was determined to do whatever it takes to get back to his studies. Dr. Clark proceeded with a needs assessment to identify potential listening situations and from that together they selected a set of hearing aids most appropriate for his needs. Because Dave was frequently in small group discussions, large classrooms, and was frequently around a lot of noise, Dr. Clark selected behind-the-ear (BTE) digital hearing aids with directional microphones, a noise reduction circuit, a feedback circuit, and a telecoil. Additionally, Dr. Clark indicated that Dave might also benefit from several types of assistive listening devices, which would work with his hearing aid telecoils to help him communicate in very noisy situations. Although Dave was not yet in medical school, Dr. Clark informed him about the Association of Medical Professionals with Hearing Losses and the fact that there were such things as amplified stethoscopes. Dr. Clark said that Dave would be contacted as soon as his new hearing aids arrived. At the Student Access Center, Dave met with Mr. Bellis, a hearing loss specialist. In order to get Dave back into his classes as quickly as possible, he drafted letters to be given to each of Dave's professors with an announcement to hire notetakers in each of his classes.

Hearing Evaluation

A comprehensive hearing evaluation is the first step in the aural rehabilitation process. The evaluation should begin with an in-depth case

history in which the hearing health care professional asks questions related to the student's family medical history, individual medical history, noise exposure, medications, and anything else associated with the student's primary complaint. We believe that the minimum test battery should include the following: otoscopy, immittance testing, pure tone air- and bone-conduction testing, speech recognition threshold testing, and word recognition testing.

Otoscopy involves inspection of the ear canal and eardrum with an otoscope. An otoscopic examination should also include inspection of a student's entire head, neck, and palpation of the auricle itself. Findings during otoscopic examination should be reported on the audiogram or in the hearing evaluation report. Immittance testing includes tympanometry and acoustic reflex testing. The battery of immittance measurements are designed to assess middle ear function and aid in the identification and classification of middle ear disorders. In addition, immittance testing provides some information regarding disorders of the auditory and related nervous systems. Pure tone testing is used to determine the type, degree, and configuration of the hearing loss. Both air- and bone-conduction testing should be performed. Headphones or insert earphones are used to present the different tones during air-conduction testing whereas a bone oscillator placed behind the ear (on the student's mastoid bone) is used during bone-conduction testing. Air-conduction testing determines the degree and configuration of hearing loss while bone-conduction testing determines the type of hearing loss present by comparing air- and bone-conduction thresholds. A speech recognition threshold (SRT) is the lowest level at which 50% of two-syllable spondee words (e.g., baseball) can be identified correctly. Like pure tone thresholds, speech reception thresholds are measured in decibels (dB HL) and should correspond closely to the pure tone average (PTA) discussed previously in this chapter. Word recognition testing is performed in order to obtain a measure of the student's ability to identify monosyllabic words (e.g., yard) presented in a quiet environment. A student's word recognition score is based on the percentage of words correctly understood.

The above tests are considered to be part of the *minimum* recommended test battery. In some cases, additional testing may be warranted. These tests may include, but are not limited to, otoacoustic emissions (OAE) testing, auditory brainstem response (ABR) testing, and central auditory processing ('(C)APD') evaluations. OAE testing provides objective information about the integrity of the outer hair cells within the cochlea. ABR testing is an objective measure that provides an estimation of hearing sensitivity as well as an assessment of the integrity of the hearing nerve and brainstem auditory pathways. (C)APD testing provides information about the integrity of

numerous levels of the auditory nervous system and other higher-order processes.

Hearing Aid Evaluation

After the hearing evaluation has been performed and it is determined that the student has an irreversible hearing loss that cannot be corrected medically, a hearing aid evaluation should be scheduled. This evaluation should include additional pure tone and speech testing to determine most comfortable listening levels (MCL) as well as uncomfortable listening levels (UCL). These measures are necessary for a successful hearing aid fitting. Specifically, this information ensures that a hearing aid will never amplify sounds to the point of being uncomfortable or painful.

During the hearing aid evaluation, the student's communication needs and wants should be assessed. It is important to identify his or her perceived social and emotional consequences of hearing loss. Several scales of communication function are available including the Abbreviated Profile of Hearing Aid Benefit (APHAB; Cox & Alexander, 1991), Client Oriented Scale of Improvement (COSI; Dillon, James, & Ginis, 1997), and the Hearing Handicap Inventory for Adults (HHIA; Newman, Weinstein, Jacobson, & Hug, 1991). The HHIA for screening purposes is available online (http://www.msu.edu/~asc/hhi/). Amplification options including the various hearing aid styles and the latest technological advances should be presented to the student. A telecoil (or T-coil) is an electrical component that can be added to many hearing aids that permit the user to couple the hearing aid with audio devices such as telephones and headphones. It is strongly recommended that telecoils be included with all hearing aids (Ross, 2004), though there may be situations prohibiting the inclusion of telecoils. If earmolds are to be made for use with behind-the-ear hearing aids, earmold impressions should be made properly followed by a selection of the appropriate earmold style. Care in taking earmold impressions and style selection will optimize earmold and hearing aid fit (Ingrao, 2005; Pirzanski & Berge, 2003). Hearing aids and other assistive listening devices should be selected based on the student's type, degree, and configuration of hearing loss, but more importantly, they should address the information gathered during the needs assessment.

During the hearing aid evaluation, it is important that the student be informed that the U.S. Food and Drug Administration (FDA) has determined that it is in his or her best health interest to have a medical evaluation by a licensed physician (preferably a physician who specializes in diseases of the ear) before purchasing a hearing aid to check for any of the following conditions:

- Visible, congenital, or traumatic deformity of the ear.

- History of active drainage from the ear within the last 90 days.
- History of sudden or rapidly progressive hearing loss within the last 90 days.
- Active or chronic dizziness.
- Unilateral hearing loss of sudden or recent onset within the last 90 days.
- Audiometric air-bone gap equal to or greater than 15 decibels at 500 Hz, 1000 Hz, or 2000 Hz.
- Visible evidence of earwax (cerumen) or any foreign body in the ear canal.
- Pain or discomfort in the ear.

Federal law allows fully-informed adults (age 18 and older) to sign a medical waiver statement declining the medical evaluation. The audiologist or hearing instrument specialist at times may refer the student to a physician before the hearing aid evaluation.

Hearing Aid Fitting

During the hearing aid fitting, the actual physical fit of the device should be verified. Hearing aids should never cause physical discomfort to the user. The hearing aids will then be programmed and adjusted to meet the student's specific hearing needs. Functional gain or "aided" testing is a hearing aid verification procedure that was used routinely in the past. This testing method is performed in a sound booth environment and utilizes behavioral testing to assess hearing aid performance. The difference between a student's aided and unaided response is called the functional gain. Functional gain testing alone is not an appropriate method of assessing new hearing aid technology.

Real ear measures (REM) should be performed to verify hearing instrument function. In this test, a tiny microphone is placed in the ear canal next to the earmold or hearing aid in order to measure the performance of the hearing aid in the student's ear. Responses are analyzed to determine the audibility of different sounds. Unlike functional gain testing, these measures provide information about the audibility of speech signals as well as maximum sound pressure levels delivered to the ear.

Proper care, use, and maintenance of the amplification device should all be explained to the student during the fitting appointment. Follow-up appointments are a necessary part of the aural rehabilitation process as well. Hearing aids and other assistive listening devices may need to be "fine-tuned" and additional testing may be necessary. Kits that help keep hearing instruments free from moisture and reduce breakdown are recommended

(e.g., http://www.dryandstore.com/). Unless the student is an experienced user of hearing aids, wearing hearing aids for the first time will likely be overwhelming. For some students, psychosocial adjustment training may be necessary. This is a time to discover what the student's attitudes may be toward his or her hearing loss and the use of hearing aids, and to help the student deal with misconceptions and dissonant thinking with respect to hearing loss. Communication strategies may need to be taught, especially for use in challenging listening environments. Whenever a student wears hearing aids for the first time, or has received a new set of hearing aids, the brain must be retrained to adapt to the new input. As the student learns to listen with his or her hearing aids, their listening demands are likely going to change. Because of this, it is important to obtain regular follow-up care.

Audiologic Report

A thorough, clearly written audiologic report is a critical piece of the rehabilitation puzzle. Hearing health care professionals should be able to provide the student with a written report that includes both the results and recommendations from his or her hearing evaluation. The results should confirm the student's hearing complaints and the recommendations should offer a suggested course of action. The student can then sign a "release of information" form in order for the results to be sent to vocational rehabilitation agency, Student Access Center, and aural rehabilitation programs. Refer to Appendix A for a sample audiological report.

Aural Rehabilitation

Aural (or audiologic) rehabilitation includes any effort intended to minimize and/or alleviate the effects that hearing loss may have on communication. Audiologists work to provide their consumers with the support needed to maximize the use of their residual hearing. Aural rehabilitation services focus on helping individuals adjust to their hearing loss. These persons are also taught how to communicate effectively, overcome communication breakdowns, properly use and care for their hearing aids, and use of assistive listening devices to enhance their communication. This is also a time when students can learn about other assistive devices that preserve or increase independence (e.g., vibrating alarm clocks). Aural rehabilitation may be provided individually, in small groups, or in a combination of both. Even students with longstanding hearing losses can benefit from aural rehabilitation as hearing technology is always being developed or improved.

Table 7-1. Best Practices

Hearing Evaluation

Minimum Test Battery

Otoscopy

Immittance (tympanometry and acoustic reflexes)

Pure tone air- and bone-conduction audiometry

Speech reception threshold testing

Word recognition testing

Special Tests (as needed)

  ⬩ Otoacoustic emission (OAE) testing

  ⬩ Auditory brainstem response (ABR) testing

  ⬩ Central auditory processing ((C)APD) testing

  ⬩ Hearing Aid Evaluation

Most comfortable listening (MCL) and uncomfortable listening levels (UCL)

Needs assessment (APHAB, COSI, or HHIA)

Amplification options including hearing aids and assistive listening devices

Medical evaluation or medical waiver

  ⬩ Hearing Aid Fitting

  ⬩ Real-ear measures

  ⬩ Proper care, use, and maintenance

  ⬩ Aural rehabilitation (psychosocial adjustment, communication strategies)

Follow-up care

Hearing Aids and Auditory Implantable Devices

HEARING AIDS

Because of the reduced dynamic range and loudness recruitment common in students with hearing loss, hearing aids must amplify soft sounds greater than they do loud sounds. The conventional use of the term hearing aid usually refers to a device that is coupled to the ear and any inaudible sounds are captured, amplified, and directed at the eardrum. Thus, hearing aids rely on all the parts of the ear and attempt to deliver as clear a sound to the damaged ear as possible. In general, the greater the severity of the hearing loss the greater the need for amplification.

In this section, various styles, types, and features of hearing aids are described. Some of the features depicted in this section also pertain to

auditory implantable devices. As the various features of hearing aids are described, it is important to keep in mind that a student's success with hearing aids may depend on a large number of factors, only some relate to the hearing aid itself. Specifically, there is no "one-size-fits-all" solution for every student. Additionally, the students themselves may have particular preferences for certain styles or types of hearing aids that may not be appropriate for their hearing loss or ear size. In sum, the selection of hearing aids will depend on the primary hearing difficulties, the type, degree, and configuration of hearing loss, the student's listening needs and wants, and availability of technology. Table 7.2 sums up the various styles, types, and features that described below.

Table 7-2. Hearing Aid Features

Style
Open fit
Behind-the-ear (BTE)
In-the-ear (ITE)
In-the-canal (ITC)
Completely-in the-canal (CIC)
Types
    ⬩ Processing
        -Analog
        -Digitally-programmable analog
Digital
    ⬩ Non-Traditional
        -Bone-conduction hearing aid
        -CROS/ BICROS
        -Frequency compression/ transposition
Available In Most Hearing Aids (Analog or Digital)
    ⬩ Telecoil
    ⬩ Directional microphones
    ⬩ Venting
Available In Only Digital Hearing Aids
    ⬩ Noise reduction/ suppression
    ⬩ Adaptive directionality
Feedback cancellation
    ⬩ Automatic telecoil

Hearing Aid Styles

Hearing aids come in several styles (Figure 7-5) with the intent of meeting the student's lifestyle. The styles from largest to smallest include: Behind-the-ear (BTE), In-the-ear (ITE), In-the-canal (ITC), and Completely-in the-canal (CIC). The latter three are typically called customized hearing aids, because the hearing aid components fit into a cast of the student's own ear.

The newest style on the market is called an open fit hearing aid, which is a type of BTE. Open fit hearing aids are designed for students with high frequency hearing loss and normal to near normal thresholds in the low and middle frequency ranges. This type of hearing aid keeps the ear canal open in order to reduce the plugged-up sensation. With open fit BTEs, the traditional ear mold is replaced with a thin tubing and dome-like (or customized) attachment that fits in the ear canal. For other hearing aids, the style that is chosen will depend on several factors. First, the audiologist or hearing instrument specialist will need to assess the student's communication needs. For example: Will the student require a telecoil to use assistive listening devices? Will the student benefit from directional microphones? A telecoil, directional microphones, and other related components take up space in the hearing aid. Therefore, in some cases a larger hearing aid style is needed to house all the components and to maximize benefits for the user. Second, the hearing aid style that is chosen may depend on the size and shape of the ear canal. If the ear canal is too small or too curvy, a larger hearing aid style may be required. Third, does the student have a tendency to produce a lot of ear wax (cerumen)? Hearing aid styles, other than BTEs, tend to have a higher risk of breakdown due to excessive ear wax. Lastly, does the student have a tendency to misplace things or have difficulties with vision or dexterity? Hearing aids that are larger in size are generally easier to handle, change batteries, clean, and operate.

Open Ear   Behind-The-Ear (BTE)   In-The-Ear (ITE)   In-The-Canal (ITC)   Completely-In The-Canal (CIC)
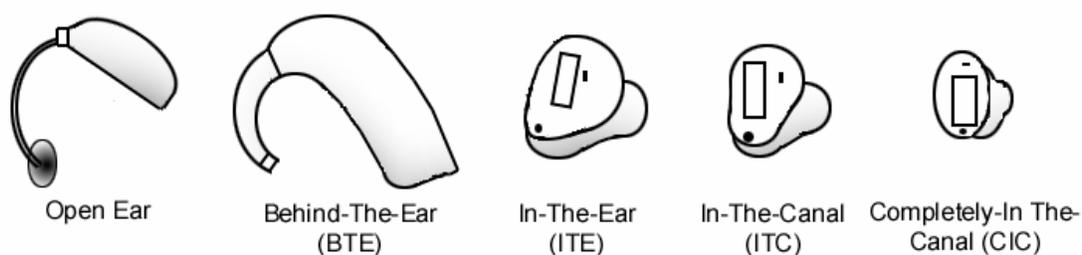
Figure 7-5. Hearing Aid Styles

Analog versus Digital Hearing Aids

Minimally, all hearing aids contain a microphone (also called a "mic"), amplifier, and receiver (a small speaker). The microphone picks up the incoming acoustic signal from the environment and converts it to an electric signal. The amplifier takes the electric signal and makes it louder. The receiver takes the magnified electric signal and converts it into an acoustic signal to be directed at the eardrum. The amplifier is perhaps the most critical aspect of the hearing aid because it has the ability to make both voltage and current larger, which depends on the size of the battery used.

Hearing aids fall into three broad categories: analog, digitally-programmable analog, and digital. All three types contain a microphone, amplifier, receiver, and power supply. Analog hearing aids rely only on electrical parts and controls to manipulate the incoming signal. Digitally-programmable analog hearing aids work similarly to analog hearing aids, but they are programmed and adjusted using computers. Drawbacks of analog technology include potential distortion, greater internal noise, and much less flexibility in fine-tuning the acoustic signal for the hearing aid user.

Digital hearing aids utilize a more sophisticated technology programmed by computers. In digital hearing aids, the incoming acoustic signal is converted to an electric signal, which then goes through an analog-to-digital converter. This converter samples the incoming electric signal and turns it into a string of ever-changing numbers called *binary digits* (bits), which is the language of computers. Thus, digital hearing aids are like miniature computers with the ability to perform sophisticated and precise mathematical calculations on the incoming electric signal. After the calculations are performed, the new signal goes through a digital-to-analog converter and the receiver converts this new electric signal to an acoustic signal. The result is a clear sound with reduced distortion and internal noise. The benefit of digital sound is often appreciated when comparing the sound quality of cassette tapes to compact disc (CD) recordings, where CDs have a much cleaner sound. The same is true with digital hearing aids.

Some high-end digital hearing aids have multiple programs (or memories) and some can perform data logging. Having multiple programs permits the hearing aid to have different processing strategies for different listening situations such as a quiet classroom versus a cafeteria. Data logging is a feature in which the auditory environment is constantly sampled and stored in the hearing aid. Data logging permits the audiologist or hearing instrument specialist to assess the types of listening situations in which the student is involved. This information may be useful to "tweak" the hearing aids and optimize the use of the programs.

There is at least one major caveat with digital hearing aids. Long-term users of analog hearing aids may have difficulty adjusting to a digital hearing aid. This difficulty may be because they are used to the sound quality offered by analog hearing aids. What digital hearing aids attempt to improve on, such as reducing background noise, may be perceived to the analog user as a loss of sound volume. Fortunately, digital hearing aids can be programmed to behave very much like analog hearing aids when needed.

At this point, it is necessary to understand three things. One, both analog and digital hearing aids come in all styles except for the open fit style, which is digital only (Figure 7-4). Two, both analog and digital hearing aids can have

telecoils, directional microphones, and multiple channels. Certain features such as data logging, noise reduction, feedback cancellation, and multiple programs are only available in digital hearing aids. Lastly, in the future, many hearing aid manufacturers are likely going to eliminate analog hearing aids. In fact, many have already begun to phase them out of their product lines.

Channels

Both analog and digital hearing aids can divide the incoming signal into different frequency regions so that they can be manipulated independently of one another. This is particularly useful when the configurations of hearing loss are not flat. Equally important is the need to allow the hearing aid to amplify certain regions, such as those that carry speech (primarily mid-to-high frequencies), while minimizing the amplification of regions that carry background noises (primarily low frequencies). These independent channels are recombined before they leave the hearing aid's receiver. The number of channels varies among hearing aids as well as among hearing aid manufacturers. Generally, more expensive hearing aids have more channels, because of the greater amount of flexibility in fitting the hearing aid to the hearing loss. For some students in demanding listening environments, hearing aids with multiple channels may be just what they need to be successful in college.

Telecoil

A telecoil is a small coil of wire that produces voltage when a magnetic field flows through it creating an electric current that has the same pattern as the incoming signal. Many audio devices[3] generate magnetic fields as a by-product, and users of hearing aids with telecoils benefit significantly from them. When the telecoil is used, the aid's microphone is typically turned off. This enables the user to enjoy sound without background noise. User access to a telecoil may vary on different hearing aids. Some telecoils are started simply by toggling a switch from M (microphone) to T (also called a T-switch). In some digital hearing aids the user may have to press a button to change to the telecoil program. Lastly, some sophisticated digital hearing aids automatically switch to telecoil in the presence of a strong magnetic field such as putting the phone next to the hearing aid. Special headsets have been designed to be used with telecoils that permit consumers to listen to

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[3] It should be noted that some digital cell phones may be problematic for both analog and digital hearing aid users. Digital cell phones operate using FM radio waves, which generates a pulsing magnetic field around the antennae. This is perceived by the hearing aid wearer as a buzzing sound. Other sources of interference come from the backlight display. Interested readers are directed to: http://tap.gallaudet.edu/DigitalCellFAQ.htm

telephones and other audio devices with neckloops and silhouettes. These special headsets can be used with some assistive listening devices. The use of telecoils with these devices is discussed in-depth in Chapter 8.

Noise Reduction and Suppression

A common complaint of hearing aid users is the interference of background noise. Whenever hearing aids are used, both speech and noise increase. This is an inevitable problem even with the most sophisticated hearing aids (Levitt, 2001). Interestingly, Palmer, Bentler, and Mueller (2006) have indicated that the annoyance to noise by hearing aid users is actually no different than perceived by normal hearing listeners. Thus, noise reduction is one solution to minimizing this annoyance to amplified sounds.

Because speech and noise overlap when they enter into a microphone, any attempt to reduce noise is likely to cause parts of speech to become reduced as well. The simplest form of noise reduction is amplifying low-frequency sounds less than mid- and high-frequency sounds; however, as expected, some of the lower frequency components of speech may become inaudible. Hearing aid manufacturers are always trying to develop ways to reduce noise, and any attempt to reduce noise will require the ability to truly separate speech from noise, or at least the capacity of hearing aids to predict the composition of noise. Currently, noise reduction appears to offer listening comfort in noisy situations.

Directional Microphones

A solution for the enhancement of speech in the presence of background noise is using directional microphones. Such hearing aids have two microphones arranged in a horizontal plane to increase speech sounds that are directly in front of the hearing aid user while reducing the level of background noise. Because background noise is generally similar in the front of the user as it in the back, directional microphone technology has the ability to detect signals common to both microphones and attempt to reduce it. Research by Amlani (2001) suggests that directional microphones provide statistically significant advantages over single microphone hearing aids.

There are three potential drawbacks to directional microphones. First, the hearing aid user must face the source of sound he or she wishes to listen to. When a group meets in a noisy environment, the hearing aid user will have to readjust his or her head/body position with every new speaker, particularly with speakers on his or her side. A second potential disadvantage is a situation when the hearing aid user is facing a speaker, but another speaker is directly behind him or her at some close distance such as small group discussions in a large class. A hearing aid with directional microphones may

not be able to effectively amplify the front speaker because of the competing speaker directly behind the user. A final drawback is that benefits of directional microphones decrease in reverberant conditions involving echoes (Studebaker, Cox, & Formby, 1980). Regardless, directional microphones do work in the right situations and have increased user satisfaction and communication (Kochkin, 1996). Newer directional microphone processing technologies have been designed to track moving sources of background noise and minimize them with some success. Research has shown that the use of directional microphones is better than noise reduction, but the two in combination increase performance in noise compared to either one alone (Chung, Zeng, & Waltzman, 2004).

Boots, DAI, FM, Bluetooth, and Wireless Setups

At the request of the hearing aid candidate, or suggestion of the audiologist or hearing instrument specialist, hearing aids can be selected with the option of coupling them in some way to audio and assistive listening devices. This is different from the use of telecoils. Instead, hearing aids may have the ability to have audio devices directly coupled to the hearing aid's circuitry by direct audio input (DAI), or by a separate part that attaches to the back of a hearing aid called a boot. More recently, using frequency-modulated (FM) type systems and Bluetooth technology either by an internal electronic part or small boot, many hearing aid users have been enjoying wireless forms of connecting audio and assistive listening devices. These setups will resurface again in Chapter 8.

Earmolds

In order to deliver amplified sounds to the ear, the hearing aid must be coupled in some way to the outer ear. Behind-the-Ear (BTE) type hearing aids require a separate earmold, which is a plastic (acrylic), vinyl, or silicone cast of the user's ear. The earmold has a piece of clear rubber tubing that is connected to the hearing aid that sits on top of the ear. As indicated earlier, the earmold is the most critical component in the success of hearing aid fittings (Ingrao, 2005; Pirzanski & Berge, 2003).

Feedback Resolution

When earmolds or custom hearing aids do not fit well or they have not been designed or selected appropriately, feedback can occur. Hearing aid feedback is the whistling sound created that can annoy others and embarrass the user. Feedback occurs anytime the amplified sound coming out of the receiver re-enters the microphone. As a result, the hearing aid increasingly amplifies the sound leak causing the hearing aid to whistle. When this occurs, most hearing aids wearers will turn down their volume controls, which puts them

at a disadvantage without the amplification that they need. For most hearing aid users, some leakage of sound will happen, but it will not lead to feedback if the exiting sound is no louder than the incoming signal. Therefore, it is not necessary for all hearing aid users to have a tight-fitting earmold (or customized hearing aid). Generally, the greater the hearing loss, the tighter the fit required. It should be noted that some digital hearing aids have a feedback cancellation feature that permits the hearing aid to catch any sources of feedback and minimize it with little affect on the overall gain and sound quality. Vinyl or silicone earmolds do need replacing about once a year, or when significant changes in hearing occur to minimize the likelihood of feedback.

Venting

Some earmolds and custom hearing aids have open ports called vents to minimize the perception of ears feeling blocked (i.e., occlusion effect). A simple experiment will illustrate the need for venting. Try speaking with your fingers in your ears and then with your fingers out of your ears. Notice the perception of your voice inside of your head with your fingers in your ears. For many hearing aids users, this perception is annoying. Adding vents relieves the hearing aid user of some of the occlusion; however, there is a tradeoff. Greater hearing losses require a smaller vent or no vent at all, or the hearing aid will create feedback.

Non-Traditional Hearing Aids

Some non-traditional, but important types of hearing aids include bone-conduction hearing aids, CROS or BICROS hearing aids, and frequency compression and transposition hearing aids. Bone-conduction aids deliver sound directly to an otherwise normal cochlea in the presence of a conductive hearing loss. These instruments require an elastic, metal headband with a bone oscillator that is placed directly on the skull behind the ear. CROS (contralateral routing of signals) or BI(bilateral)CROS hearing aids are designed in deliver sounds from an unusable and unaidable ear on one side of the head to the ear with better hearing (normal or some hearing loss). Finally, frequency compression and transposition hearing aids attempt to shift otherwise inaudible high frequency sounds to a frequency range where hearing is better (typically lower frequency) (Andersen, n.d.; Parent, Chmiel, & Jerger, 1997). In other words, the hearing aid user will hear high frequency sounds, but at a lower pitch.

IMPLANTABLE AUDITORY DEVICES

Miniaturization of technology, improved understanding of how the hearing mechanism works, and advances in surgical technique have paved the way

for the use of auditory implantable devices for partial restoration of hearing. Motivated patients who meet strict candidacy criteria will have their auditory device surgically implanted by an otolaryngologist and programmed by an audiologist. Following implantation and subsequent programming, some individuals may require extended periods of auditory rehabilitation, while others perceive immediate benefit. Given time, most users are considered to have appreciable advantages over hearing aids. Below is a brief description of each device, its associated candidacy criteria, the implant procedure, and expected outcomes. Because of the widespread use of cochlear implants, it will be introduced first and in greater depth, followed by a discussion of bone-anchored hearing aids then middle ear and auditory brainstem implants.

Cochlear Implants

Cochlear implants (CI) are considered by many to be the most successful of all available prosthetic devices for those with auditory impairments (Moller, 2001). Their success is due primarily to the shape of the cochlea and the arrangement of the auditory nerve fibers that innervate the sensory hair cells throughout the cochlea. Cochlear implants are designed to bypass the cochlea when most sensory hair cells are damaged, missing, or have inappropriate connections with the hearing nerve. This is typically evidenced by lack of benefit from hearing aids, regardless of how loud the aids have been turned up. The multiple-electrode array that is surgically inserted into the cochlea will ultimately stimulate the surviving auditory nerve fibers of the hearing nerve. In this way, a connection to the hearing centers of the brain is re-established and partial hearing is restored.

The candidacy criteria for cochlear implants have evolved over the years due to advances in both hardware and software technology. With this in mind, cochlear implant candidacy often revolves around three basic questions:

- Are there any medical or health inconsistencies or physical problems with the auditory structures that prohibit cochlear implantation?
- Will the individual receive more benefit from the cochlear implant compared to hearing aids or no prosthesis at all?
- Does the individual have a strong support system of family, friends, and professional services as well as appropriate motivation and reasonable expectations?

These questions are often addressed by a team comprised of a surgeon, audiologist, and psychologist. Other members of this team may also include educators, disability counselors, and vocational rehabilitation specialists. Current guidelines permit adults to undergo cochlear implantation if their open-set sentence recognition abilities are 50-60% or less with appropriately fitted hearing aids. Individuals who do not wear or have their own hearing

aids may be required to undergo a three-month hearing aid trial period. Above and beyond candidate criteria, all cochlear implant devices in the United States must be approved for use by the FDA.

The cochlear implant procedure involves a medical evaluation, audiological evaluation, surgery, recovery, fitting and programming of the implant, several follow-up adjustment appointments, and participation in an aural rehabilitation program. The cochlear implant has two main parts: an internal processor with electrode array and external processor with a magnetic headpiece. The internal processor is surgically attached to the skull behind the ear with the electrode array threaded into the cochlea. Some two to four weeks after the surgery, the external processor, which has digital components, will be fitted and the magnetic headpiece will be affixed to the head in the area of the internal processor. The external processor works very much like a digital hearing aid in that it picks up sound from the environment and transmits it, via frequency-modulation (FM) radio waves across the scalp from the external to internal processor where it is converted to electrical impulses.

Partial restoration of hearing through a cochlear implant comes in the form of improved auditory thresholds (~ 15 to 20 dB HL at multiple frequencies) and enhanced ability to differentiate one frequency from another. It is important to understand that cochlear implants do not restore all normal hearing abilities. Even the most successful cochlear implant users may continue to have difficulty understanding speech in background noise without visual cues, and when people speak rapidly or too softly. Cochlear implant consumers may also continue to face great problems localizing sound and responding to sounds from far distances, although bilateral cochlear implantation may help with this. The perceived success of cochlear implantation is very individualized and often depends on the user's expectations and past experiences hearing sound. For example, a cochlear implant user with poor speech recognition performance may derive significant benefit and satisfaction for non-speech sounds that are minimally necessary to perform a job. Just as with many hearing aids, assistive listening devices, and audio equipment can be used with cochlear implants to enhance the reception of speech signals. (Interested readers are directed to Atcherson, Rastetter, Carroll & McKee (2003) for personal stories on the cochlear implant process.)

Bone-Anchored Hearing Aids

Individuals with conductive or mixed hearing losses, and outer and middle ear pathologies, or malformations often have limited amplification options. Conditions such as chronic ear drainage, abnormal narrowing of the ear

canals, or absent ear canals, may limit a student's ability to wear and benefit from traditional types of hearing aids (Spitzer, Ghossaini, & Wazen, 2002). In many types of conductive hearing losses, the cochlea is functioning normally, but sound is reduced in level as it passes through the outer and middle ears. Those familiar with audiological testing may recall the use of a bone oscillator headset to test for hearing thresholds. The bone-vibrator is placed directly on the skull behind the ear and sound is transmitted directly to the cochlea through vibrations of the skull. A bone-anchored hearing aid works on the same premises, delivering sound directly to the cochlea when traditional hearing aids are not appropriate. Bone-anchored hearing aids operate on the same principle as bone-conduction hearing aids, except there is not a headband binding the oscillator to the skull.

The bone-anchored hearing aid (BAHA) has three parts: a titanium implant, a protruding screw, and a sound processor. The titanium implant is anchored directly into the skull in the area behind the ear and the screw is attached to the implant. A small hole is cut into the skin to allow the screw to pass through at the point where the sound processor is attached. The sound processor then serves as the bone oscillator. When the cochlea is normal, bone-anchored hearing aid users can expect to have nearly normal hearing abilities.

Middle Ear Implants

Middle ear implants (MEI) make up another class of tools for the partial restoration of hearing (Spindel, 2002). These implants have similar components as hearing aids; however, an amplified, vibratory signal is transmitted directly to a mobile auditory structure in the middle ear. Unlike traditional hearing aids, middle ear implants elicit a broader range of frequency of signals than hearing aid receivers. Because the device works directly with the middle ear structures, there is nothing in the outer ear to obstruct sounds or cause feedback. Similar to a cochlear implant, middle ear implants have an internal processor that is surgically placed on the skull behind the ear and the external processor that delivers sounds to the internal processor. Unlike the cochlear implant, the success of middle ear implants depends on maintaining good cochlear structure survival. Specifically, they are suitable for students with stable moderate to severe sensorineural hearing losses.

Auditory Brainstem Implants

Auditory brainstem implants (ABI) operate similarly to cochlear implants; however, brainstem implants are only used in individuals who have missing, damaged, or severed hearing nerves, or following hearing nerve tumor removal by surgery. Unlike cochlear implants, the auditory brainstem

implant electrode array is attached directly to a group of auditory neuron cell bodies in the brainstem called the cochlear nucleus. The cochlear nucleus is the first of any of the brainstem or brain areas to receive signals from the sensory hair cells of the cochlea. Currently, the auditory brainstem implant remains limited at best because of the complex organization of frequency representation in the cochlear nucleus and the difficulty electrically stimulating sound-linked neurons in the cochlear nucleus. Researchers have been working on a new electrode array that has penetrating electrodes to stimulate neurons in the cochlear nucleus (House Ear Institute, 2006). At present, auditory brainstem implant consumers can expect to receive communicative benefits as they add visual cues with their hearing. Some consumers may develop the ability to recognize words without heavy reliance on visual cues (Colletti & Shannon, 2005).

Chapter Eight

Communication Access Options: Hearing Assistance Technology[4]

Cheryl D. Davis and Samuel R. Atcherson

Abstract

Most individuals with hearing loss have never been exposed to hearing assistance technology beyond hearing aids. While they may realize the limited utility of hearing aids in group listening or noisy environments, they most likely do not know that there are a variety of assistive technology devices available. Hearing assistance technology includes assistive listening devices, alerting devices, and telecommunications options. Speech-to-text technology is included in this range of options as adequate amplification is not possible for many people. Before covering the technology, the chapter opens with a discussion of what a person with hearing loss might experience, why hearing in different environments is challenging, and a definition of communication access.

One Student's Story

Sydney, a student access provider relays the following story about Irina, a hard of hearing student:

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[4] Undoubtedly, the technology options described in this chapter will change. For current information, check catalogs from companies selling assistive technology, check with consumer organizations, and join electronic mailing lists for individuals with hearing loss.

> Irina was a returning student, married with children, who had a severe hearing loss. She thought she was doing well in her classes until she got her midterm grades. Not understanding why she was doing so poorly, she decided she must be missing information in class discussion. She used two hearing aids, read her materials in advance, attended class, let her instructors know she had a hearing loss, and sat in the front. Not knowing what else to do, she appeared in the Student Access Center requesting a tape recorder. Her plan was to ask her children or her husband to listen to it with her and repeat what was said to her so she could find out what she was missing. She had been wearing hearing aids over 20 years and no one had ever told her about assistive listening devices.

A majority of individuals who have a hearing loss are unaware of assistive technology, beyond hearing aids, that can be useful in difficult listening situations. Whereas Chapter 5 focuses on the services provided by the Student Access Center and Chapter 7 on hearing aids, cochlear implants and other auditory implantable devices, this chapter concentrates on the variety of technologies available and provides a brief overview of how many of them work. Understanding the pros and cons of each option assists in choosing the most appropriate option and troubleshooting when problems occur. Many brand names are mentioned in this chapter. These are not meant as recommendations; rather, they are meant to provide the reader with a means to locate more information. Much of the technology mentioned in this manual is one of a kind, and without the names of the devices, locating them would be difficult.

Communication Access

Before we discuss the technology, it is important to evaluate both the goal of providing the accommodation and to identify some myths and misconceptions that may be held by decision makers concerning what an individual who identifies as hard of hearing (rather than deaf) actually hears. Confusion among service providers arises due to a number of misconceptions or beliefs: (1) the label "hard of hearing" indicates the individual does not have a serious impairment, (2) people who can hear well enough to make a phone call would not qualify for an accommodation, (3) a classroom accommodation would not be necessary if one is not needed in the intake interview or application interview, (4) clear speech indicates that the person does not have a severe hearing loss, (5) people who speechread do not need additional assistance, and 6) hearing aids provide satisfactory access.

While some individuals will be able to enjoy music, the goal of most accommodations is to understand spoken language and auditory alerts. Thus, hearing aids focus on the speech frequencies, not the entire range of frequencies perceptible to the human ear. While individuals with cochlear implants may be able to hear a wider range of frequencies, being able to perceive the difference between two similar frequencies, such as two consecutive notes on a keyboard, is still problematic for most. See Ross, 2006b for more information.

Because service providers may err in determining need based on conversation or an intake interview, this concept is worth exploring. How does conversation differ from other listening situations? Hearing aids are very effective in quiet, one-on-one situations[5]. In an intake interview the counselor is usually using his or her best listening skills and maintaining eye contact. This gives the listener full access to the speaker's face. In addition to the fact that is conversation is likely to take place in a quiet, more optimal listening environment, this is a conversation with give and take. Facial expressions and body language greatly facilitate understanding. In a lecture in school or a training or meeting at work, there is usually much less give and take in the conversation. There is limited eye contact, minimal opportunity for response or feedback, less likely to occur in an optimal listening environment, and at the same time, the listener is held completely responsible for the information presented.

HOW MUCH IS ENOUGH?

With few exceptions, there is little argument that in academic, employment, and social settings, hearing and understanding speech is vital to our functioning. So how much speech does one need to hear in order to have access to the entire message or to succeed? Hearing 75 or 80% sounds like a lot…but is it enough? Remember in evaluating a request for an accommodation what is at stake. For a student or employee, being able to understand what is being said is vital to the individual's success as a student or worker. This is in fact true of any social situation that goes beyond the anticipated "Hi, how are you?" or a controlled conversation on a known topic.

So what is a person hearing and how much information is needed to understand the entire message? As an example, hearing loss in the higher frequencies is the most common type of loss. In looking at a mapping of

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[5] While newer hearing aids and cochlear implants are greatly improved over older models and provide many benefits in some noise, it is important to remember that not everyone will have the newest and the best equipment, and noise, by its nature, is variable and difficult to control.

common speech sounds by frequency or pitch and decibel (dB) or loudness, it can be seen that even a mild high frequency loss means the individual loses the sounds s, f, t, h, p, th, ch. These are extremely common sounds. Additionally, in English the s and t sounds provide plural and past tense information, and the difference between can and can't. When these key sounds are missing, the message becomes ambiguous. So, if you can hear 'most' sounds, isn't that enough?

> In looking a a ma ing of common   ee   ound by requen y or   i
> and de ibel (dB) or loudne , i   can be   een   a even a mild igh
> requen y lo   mean   e individual lo e   e ound.

The above sentence is the third sentence in the previous paragraph. Only the high frequency sounds listed above have been removed. Even though the reader is reading and not listening, it is easy to see that the individual is not missing a word here or there, but missing sounds in many words. Not counting the list of sounds at the end, 74% of the letters of the original sentence could be heard. At the same time, only 43% of the words are left intact. What percent of the message would the individual understand? Being able to hear 75% of a message may seem adequate, but functionally it is devastating, especially in a classroom environment. Clearly, individuals with hearing loss fill in a great deal of information. It is easy to see how lost one might become in a lecture or straight presentation of information if the opportunity to stop the speaker and ask for clarification were not possible or not socially appropriate.

SOUND AND SETTING

Besides presented information in lecture formats, another major listening challenge for individuals with hearing loss is group discussions. It is important to appraise the variety of information a person with normal hearing picks up auditorially to understand why this is a challenge. In a large group of people, we are able to locate the direction a sound is coming from, whether the speaker is male or female, and identify whether the speaker is a child or adult. We might even recognize the voice so we know who we are looking for. These differentiations probably will be blurred for the individual with a hearing loss. With normal hearing, we also glean other information that may help us socially. The person may have an accent that we could comment on, may speak passionately about the topic, or may come across as insecure or even condescending. We also hear grammatical information and cues about when to interrupt or ask a question. Without these cues we can easily make a social misstep, which others might misattribute as rude or socially inept behavior.

The final piece to understanding the bigger picture of the challenge of hearing is the issue of background noise. Most hearing aids amplify a range of sounds specific to the individual's hearing loss. If a person has a loss in high frequencies but not the lower ones, most hearing aids will amplify only the high frequencies (see Chapter 7 for additional information). Cochlear implants function differently and are designed to bypass cochlear hair cells that are non-functioning to directly stimulate the auditory nerve. Both hearing aids and cochlear implants use a microphone to collect sound, and neither discriminate perfectly between speech and background noise. *Neither the hearing aid nor the cochlear implant can discriminate between desired sound and background noise.*

Restaurants, meetings, and classrooms are generally very noisy not only because of the number of participants, but also because of other sounds in the environment, such as heating or air conditioning units and overhead projectors. Many of the sounds that individuals with normal hearing can ignore are amplified for both hearing aid and cochlear implant users into noise that competes with speech.

How much louder does the target sound need to be than the background noise? In research conducted by Blair (1990), students with normal hearing understood clearly as long as the speech was 6 dB louder than the background noise. Students with hearing loss, though, required speech to be 15–25 dB louder than the background noise. Thus, clarity, especially in noisy situations, is a major issue for hard of hearing individuals. This concept is known as the signal-to-noise ratio. With cochlear implants, it is a question of the brain interpreting the signals it is now receiving. Some people gain only the ability to differentiate among environmental sounds. Others can recognize speech under some circumstances, and others are able to understand speech in most circumstances. While adults are "retraining their brains" to understand the new sounds they are receiving, it is important to provide practice time with a clear speech signal that is unmuddied by background noise.

In addition to a strong signal-to-noise ratio, two other properties of sound impact the listener's ability to receive sound—distance and reverberation. Distance from the sound source also has a dramatic impact on the ability to hear. The greater the distance from the sound, the softer the amount of pressure that is exerted on the eardrum, and the less intense (loud) the sound is. Consider that the average speech is about 65dB. At about 4 feet (for example, the first row in a classroom), the intensity drops to about 53dB, and at 16 feet (about the fourth row), the intensity is only 41dB. With or without a hearing aid, it would be beneficial to sit closer to the sound source and would help reduce eyestrain when speech reading (Blair, 1990).

Reverberation

Solid Wall

No Reverberation

Absorbent Wall
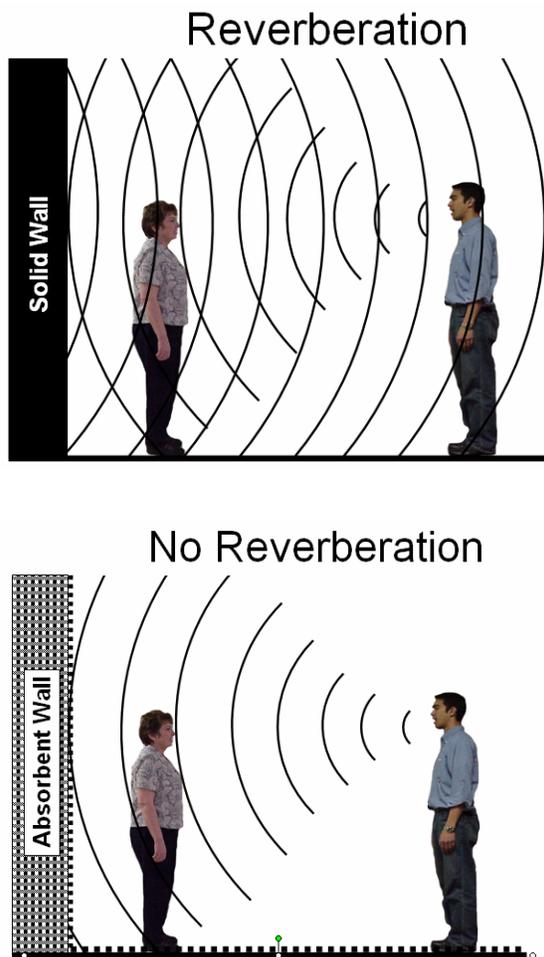
Figure 8-1. Visual Representation of Reverberation

Reverberation is the third characteristic of sound that hearing aids and cochlear implants cannot overcome. Reverberation is the time required for the intensity of a sound to drop 60dB once it has stopped being produced. The longer the time, the more of an echo, and the muddier sound becomes (see Figure 8-1). Assistive listening technology can help overcome these problems.

ASSISTIVE LISTENING DEVICES

Sydney's story continues:

> With Irina's openness with her faculty about her hearing loss, I thought that she might also be willing to try an assistive listening device, which she had never used. I gave Irina the receiver and neckloop [an alternative to headphones for some hearing aid users] and I turned my back to her and spoke into the microphone. When Irina didn't respond, I thought her hearing loss might be too severe to benefit from the device. When I looked up, though, I saw Irina was fighting to control her emotions. She shared with me the following: "You don't know how long it's been since I've understood someone's voice without seeing their face. I'm thrilled with the possibilities that this technology can provide me, and really, really angry that no one ever told me about this before. I have struggled so much. Even my family gets frustrated with me not being able to hear them. I've often thought that if the people who love me most are challenged by my hearing loss, why would any employer ever take the trouble with me? A lifetime of choices are flashing before my eyes and I am thinking 'What would I have done differently if I'd only known?'"

Assistive Listening Devices (ALDs) consist of a microphone, a transmitter and receiver system, and a coupling device, such as headphones. The speaker talks into the microphone, which should be placed within 6" of his or her mouth. The microphone is attached to a transmitter, which sends the signal across a limited distance to the receiver at the user's seat. The only sounds being transmitted are those coming through the microphone. The user's receiver picks up the signal and sends it to the coupling device, such as headphones. There is a volume control on the receiver, so that the user can turn it up or down as needed.
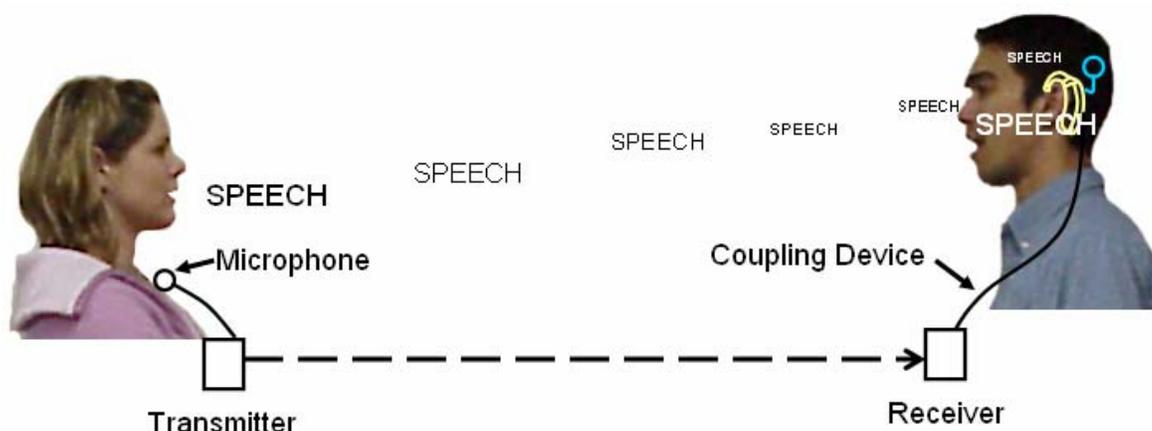
Figure 8-2. Assistive Listening Devices Transmit Sound Without Losing Intensity.

ALDs help minimize background noise and maximize the desired target sounds. Because the speaker is using a microphone, the user can turn up the volume on the speaker's voice without turning up the background noise. That is, ALDs improve the signal-to-noise ratio. In this way, speech can travel across the distance without losing clarity (see Figures 8-2 and 8-3).
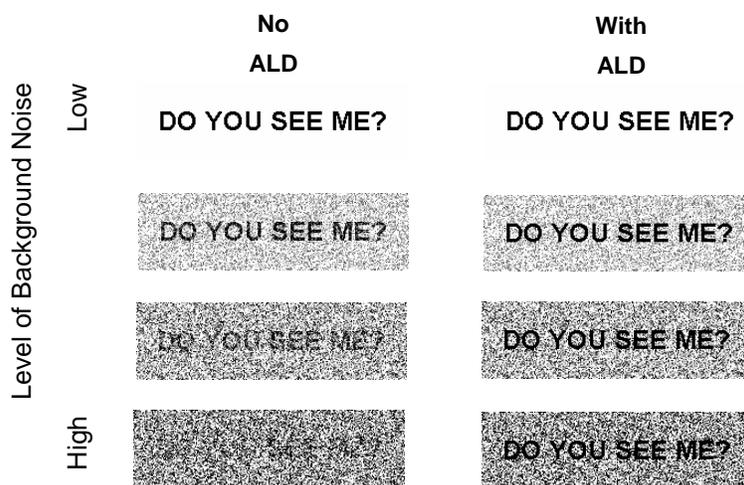
Figure 8-3. Visual Representation of Background Noise and How ALDs Help

The benefit to the user depends on the severity of his or her hearing loss. ALDs aid in speechreading in more severe hearing losses, and help reduce dependence on speechreading for milder hearing losses. For more severe hearing losses, ALDs may only help the individual pick up voice inflections,

such as word endings indicating tense, mood, or number, for example. However, this does help the individual interpret meaning. Individuals with and without hearing aids, and individuals with cochlear implants may benefit from ALDs (those with cochlear implants would need to use the appropriate coupling devices such as patch cords—an audio cable with a plug on both ends—to be able to take advantage of them with the implant, or they may use the ALD with the aided ear). The use of ALDs also helps reduce eyestrain and fatigue for those who depend on speechreading.

ASSISTIVE LISTENING DEVICE SYSTEMS[6]

There are three major transmission systems related to assistive listening technology. This variety is useful as each system has its own advantages and disadvantages. There are large and small area, personal versions available for each transmission system. Range varies with the system from under 100 feet to more than 500 feet. The receivers generally are powered by batteries, though not all transmitters are. With the appropriate coupling device, each system can be used with or without hearing aids.

FM (Frequency Modulation)

The personal FM transmitter is about the size of a pager, and has an on-off switch and a jack for a microphone. The instructor plugs in the microphone and clips it close to his or her mouth (within 6"), turns the transmitter on, and begins speaking. The FM receiver looks very similar and, like other receivers, includes an on/off, volume control, and a jack for headphones or another coupling device. The user wears the receiver to intercept the signals and plugs in headphones or another coupling device to transmit the sound from the receiver to the ear (see Figure 8-4). FM uses radio waves to transmit the signal across the distance, like tuning into a radio station. In fact, you can leave the room and still pick up the signal. Instructors should be aware that, unless they turn off their microphone, they, too, can leave the room and still

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[6] Some hearing aids have built-in or attachable assistive listening transmitters such as FM, with a separate microphone for speakers. A switch on the hearing aid will activate the system. This equipment that is personally prescribed, such as a hearing aid, would not be provided by an institution of higher education (IHE) or employer and thus is not discussed here. IHEs or employers would, however, would provide assistive listening systems that do not require a prescription such as those described below to individuals who are deemed eligible for services. The equipment would then belong to the IHE or employer, not to the individual. See Chapter 7 for more information on ALDs that are built into hearing aids or cochlear implants.

be transmitting the signal. The receiver and transmitter must be tuned to the same frequency to connect.

FM systems are susceptible to interference from other devices using FM radio waves within the same frequency range, such as walkie-talkies or emergency/dispatch radios. Similarly,
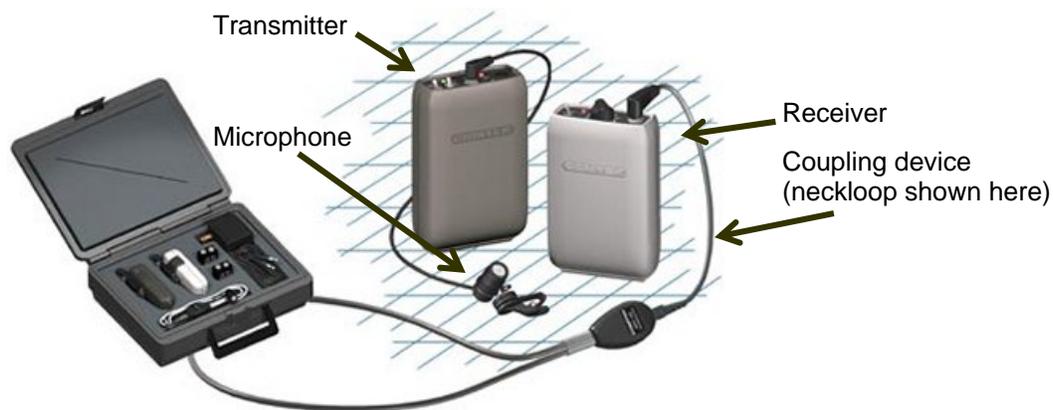
Figure 8-4. Comtek AT-216 Personal FM System

in order to be used in two rooms side-by-side, there must be at least one free frequency between the two transmission channels or else both signals may be picked up simultaneously. If rooms are far apart, though, they may remain on the same frequency without fear of this occurring. If signals are picked up from other devices, ask the manufacturer to recalibrate your equipment or the devices causing the interference to a different frequency. If the equipment will be employed in a high use area, purchase narrow band equipment. These transmit on a different set of frequencies and are much less vulnerable to interference from other devices transmitting on similar frequencies.

Infrared

Infrared (IR) systems use infrared light to transmit the signals, similar to remote controls for televisions. While a direct line of sight between the remote control and the electronic device must be maintained, IR systems have a wider area of coverage than in remote controls. Some older systems will require a more direct line of sight than the newer systems. Light does reflect off surfaces, so the signal can often be picked up from a variety of directions. There are a number of styles of IR emitters; some look like panels and some look like pyramids. They are all identifiable, though, by the rows of light diodes or eyes covering them. IR transmitters must be plugged into a power source. Most of them collect sound from an existing public

announcement system although there are home versions that are used with television sets.

There are also several different versions of IR receivers. All will have a light-intercepting diode terminal on them. This diode must not be covered or the signal will be blocked. So, unlike FM receivers, the user would not be able to put the IR receiver in his or her pocket. Some are worn like headphones and have the diode on top, others are worn like a stethoscope and the diode hangs under the chin. Still others look similar to the receivers described above for personal FM systems and can hang around the neck or be placed on the desk. *This last type is the most versatile because individuals who wear hearing aids often have problems wearing headphones or the stethoscope-type headsets (see Figure 8-5).* Users often must remove their hearing aids to wear these two styles, thus losing the benefits of their hearing aid prescriptions. When purchasing receivers, make sure they include a jack so that other coupling devices, such as neckloops or headphones, can be plugged into them. Some IR receivers come with the audio jack necessary to accommodate this, others do not.

Figure 8-5. Directear 810 Infrared TV System With Stethoscope Type Receiver

Because infrared light is used to transmit the signal, this system is considered secure, meaning light does not pass through walls. Persons passing by outside with IR receivers could not 'tune in' and pick up the signal as they could with FM. IR may be open to interference from high frequency lights or direct sunlight, although indirect sunlight does not usually cause problems. Check with the manufacturer about systems that work with high-intensity lighting. IR has the best sound reproduction across the broadest range of frequencies, and is therefore the system of choice in theaters and concert halls. Also, many multiplex movie theaters use the system because the signals do not pass through walls, thus can be played in adjoining rooms.

Electromagnetic Induction Loop

This is the only system that is properly referred to as a "loop." The system consists of a loop of wire that is powered by an amplifier and a microphone. The amplifier must be plugged into a power source (see Figure 8-6). The wire loop transmits electromagnetic waves that carry the signal. An area as small as a table or as large as a room can be looped. Large listening areas should be set up by professionals to prevent dead spots or areas where no sound is picked up.

Figure 8-6. Oval Window Microloop

If the consumer's hearing aid has a built-in telecoil (see Chapter 7), no external receiver is needed. The user would enter the looped area and change his or her hearing aid setting to telecoil mode to pick up sound signals. Unfortunately, many hearing aids sold in America do not contain telecoils, and only recently have they been built in to cochlear implants. In order for those without hearing aids (or those whose hearing aids do not have telecoils) to use the system, an induction receiver must be used. These receivers, actually a telecoil in a box, look like the FM receivers described above and headphones can be plugged into them to transmit the sound to the ear.

There are a number of other induction options becoming available. Oval Window sells a small, lunchbox-sized portable induction device. It has a built-in microphone and an option for a plug-in microphone. It could be used easily at a service window. If the device were on the counter, the microphone would pick up the speaker's voice. The user would need to put his or her hearing aid in telecoil mode to pick up the signal. There are versions of this made for the classroom. There are also mat versions that can go underneath carpet to make an entire area accessible. The Univox (see Figure 8-7) is one such device. It would be placed under the cushion or under the chair for ease of television listening.

Figure 8-7. Univox Induction Listening System

Unfortunately, everything that is powered by electricity gives off some electromagnetic energy, and telecoils may pick this up as interference such as static or humming. Some sources of interference are noticeable, whereas others are not. Thus, this is not the system of choice for use in areas near bundled electrical equipment. With some sources of interference, such as light fixtures or ballasts, simply changing seats helps. This is not to say that induction loops are ineffective. In fact, at least one community (Holland-Zeeland, Michigan) is out to make the entire city hearing accessible via loops. To read about this movement, go to http://www.hearingloop.org/.

COUPLING DEVICES

Acoustic Methods

Headphones and earbuds are the most commonly used devices to transmit sound from the receiver to the ear. If the individual does not have hearing aids or if the hearing aids do not have telecoils, the user is limited to headphones or earbuds. Earbuds are single-ear versions of headphones. Some clip on, fit into the ear, or are held up to the ear. Some users remove their hearing aids to use headphones. This may be because of comfort or because of a problem with feedback (squealing) when covering the hearing aid microphone. This means the consumer loses the benefit of his or her hearing instrument. The benefits include not only specific amplification, but also compression circuitry. *Compression prevents sound from being amplified to a dangerous or painful level for the hearing aid user. This is an important benefit to individuals who need to preserve any residual hearing they may have.*

Induction Methods

If the hearing aids have telecoils, there are two other listening options (see Figure 8-8). One is the neckloop (on the right): A neckloop is a loop of wire that plugs into the receiver in the headphone jack and is worn around the neck. The neckloop gives off a signal (a magnetic field) that is picked up by

the telecoil. The neckloop can even be worn under clothing, depending on the strength of telecoil, the thickness of the neckloops, and the severity of the hearing loss. As with the induction loop system, using the neckloop requires that the hearing aid be set to the telecoil mode.

Silhouette   Neckloop
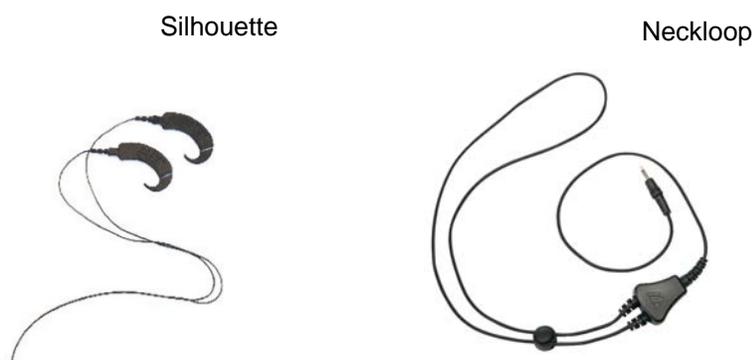
Figure 8-8. Silhouette and Neckloop Coupling Devices

Some people may find themselves holding the neckloop closer to the hearing aid to improve the signal transmission. In these cases, silhouettes (pictured on the left) may be the answer. Silhouettes look like flattened, behind-the-ear (BTE) hearing aids and they hook behind the ear just like a BTE hearing aid. They will work with either BTE or in-the-ear hearing aids that are fitted with telecoils. Because they are closer to the hearing aid than a neckloop, they provide a stronger signal for more severe losses. Using the telecoil further reduces room noise because the hearing aid microphone can be turned off when the hearing aid telecoil is activated. Now the only sound being picked up is what is coming across the instructor's microphone. With the hearing aid microphone off, it cannot receive room noise or anything that is not said into the ALD microphone.

Even though the same electromagnetic induction method of transmitting the signal is taking place, the neckloop and silhouette are coupling devices, not methods of transmission. They can be plugged into IR or FM receivers. As with the induction loop system, though, telecoils may still detect electromagnetic interference. Just as computer labs might cause problems using induction loops, they would cause similar problems if the user was coupling via neckloops whether the transmission system was FM or IR. In both cases the telecoil is being used to pick up an induction field, and is susceptible to interference.

Silhouettes, neckloops, and headphones can be used to deliver sound to both ears instead of just one. Research tells us that the brain is better able to comprehend when we can to hear with both ears. It provides better hearing in

noisy environments and improved understanding of speech (Ross, 2006a). Especially in situations where viewing the face for speechreading may be interrupted or not possible, choose a coupling option that will deliver sound to both ears.

Direct Audio Input

Direct audio input (DAI) is an option on some models of behind-the-ear (BTE) hearing aids that allows an external audio source to be plugged directly into the aid. It is also how external microphones and assistive listening devices are coupled to both behind-the-ear cochlear implants and older models with body worn processors. DAI is beneficial because no telecoil is needed, thus reducing one source of interference. The down side of this that it needs extra cords or adaptors, as jacks on different equipment may not all be the same size. Some hearing aids can be retrofitted with telecoils or direct audio input in order to take advantage of assistive listening systems.

Other Assistive Listening Devices

There are a number of other options for assistive listening that can help in a variety of situations. One simple device is the **personal amplifier**. These can be purchased for around $50 from a Radio Shack or other electronics store, and they are available from hearing assistance technology dealers as well. The Williams Sound PocketTalker is shown in Figure 8-9, but there are a number of other brands available. This is a single-unit device with a jack for a microphone and a jack for a coupling device as shown here with an ear bud. You simply hold the earbud to your ear and point the microphone at the speaker. It works well for close range situations, such as riding in a car, eating in a noisy restaurant, or having small group or one-on-one meetings. You can purchase different microphones and coupling devices for the unit, depending on your needs.

Microphone

Coupling device

(earbud shown here)

Figure 8-9. Williams Sound PocketTalker

The **Link it** (see Figure 8-10) is a wireless assistive listening device that clips on behind the ear like a silhouette. It can only be used with hearing aids equipped with telecoils. There are a series of microphones placed along the barrel of the device. The Link it is especially effective in noisy, reverberant areas where speech is difficult to hear because sounds are repeatedly reflected.

Figure 8-10. Link It Induction Assistive Listening Device

Many people depend on speechreading in addition to amplification. It is rare, though, to constantly see a speaker's face, even in one-on-one meetings. The **AudiSee** by AudiSoft was developed with the speechreader in mind. The instructor wears a headset with a camera that is focused on his or her face. The student has a small receiver with a screen on it projecting the instructor's face. No matter where the instructor moves, the camera is always capturing the face. The unit includes an FM option. For more information, go to http://www.audisoft.net/ en/index.htm

PRACTICAL APPLICATIONS

The systems are relatively simple in concept. Application to real-life situations may require some troubleshooting. When only one person is speaking the system is easy to set up, because only one person needs a microphone. If questions came from the audience, though, the hard of hearing user would not be able to hear if the questions are not spoken into the microphone. The speaker should repeat questions into microphone, or pass the microphone to the individual for long comments. Panel discussions can also cause problems. If the speakers are taking turns, they would need to pass the microphone among themselves. If the structure is more of a discussion, there should be a separate microphone for each speaker or pair of speakers. *People do not reliably pass a microphone when discussions are fast-paced or heated.* Side comments become lost, causing the hard of hearing user to miss out on the flavor of the interaction. Check with the campus audio-visual technology program to help with setting up multiple microphones and plugging the transmitter into public address systems. Otherwise, check with manufactures to find out about other options. A few companies selling assistive technology can be found in the resources section at the end of this chapter.

If a video will be shown, a patch cord may be used to plug the transmitter into the auxiliary component jack on the TV, VCR or other audio component for the best quality sound. If this is not possible, place the microphone next to the television speaker. If the video is being watched alone, the transmitter could be plugged into the headphone jack. However, this will cut the sound off for anyone not wearing the receiver and headphones. Finally, the use of off-screen narrators makes speechreading impossible. Videos should be closed-captioned or have subtitles.[7]

Some hearing aids can be on either microphone or telecoil, but not both at the same time. When the hearing aid microphone is turned off, the only sound being amplified for the user is what is said into the speaker's microphone. This means the user may not be able to hear his or her own voice or neighbor's comments while using the telecoil. In that case, a receiver that has two jacks, one for the coupler like the neckloop and one for an additional "environmental" microphone answers this problem. The receiver fitted like this looks much like the PocketTalker shown in Figure 8-9, and functions like it as well. The environmental microphone on the receiver will pick up the individual's voice. This microphone also allows the user to hear comments from neighbors, and can be used by itself in small groups. Be sure to comparison shop for these items. There can be a $150.00 or more difference in catalog prices on this item.

Evaluating complaints of interference is always a challenge for people who do not wear hearing aids. As a first step, plug a headset or earbud into the receiver to test for problems. This will enable you to test if the transmission system itself is working. If this works, the location of the problem has been narrowed down, such as the neckloop or the telecoil of the hearing aid. For example, some automatic room controls, such as those for heating and lighting, can cause hearing aids to hum and deplete the batteries. See Cederbaum (1996) for more information.

If a loop transmission system is being used, an induction receiver will be required to test the equipment. This is the same induction receiver mentioned earlier that is used with induction loop systems when consumers do not have hearing aids with telecoils. Simply listen through headphones plugged into the induction receiver to hear what is being broadcast from the induction

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[7] When it is not possible to present a captioned video, a transcript is sometimes provided as an accommodation. Care should be taken that the student is allowed to watch the video outside of class, and there is a guide to assist the student in knowing how far the video has proceeded in terms of the transcript. The student should be allowed to pause the video and read the transcript, as it is clearly not possible to do both at the same time. This is especially true if the purpose of the video is to demonstrate or show specific visual images that the student is responsible for learning.

loop. Neckloops and silhouettes can be tested in a similar manner. For example, suppose a student is using a neckloop to listen through an FM system. You have tested the FM transmitter and receiver and you know they are working. Now you need to determine if the neckloop is working. First, plug headphones into the induction receiver and hold the neckloop plugged into the FM receiver next to the induction receiver. Have someone speak into the microphone on the FM transmitter. What is heard through the headphones is the same signal that would be picked up by telecoils.

Rooms can be tested for noise or static to help telecoil users regardless of the transmission system used, be it FM, IR, or induction loop. Using the induction receiver and headphones, walk around the room and listen for static. This is noise that would be picked up by telecoils. Note the areas of the room that are static free, for example away from the light fixtures. Let the hard of hearing individual know where the good listening areas are located. In some cases, changing rooms, transmission systems, or coupling devices may be required. For more detailed information see Ross (1994). Finally, assembly areas with fixed seating such as classrooms and auditoriums require installed, permanent ALD systems. Guidelines from the Access Board and an informative guide concerning ALDs and the performing arts are listed in the Resources section at the end of this handbook.

SPEECH-TO-TEXT ACCOMMODATIONS

It is not unusual for students who succeeded academically using hearing aids alone in high school to find themselves needing more support in college. There are a number of reasons for this: use of lecture style formats, higher expectations, new vocabulary, fewer opportunities to check for understanding (e.g., entire grade may be based on the midterm and final exam with no other graded assignments), and total responsibility for understanding placed on the student's shoulders. Notice that degree of hearing loss was not mentioned. Even individuals with milder hearing losses may be unable to understand someone with an accent, unable to function in a room with poor acoustics, or lost in fast-paced group discussions. Combinations of these factors may cause someone who has never previously requested accommodations to seek help. In academic settings, speech-to-text options are now being employed more often. On the job, speech-to-text options may be needed less frequently, but are still vital when they are needed. These are especially important for meetings and trainings.

THE DIFFERENCE BETWEEN NOTETAKING AND SPEECH-TO-TEXT

When amplification alone is not enough, there are a number of options to convert speech to a visual text format to provide communication access.

Understand: notetaking alone is not equivalent to communication access. *Communication access means that the hard of hearing individual can understand what is being said in real time, so that he or she can participate in the discussion as it is taking place.* Notetaking does not provide this kind of access. Notetaking provides information about what has happened, not what is happening. Consider that instructors generally speak about 170–220 words per minute. Notetaking, at 20–30 wpm, is adequate to record the facts but little else. Generally, even though the information is written down more quickly, computerized notetaking does not provide the information needed for real time interaction. Notes typically do not include who is speaking, comments or asides that are made, or questions from other students. See Stuckless, 1999 for a discussion of the options and what is captured. This does not mean that notetaking is not useful. As with students who are watching an interpreter, students who are reading the lecture as it is happening generally cannot take notes while they are "listening." When they look away to write, they will miss what has been typed on the screen and the opportunity to speech read.

SPEECH-TO-TEXT OPTIONS

The main options for converting spoken language to text in real time include communication access realtime translation or CART (provided by stenographers), summary transcription or text interpreting (e.g, C-Print and Typewell), automatic speech recognition (ASR) (e.g., Dragon Dictate, Liberated Learning Initiative, i-Communicator, Caption Mic), ASR supported CART or text interpreting, and remote CART or text interpreting. Each of these will be discussed in some detail to clarify the pros and cons of each option.

Communication Access Realtime Translation (CART)

We have traditionally seen stenographers providing realtime speech-to-text services. These individuals have been trained in a rigorous court-reporting program to use a stenographer's machine. Realtime writers or stenographers strive to record word-for-word what transpires in class. Their keystrokes are based on phonetics (in fact, their keys do not represent letters of the alphabet, but phonetic sounds). They must build their own dictionaries. If a word is not entered in their dictionary, no matter how perfectly they type it, the correct word will not appear on the screen. Thus, speed comes from being able to convert what they are hearing into the correct phonetic combination, striking the keys quickly, and having a large dictionary.

If stenographic service providers are not available locally, remote services may be an option. A computer Internet protocol (IP) or phone line is required. All spoken communication in the setting must be stated into a

microphone so that the off-site transcriber will be able to hear it, thus, this is probably not a good option for group discussions. The Resource section lists several informative websites that provide more detail about how these services work and ideas for locating service providers such as, http://www.ncraonline.org/ or http://www.cartwheel.cc/. "The Leading Network of Realtime Providers for the Deaf and Hard of Hearing." Also, see Robson (2000) for realtime careers in alternative settings such as classrooms.

CART providers are difficult to locate. Their training programs require at least two years, and less than half successfully complete the program. In addition, current Federal Communications Commission (FCC) regulations requiring television captioning means the few stenographers who are not working in courtrooms are now heavily employed for television captioning. Postsecondary institutions have been desperate to find service providers to work in this specialized setting. Enter text interpreting.

Text Interpreting

The two currently offered text-interpreting options are C-Print and TypeWell. C-Print is a system that incorporates phonetics and summarization to reduce keystrokes and increase the typist's speed. TypeWell is a similar idea, but uses spelling abbreviations (e.g., in some longer words, vowels are left out) and summarizing to achieve the same end result. Because of the "meaning for meaning" instead of "word for word" transcription, these services are sometimes referred to as "summary transcription services." With both systems, the transcriber uses a laptop computer, not a stenographic machine. The student views the output on a second laptop or on a monitor. The computer program automatically expands the abbreviations the transcriber is using for the student to read. Depending on the speed of the text interpreter and the rate of the speaker, these transcripts may resemble the output of CART transcripts, although text interpreters tend to reduce speech dysfluencies such as "um," "you know," stutters, and false starts and write out complete thoughts, making the output easier to follow without sound. Text interpreters indicate changes in speakers and include environmental information including "applause," "laughter," or "cell phone ringing" just as stenographers do. Text interpreting is also available via remote options. The display options for output of CART and text interpreting are the same.

Training for either system can be done online and requires only a few months of practice before becoming an *entry-level* service provider. These systems are helping to fill in the gap of needed services left by the dearth of CART providers. Text interpreters are paid at similar rates to sign language interpreters. Court reporter trained stenographers charge from $50 to $200 per hour.

Automatic Speech Recognition (ASR)

As accuracy has improved, automatic speech recognition is increasingly being explored as an access tool (Davis, 2001). ASR programs were originally developed for dictation. The computer program must be trained to recognize the individual speaker's voice. Multiple dictionaries (i.e., different voice files for different speakers) are possible, but cannot be in use at the same time. Thus, it is not currently possible to change speakers and expect accuracy in the transcription. Punctuation is included only if it is spoken, and errors must be corrected along the way or the dictionaries will become corrupted. This is not usually possible in a lecture situation. However, assuming the individual has taken the time to train the program to his or her voice, ASR programs such as Dragon Dictate and Via Voice could be very useful in one-on-one meetings or tutoring sessions, where the pace can be much more controlled and where the speaker can monitor the screen output for accuracy. Research is being conducted now on using ASR as an as an access tool with programs such as the Liberated Learning Initiative (http://www.liberatedlearning.com/), and the I-Communicator (http://www.myicommunicator.com/).

ASR with the spoken word provided by a secondary service provider rather than the original speaker is being implemented extensively. Some court reporters use a stenographer's mask to muffle the sound of their voices and repeat what is being said including speaking the punctuation into a microphone in the mask. Their accuracy rates are not as high as stenographers, but are still very high. Similarly, the National Technical Institute for the Deaf is evaluating this "shadowing" technique combining ASR with C-Print (Stinson, Eisenberg, Horn, Larson, Levitt, and Stuckless, 1999). The advantage to these options in classroom access situations is that the service provider can monitor the output for accuracy and add punctuation while it is being presented and make corrections as necessary. ASR via a service provider, whether stenography or text interpreting, is being utilized extensively in remote CART services. It is also being used by one phone service, Captioned Telephone or CapTel, described below, instead of typing to increase the speed of the text display for hard of hearing phone users (Coco, 2000).

There is an interesting difference between the output of ASR and that of stenographers. With ASR, the computer will present the closest sounding word on the screen even if it's not what was said. Thus, true words are always presented with ASR. With stenography, the output can be gibberish (although not always) if the word is not programmed into the service provider's dictionary. This is an interesting difference in the two services as

it is easy to identify the gibberish as an error, while errors may not be so obvious to the reader when they imitate actual words.

SPECIAL TRANSCRIPTION SETTINGS

Transcription can be adaptable in many areas, but there are still some special considerations, especially where symbols, foreign languages or non-English alphabets are required. The following are a few resources for these settings.

Math, Science, and Foreign Language Transcription

Creativity and skill is required to provide transcription in courses that require formulas and equations, no matter which speech-to-text service is provided. Providing transcription in languages other than English is a challenge if the alphabet is the same, and probably impossible with other alphabets. Smith-Pethybridge (2006) suggested activities as simple as changing the font to Arial Unicode (because there are more symbol options), to operating a webcam to take pictures of the equations to insert into the notes later, and manipulating the equation editor. The issue around foreign language transcription relates to having the appropriate dictionary so that the program will expand abbreviations correctly. While there has been some discussion of developing a transcription product in a specific language (e.g., Spanish), the author is aware of no presently available products. Malley (n.d.), described how she developed a French dictionary by necessarily deleting much of the English dictionary in C-Print in order to transcribe a French college course. It is strongly recommended that the reader interested in these topics connect with others who are currently providing this service. The Speech-to-Text Services Network (http://www.stsn.org/) and the National Court Reporters Association CART Providers section (http://cart.ncraonline.org/) are excellent starting points.

Transcription of Video and Web-Based Video. Undoubtedly, some readers will want to take advantage of the cost savings created by preparing a transcript of a video that needs to be captioned. In addition, the quality and ease of creating video for websites means their use has increased exponentially, and they need to be accessible. This is a great use of transcribers' time while they are not on assignment in the classroom. While this chapter will not go into any detail on this topic, there are several good resources available.

Camp and Stark (2006) presented many tips about captioning video. One item in particular included the "Amazing Slow Downer" software (http://www.ronimusic.com/ slowdown.htm) available for under $50. This software decreases the playback speed of digital audio files without distorting the sound, making it easier for the transcriber to work without

stopping to rewind the recording. MAGpie is a free downloadable program developed by the National Center for Accessible Media (http://ncam.wgbh.org/webaccess/magpie) that can be used to caption digital video. There is a manual developed by the High Tech Center Training Unit available at http://www.htctu.net/trainings/manuals/web/Digital_Caption_MAGpie2.pdf. WebAIM has much information available concerning Web accessibility, including a manual on how to add captioning for Quicktime movies at http://www.webaim.org/techniques/ captions/quicktime/web.php. The Web Accessibility for All: Failure is Not an Option Project at the University of Wisconsin-Madison just published a Campus Capacity Building Toolkit. Their website http://www.cew.wisc.edu/accessibility contains an amazing amount of information and examples to assist administrators, campus services providers, and faculty in understanding features that make websites (including video) accessible.

CHOOSING THE RIGHT SPEECH-TO-TEXT OPTION

Students should consider the advantages and disadvantages of each option. Summary transcription services provide fewer pages, with the information written in complete sentences. Realtime transcriptionists strive to provide exactly what was spoken in the class, resulting in approximately three times the printed output. Depending on the speaker's skill, the resulting output may be difficult to read without auditory cues or facial expressions to help interpret meaning. *Obviously, students must be comfortable with written English to use these accommodations.* Additionally, some highly technical programs such as law school courses will require word-for-word transcription in order for the student to remain competitive with classmates.

Evaluating Services

No matter which service provision option is chosen, the Student Access Center personnel should build in some type of evaluation component to ensure that the student receives a quality service. The student can identify if the provider shows up on time, is prepared for the class, and whether or not the provider is acting in a professional manner. However, asking the student if the provider is doing a good job may not provide accurate information as the student may not be aware of information that is being missed or presented incorrectly. There are additional methods of assessing the accuracy of output from these services. One way is to ask the instructor to periodically review a transcript to ascertain its completeness of key points. One advantage of this approach is that it gives the instructor a better idea of how well instructional information is coming across to the students. Another means is to ask students to review several transcripts. Moreover, have a

person visit the class to compare the speech-to-text output with what is spoken to ascertain that it is accurate and complete. This might be a useful task for interpreters or notetakers when cancellations occur.

The criterion of accuracy is vital for the Student Access Center office to explore in considering whether or not a service is truly making the classroom accessible. How accurate does the transcription need to be in order to be read and understood in real time? According to Gallaudet University's Technology Access Program (Technology Access Program, 2002), the required accuracy for certified court reporters is 96% at 180 words per minute (http://tap.gallaudet.edu/). If speech were presented at 150 words per minute, the number of errors per minute would be about six. This is a difficult level to reach. But consider, if the accuracy falls to 90%, the number of incorrect words would be 15 per minute, or 750 over the course of a 50-minute class. The readability of the transcription would depend on the type of errors made.

The Provision of Notes

There is some discussion as to what are best practices regarding providing notes in addition to speech-to-text services. Some programs provide a transcript and require that the students take their own notes from it. Other programs provide a notetaker (or notes are obtained from other students in the class) but no transcript is provided of the speech-to-text service. There are pros and cons to each of these options. Notetaking is a valuable skill and an opportunity to practice informal writing. Students who never take their own notes miss out on developing these skills.

On the other hand, transcripts of the spoken word are very different from well thought out written text. Without auditory cues, transcripts may be difficult to interpret. Also, many stenographers charge extra for cleaned-up transcripts. This should be negotiated when the stenographer is hired as transcription is one of the services they provide and typically expect to be paid for the service. Some people feel that getting a transcript of the class is providing the student with more than equal access because the speech-to-text service provides in-class access and a notetaker provides students with information after the class. Some professors do not want students to have a transcript of their classes, as they consider this to be intellectual property. Some programs accept this complaint and provide students with notes, others consider this an accessibility issue making this argument inappropriate and have students sign agreements that they will not share the transcripts with others. Still others simply post the transcripts for all students to access. Evaluate these issues carefully and discuss the matter with faculty and staff on your campus when developing policies. The Speech-to-Text Services

Network (http://www.stsn.org/) is a wonderful resource that compares the differences in services, provides information on how to set up services, includes sample policies and procedures, and information for consumers, administrators, and service providers.

IS THIS AN APPROPRIATE SERVICE?

Another campus services provider, Jack, relayed the following scenario concerning accommodations for a student with a cochlear implant.

> Marshall received a cochlear implant one year ago. He requested Communication Access Realtime Translation (CART) for all of his classes. Interestingly, his parents are against this. They want him to take advantage of the listening opportunities to improve his speech communication skills with his CI. With the stakes being so high in university programs, I did not agree with his parents' advice. I did not believe that the live classroom was the appropriate place to conduct his auditory rehabilitation. Because his brain's ability to interpret the sound it was hearing was still sketchy, I approved his CART request, and suggested that he use ALDs to improve his hearing in the classroom.

How does a service provider determine if a speech-to-text accommodation is appropriate? This cannot be judged by the severity of hearing loss or by how clearly a person speaks. Many individuals rely on a combination of amplification and speechreading. If either means is not there, comprehension is greatly impaired. Many conditions within the classroom affect a student's need for speech-to-text services. Is the course in a large room with many students? The student may not be able to sit close enough to speechread. Does the instructor have an accent or facial hair? These both make it difficult to speechread. Does the class require that the instructor is providing demonstrations and looking down, or is the instructor's speaking style such that she or he does not face the class much of the time? Does the instructor speak rapidly? Is the class heavy in unique vocabulary, such as biology? Unfamiliar vocabulary is difficult to speechread. Is there a lot of interaction or class discussion? The student cannot rely on sound to locate the speaker, and therefore will not be able to follow the discussion. Thus, speech-to-text services may be appropriate for someone with much less of a hearing loss than imagined.

The question often arises about the necessity or appropriateness of using ALDs with a notetaker or speech-to-text service. The Americans with Disabilities Act (ADA) requires that each case be examined individually regarding appropriate accommodations. Notetaking is almost always

appropriate, because it is difficult for the student simultaneously to speechread and take notes. Notetaking alone, though, may not be enough for adequate communication. Notes do not provide the information needed to participate in discussions or to ask questions for clarification. Remember, too, that without inflection or tone text transcripts may be very difficult to interpret. Hearing the speaker's voice will add meaning to what is being said. *Thus, the request to use ALDs in combination with a speech-to-text service is reasonable.* If the reader is interested in the development of Automatic Speech Recognition, Stuckless (1997) provides a wealth of information, most of it accessible to the lay reader.

ALERTING DEVICES

Alerting devices are often not thought of in the classroom, but they have definite implications in the home (or dorm) and on the job. Being able to get up on time, knowing that the phone is ringing, or that someone is at the door can have a serious impact on not only well-being but also on the individual's timely availability for work and school. Because listening, especially for lengthy time spans as a student must do, is stressful and tiring, many people take their hearing aids off at home. And of course, hearing aids and cochlear implants are not worn to bed or in the shower.

Alerting devices enhance abilities to hear environmental sounds. We should not downplay the importance of environmental sounds in our daily lives. For some people, hearing aids or cochlear implants only provide access to environmental sounds, not speech. Nonetheless, when asked if their implant or hearing aid is worth it, these individuals almost always respond, "yes!" Especially for people with a progressive hearing loss or with a later onset of hearing loss, not understanding environmental sounds is disorienting and often results in feelings of reduced safety and increased stress. Nadia's story is not uncommon:

I was a single mother with two young children. I worried that they would get out of bed at night without my knowing it. Every night I would put my mattress on the floor in front of their door so that they literally could not get past me without me knowing it. I lost a lot of sleep, but at least it wasn't because I was worried about my children's safety.

There are generally three ways to make an auditory stimulus understandable to someone with hearing loss: make it louder, convert it to a visual signal, or convert it to a tactile prompt. It is also important to pay attention to the placement of such devices. If the alerting device causes lights to flash, the lights must be bright enough and in a location where the individual is likely to see them. Location is also important with loudness. A smoke detector may use a 95 dB horn to alert individuals to the danger. However, the sound is

only 95 dBs when the individual is near it. If the individual is in a different room or down the hall, a single alerting device may not be audible. Alerting devices can be purchased for single or multiple purposes. For example, an amplified telephone ringer, vibrating alarm clock, and flashing light door announcer can be purchased separately or assembled together in a multi-purpose device.

TELEPHONE ALERTS

Phones ringers are a common example of a single purpose device. An individual may not be able to hear the phone ring, may only be able to hear it when close by, or only if it is in a particular frequency range (e.g., low frequency). In a noisy environment it may be difficult to detect the ring of the phone from other sounds. One option is to alter the ring so that it is much louder. Some devices plug into the phone or wall jack (RJ-11 jacks) and ring at up to 95 db. Many of these devices also have a tone control, so that the pitch of the ring can be adjusted to high, medium, or low, depending on the individual's hearing loss. They may also include a flashing ringer light. Some devices require batteries or an AC electrical outlet, and some are powered by the phone line. These devices (e.g., Ringmax, Super Phone-ringer, Clarity Ring Signaler) cost between $35 and $50.

In order to have both the phone and the loud ringer plugged into the same phone jack, a "y" connector or a "split jack" can be used. These plug into the phone jack to allow more than one phone cord to be plugged into them. They can be found at electronics, home improvement, and even grocery stores for a few dollars apiece. When evaluating appropriate equipment, think about the environment and the individual's needs. Availability of outlets, desk space, and keeping batteries charged are issues to consider before making a purchase.

There are also devices that connect the phone to a lamp, so that when the phone rings the lamp light flashes. These cost about $50. This device may be perfect for a small office, where the flashing light would be visible anywhere, or in situations where a loud ringer would be undesirable (e.g., dorm room, office, households with napping children). Some devices have an option so that the lamp can be used for light as well as signaling (i.e., it can flash off-on or on-off); with others the lamp can only be used for signaling.

REMOTE ALERTS

In a home where the individual may not be in the same room as the phone, a remote device would be appropriate. Multipurpose remote devices are available and convenient. Transmitters, usually working off of FM signals, can alert the consumer to a variety of household sounds, such as the door

bell, phone, a baby crying, a kitchen timer, or an alarm clock. Receivers can be placed in different rooms with lights that flash in different patterns for each of these or other purposes. Some include a bed shaker, a device placed under the mattress or pillow that vibrates when one of the alerts is triggered (see Figure 8-11), in addition to the lamp outlet that would alert the individual in bed. Alternatively, a separate vibrating receiver can be worn on the belt like a pager, with lighted symbols to indicate which alert is signaling. A tactile version is also available. When the receiver vibrates, each signal option is selected until the device vibrates again, indicating the source of the alert. These systems can range in price between $100 and $300, depending on how many different transmitters and receivers are needed.

Figure 8-11. Alert Master AM 6000

OTHER ALERTING DEVICES

One simple device that should not be overlooked is the mirror. When someone sits with his or her back to the office door, a mirror can be a simple, unobtrusive way to let him or her know someone is at the door.

No discussion of alerting devices would be complete without mentioning hearing dogs. These specially trained dogs are identifiable by an orange-colored service dog vest. As with guide dogs for the blind, they must be welcomed in public places. In the home, hearing dogs are trained to alert their owners to specific sounds. They go to their owners and lead them to the noise (e.g., doorbell, phone, timer, crib). Outside the home, hearing dogs are useful as well. They can alert their owners when someone calls the owner's name; they can respond to noises and even guide their owners out of harm's way. A list of websites on hearing dogs is provided in the Resource section.

Solving some situations requires creativity and a general knowledge of equipment that is available for individuals with other disabilities. For example, one institution had a problem with a deaf student with a cognitive

disability who forgot to turn the water off and could not hear it running. On several occasions she had caused damage to the housing. There are devices that give off an auditory signal when water touches it (e.g., to let an individual who is blind know the tub has filled). This device, used in combination with a baby cry signaler (which alerts to any loud noise), would provide a visual alert to let the resident know that something had happened. Employers looking for job modifications are encouraged to contact the Job Accommodations Network (http://www.jan.wvu.edu/) to brainstorm options for any problem situations.

WHO PAYS?

If the devices are needed for a dorm room, they may be purchased by the institution. When the student leaves, the item would remain with the institution. In other cases, it may be more appropriate for the state Vocational Rehabilitation agency to purchase the item for the individual. In these cases, the person keeps the item no matter where he or she lives. There may also be programs that provide some of these items through a state agency. This is most often true for telecommunications devices, but some states may also offer a phone-alerting device.

EMERGENCY ALERTS

Fire safety is important in homes, dorms, or places of employment. Smoke alarms save lives. Some devices may be a part of a multipurpose remote system discussed above, while others are stand-alone smoke alarms (see Figure 8-12). There are a variety of options including bright flashing lights and 95 dB horns and those with bed shakers. While individual units can be purchased and plugged in, it is safer to have the system wired into the home. That way, if any smoke detector in the house is triggered, all the alarms will be triggered. Individual units that are not wired into the home will only be triggered by nearby smoke and may not be heard if the individual is not in the same room. There are similar items for detecting carbon monoxide. Tests have shown that units that have an intermittently vibrating bed shaker—in contrast to lights, loud horns, or continuous vibrations—are the most reliable ways to wake someone with a hearing loss.

Smoke Detector
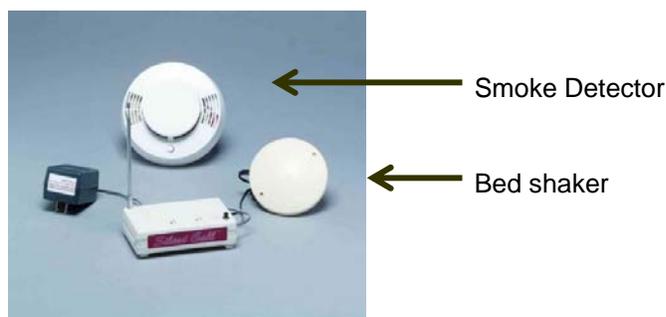
Bed shaker

Figure 8-12. SD1008 Smoke Detector Transmitter With RV5000 Receiver and Bed Shaker

If the individual is living in public housing, alerting devices and visual smoke detectors should be provided by the landlord (Sievers, n.d.). The 1988 Fair Housing Act Amendments (PL 100-430) amended title VIII of the Civil Rights Act of 1968, adding prohibitions against discrimination in housing on the basis of disability. FHAA requires housing owners to make reasonable exceptions in their policies and operations in order to afford people with disabilities equal housing opportunities. Thus, housing units with a "no pets" policy must allow service animals for individuals with disabilities. While the FHAA requires landlords to allow modifications to housing units to allow access for individuals with disabilities, these modifications may be the financial responsibility of the tenant. In order to request an accommodation, one needs a letter from a physician stating the diagnosis of the disability, and that the requested accommodation is necessary because of the individual's functional limitations. For more information, contact the Fair Housing Enforcement Center. (Contact information should be available in the blue-edged government pages in the phone book).

In addition, the federal Housing and Urban Development (HUD) program has developed specific regulations for smoke detectors for persons who are hard of hearing and deaf. These regulations apply to any rental dwelling unit assisted or insured by HUD, and to public and Indian dwelling units. Smoke detectors are the responsibility of the landlord. Stand-alone and portable devices are not allowable under the regulations. Equipment must be permanently installed (Sievers, n.d.).

The federal National Weather Service (NWS) warnings notify the public of imminent dangers such as hurricanes, tornados, and earthquakes. These television and radio voice broadcasts are not accessible to and fail to get the attention of individuals with hearing loss. Special radio receivers are available that provide visual and tactile alerting systems for receiving up-to-the-minute emergency warning broadcasts for national and local weather and

non-weather (i.e., All-Hazards) life-threatening events (see http://www.weather.gov/nwr/special_need.htm). There are also services available that will send a variety of alerts to electronic devices such as cell phones, email or pagers. One example of this is the Emergency Email and Wireless Network. Information can be found at http://www.emergencyemailnetwork.com/ (Hamlin, 2006). The Federal Communication Commission (FCC) has also recently imposed fines against television stations for broadcasting emergency information, such as evacuation instructions, without providing live captioning of these broadcasts (Sivertson, 2005).

Telecommunications

Telephone use provide vital connections in today's world, so much so that many states provide free telecommunications equipment to residents with disabilities who need special technology to access phone services. Lauren relays her frustration and positive advocacy with her state's public utilities commission.

Our state has a telecommunications device distribution program. With documentation that you have a severe or profound loss, you are loaned a free amplified telephone or TTY while a resident of the state. Ironically, the amplified phones they offered did not provide enough amplification for individuals with severe or profound losses. They also hired people who were deaf and who signed to provide training for the equipment. This was a great service to one portion of the population, but severely limited the services to the hard of hearing consumers who did not sign. Fortunately, this state was open to the feedback they were getting from hard of hearing consumers, and now have hard of hearing people involved in the testing of equipment and in training consumers.

Inability to communicate effectively over the telephone is one of the leading reasons hard of hearing individuals list for leaving a job, whether by choosing to quit, taking early retirement, or being fired (Scherich, 1996). Hearing employers and consumers alike often do not know what telephone access options are available. If phone use is an essential job function, lack of knowledge of accommodation options may lead employers to believe that a person is not "otherwise qualified."

Telephone use may be thought of only in terms of employment, but it is also important for students, especially when they are entering into internship settings and must set up appointments or interviews on their own. Issues that come up around telephone use include the difficulty of listening with one ear,

the lack of opportunity for visual cues (e.g., speechreading), sound quality, background noise, hearing aid compatibility, and of course, menu systems.

ANALOG VS. DIGITAL

Before delving into the various options, it is important to recognize there is a distinction between analog and digital phone lines, and the issue is relevant for cell phones, too. While this is not the place for a technical description of analog and digital, *what the reader needs to understand is that analog landline phones and assistive devices are not compatible with digital phone lines.* Most phone lines in homes are analog. There may be digital services offered, but the way the signal comes into your home is typically through an analog phone line. Businesses, on the other hand, often have digital phone lines. Audix and PBX systems are examples of digital phone services. This is an important distinction when shopping for phones with accessibility features. Many of these phones are analog only and are incompatible with digital phone lines. If access is needed in the office, it is best to check with the unit responsible for maintaining the phone lines in your organization to get the phone or handset that is compatible with your system. Alternatively, a separate analog phone line—the same type of line maintained for fax machines—may be an appropriate accommodation.

STANDARD TELEPHONE SERVICE[8]

Many people with hearing loss are able to use the phone effectively with or without their hearing aids by using independent amplification. There are a number of amplification options. A battery-powered amplifier held over the earpiece with an elastic strap and then removed in order to hang up the phone is especially useful for travelers or those who may not know what type of phone accessibility devices will be available to them. This is the one truly portable telephone amplifier.

Amplified handsets with volume control are available for some phones and can be adjusted by each user. These handsets replace the regular handset but only work with modular phones that have a detachable handset and the dialing mechanism in the base. In-line amplifiers are attached between the handset and the base. They usually include both a volume and a tone control which are especially useful to people with high-frequency hearing losses. There are also phones developed specifically for individuals with hearing loss that have several of the features described above built in. One important additional feature is an audio jack. Headphones or neckloops can be plugged into the audio jack allowing listening with both ears. Cochlear implant users

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[8] Information on amplified phone ringers is in the section on alerting devices.

can use a patch cord to provide a direct connection to their speech processors.

All landline phones sold in the nation must be hearing aid compatible (HAC). Originally, this did not mean that the phone included a volume control option. It meant that the telephone speaker gave off at least a minimal amount of an electromagnetic field that the hearing aid telecoil could pick up. As of January 2000, there must also be a volume control. Individuals with a greater degree of hearing loss who need a strong signal transfer between the hearing aid speaker and their telecoil may need to test phones until they find one that generates a field strong enough for his or her hearing aid telecoil.

Many digital hearing aids now have auditory feedback reduction circuits. However, for those without this feature, feedback may occur if the ear canal is covered and sound is forced to bounce back into the microphone, as might happen when tightly holding the phone over the ear in an effort to get better sound. A donut-shaped piece of foam over the earpiece may help prevent this (one commercially available brand is Squeal Stop). If feedback is a frequent problem, rather than depending upon the hearing aid microphone, the telecoil should be used. Telecoils pick up electro-magnetic fields, not acoustic sound waves. When the "volume" is increased, it is not loudness, but signal strength that is increased. Telecoil advantages include reduction or elimination of background noise, elimination of feedback, and decreased likelihood that others will overhear what the caller is saying because the sound is not amplified.

CELL PHONES

Having a cell phone seems to be a rite of passage for today's youth. Indeed, many adults are lost without the flexibility cell phones provide. In general, in order for cell phones to be fully useful to hard of hearing individuals, they should have the following features: (1) hearing aid compatibility, (2) amplification, (3) no hearing aid interference on either digital cells or cordless phones, (4) an audiojack for neckloop or headphones to allow binaural listening, and (5) a vibrating ringer. With all these features the consumer would not need to purchase additional accessories.

Previous cell phones were analog and most were hearing aid compatible. Because digital phones offer many more services and business advantages, manufacturers are now phasing out analog phones. Unfortunately, few digital cell phones have been accessible to hearing aid users. TDMA and GSM[9]

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[9] TDMA, GSM, and CDMA are cell phone technologies related to how the signal is transmitted across the cell phone network. CDMA stands for code-division multiple access,

digital transmission networks cause the cell phone to draw current in a pulsing manner, which is transmitted as interference that can be picked up by *either the telecoil or by the hearing aid microphone*. CDMA digital networks do not cause as much interference as TDMA and GSM networks. Verizon and Sprint are CDMA networks. This interference problem has left hearing aid users squeezed out of the cell phone market, unable to purchase the many desirable digital options, such as text messaging, voice mail, and web browsing capabilities.

Interference

Interference on digital cell phones arises from several sources, whether the individual is using a hearing aid telecoil or the microphone. These sources of interference include the display, the keyboard, the battery, and the circuit board. In order to reduce interference from the cell phone, look for ones with the following features: (1) the battery is farther away from the ear found on "clam shell" type flip phones, the antenna is farther away from the ear on styles where the antenna points down or out rather than straight up next to the ear when in use, and ones where the backlighting can be turned off manually (Kozma-Spytek, 2003). As of September 2006, new compatibility rules are being enforced (described below) that open up cellphone options for hearing aid users.

There are several tricks individuals with hearing loss might try to improve their ability to operate digital cell phones. Some people can use a cell phone without a hearing aid by holding the phone up to the ear like anyone without a hearing loss. Several cell phones are now available with a speakerphone function. A speakerphone is really like an amplified phone in the level of acoustic output, so people wanting louder cell phones should explore that option. Other people use a hearing aid with a cell phone but do not use a telecoil. The microphone on the hearing aid picks up the sound from the phone. While interference due to GSM transmission networks is a problem for some people, if the phone is loud enough it can be held away from the hearing aid by a few inches, which may adequately reduce the interference. Finally, check with providers to find out if analog service is still available, or if they provide phones that can be manually switched to analog on a call-by-call basis. Some CDMA services do this because, when roaming, analog phones may have service where digital phones do not. This option is generally not available with GSM services.

TDMA for time-division multiple access, and GSM for global system for mobile communication. TDMA service providers in the US and Canada have switched to GSM. To find out what type of digital technology your cell phone service provider uses, go to http://www.wirelessadvisor.com. Enter your zip code to find out the various services available in a particular area and the type of technology each provider uses.

Accessories

While the goal is to have cell phones that are functional *without* having to purchase and set up additional accessories, individuals who are hard of hearing and cochlear implant users may benefit from a variety of cell phone accessories. Some phones have an audiojack that allows use of a neckloop or patch cord for hearing (but the user would still need to speak into the phone mouthpiece). Nokia and Motorola both make their own version of a loopset. A loopset is an induction neckloop with a built-in microphone. Nokia products are proprietary and work only with certain Nokia phones. Be aware that batteries are needed to power the amplifiers in loopsets, thus providing a stronger magnetic field signal, and that they can be used *only* with hearing aids with telecoils. Hearing aid telephone interconect systems (HATIS) (http://www.hatis.com/) is similar to a loopset, but instead of a neckloop a silhouette is used.

Hands-free kits (e.g., ear buds with microphones) that come with phones can be altered to provide direct audio input. Send the hands-free kit to your hearing aid manufacturer so that the firm can remove the ear bud and replace it with the appropriate direct audio input jack. The cost for this modification is about $25.00. To find contact information for hearing aid companies, go to http://hearingresearch.org. For hearing aids with a telecoil the TELEMAX magnetic coupler for portable and cellular phones (http://www.hearmore.com) is a useful portable amplification device.

In addition, Chaamp by Audex reduces interference for specific Nokia phones and provides an amplified speaker and ringer volume (http://www.audex.com). For individuals who do not have hearing aids, or who prefer a cell phone without their hearing aid, there are also a variety of options. The Ameriphone website shows a cellphone amplifier (CPA) which utilizes an earbud and connects directly to the cell phone. This provides up to 25 dB amplification. There are also JABRA telecoil-compatible headsets and custom earmolds for earbuds. Westone Laboratories, Inc. is one manufacturer.

Finally, Bluetooth options are becoming available for hearing aids. The Phonak Smartlink and Ear-Level Instrument (ELI) are two examples of boots that can be plugged into some hearing aids via a direct audio input type connection. These instruments allow the consumer to connect via Bluetooth to their Bluetooth-enabled cell phone, head set, and other Bluetooth enabled devices. There are even Bluetooth devices attached to neckloops for individuals who have telecoils in their hearing aids but no way to add a Bluetooth boot. These will make hearing aids much more flexible to connect to a variety of Bluetooth enabled audio devices. For an example, see http://www.hearwireless.com/eli.html.

Current FCC Accessibility Rules

In 2003 the FCC adopted rules to make digital wireless telephones compatible with hearing aids and the timetable was reaffirmed in June, 2005. The guidelines (http://www.fcc.gov/cgb/consumerfacts/hac.html), include:

1. By September 16, 2006, nationwide *wireless carriers* (e.g., Sprint-Nextel, Verizon Wireless, Cingular, and T-Mobile) must make at least two hearing aid-compatible handset models available for each air interface.

2. Each *manufacturer* must offer to service providers at least two hearing aid compatible handset models available for each air interface.

3. By February 18, 2008, all wireless carriers and manufacturers must ensure that 50% of their handset models are hearing aid-compatible.

4. Hearing aid-compatible wireless phones must have prominent exterior labeling indicating the handset's technical rating, and have more detailed information included inside the package.

In addition, all carrier-owned and carrier-operated retail outlets must make live, in-store testing available to consumers and wireless providers are encouraged to offer a 30-day trial period or flexible return policy. Hearing aid compatible cell phones will be clearly marked with M and T ratings. According to the Verizon website, "the higher the M-rating the handset has the lower the radio frequency emissions level and higher signal quality the handset will have" (Verizon Wireless, n.d.). To choose the best cell phone compatible with a hearing aid in the microphone mode, review the M ratings provided on the box. An M3-rating indicates the handset meets the American National Standards Institute (ANSI) standard, and an M4-rating indicates the handset has exceeded the ANSI standard. *If there is no M-rating then the handset does not meet the ANSI standard.* To use the hearing aid in telecoil mode, follow the T-rating. The T-rating indicates the strength of the magnetic field provided. As with the M ratings, level 3 meets the standard and level 4 exceeds the standard.

Clearly, digital phone options are changing continuously. To find the most current information on cell phone use with hearing aids, check the Technology Access Program at http://tap.gallaudet.edu/, or join a listserv and ask other consumers about their favorite phones and service providers. Once the desired features have been identified, go to http://www.phonescoop.com/ and click on "Phone Finder" to identify phones and services with those features.

Other Telecommunication Options

TELETYPEWRITERS (TTY)

For those who cannot use amplification or telecoils to make telephone calls, teletypewriters (TTYs) also known as telecommunications devices for the deaf (TDDs) are available. TTYs are devices with keyboards that can transmit text over phone lines (see Figure 8-13). TTYs come with and without hard copy printers. Those with a printer are more convenient, as it is difficult to record information like phone numbers or addresses while watching the light emitting diode (LED) screen. TTYs are not as popular among hard of hearing individuals as they have been with Deaf individuals because hard of hearing individuals, in general, would rather use their voices than type a message. TTYs are also analog devices. It is common for an analog phone line to be installed in an office when a TTY is needed. Another consideration for using TTYs was that both the caller and the receiver had to have the devices, thus the need for a method of relaying a call from a TTY user to a phone user. The Relay Options section below describes this method.

Figure 8-13. Ultratec Superprint 4425 TTY

TTYs are now available that connect to digital cell phones and to cordless phones. Examples are the TextLink 9100 Mobile TTY (http://www.hitec.com/) and the Compact/C and Ezcom Pro/C TTYs (http://www.ultratec.com/). A very useful guide entitled *Wireless TTY Calling* is available from Ultratec. It includes information on using a TTY designed for cellular calling, using a direct-connect TTY with cell phones, and using acoustic TTYs with cordless phones. Updates to the guide are posted to their website.

RELAY OPTIONS

When telephone relay was first invented, it was often run out of people's homes and was only to connect TTY users with phone users. Thanks to the Americans with Disabilities Act and newer technologies, relay services are now mandated nationwide, confidential, and free (although normal long-distance charges apply), and there are a number of different technology and communication options.

The caller calls the relay service and provides the number of the party he or she would like to call. The relay provider, referred to as a communication assistant or CA, reads to the hearing party what the TTY user types, and types to the TTY user what the hearing party says. Because turns must be taken, the phrase "go ahead" or "GA" is used to indicate when it is the next person's turn. This traditional relay option is not used as much now as in the past. Many people have email and text enabled cell phones or text pagers. Nonetheless, relay still serves a purpose especially in calling public entities or businesses. In the past, users called an 800 number to reach the relay service, and these numbers were different in each state and for each service. To reach a relay service anywhere in the US today, simply dial 7-1-1. Hard of hearing callers may still want to use one of the 800 numbers set up for some of the specific services described below for faster service.

Online Relay

One of the newer additions to the relay family of services is Internet online relay which is reached via the Internet instead of a TTY. The person with the hearing loss utilizes the service through an Internet website and a communication assistant provides the relay service in much the same way as the traditional telephone relay. (See the Resources section of this handbook for websites).

Voice Carry Over

Even though most hard of hearing people do not use TTYs, there are still several options available through the relay service to assist them with phone calls. The first one is called voice carry over (VCO). With a TTY call, the CA must assist with communication in both directions. With VCO, the hard of hearing caller speaks directly to the person he or she is calling. The person being called speaks to the CA, who types what is said for the hard of hearing caller to read. The conversation progresses more quickly because the CA is only relaying one part of the conversation. The hard of hearing person would need either a phone that includes a screen for a text readout or a combination of phone and TTY.

There are portable options for this as well, such as the Pocket Speak-and-Read VCO. To use this device, the individual calls the relay service and asks to place a VCO call. The device is then attached to the earpiece of the telephone with an elastic or velcro strap. The TTY tones from the relay operator are picked up by the device, converted to text, and shown on a small screen on the face of the device. The individual reads what is being said and responds using his or her own voice speaking into the phone receiver. The Pocket VCO is portable, works on a variety of telephone handsets, including cell phones, and operates on battery power.

Two-Line Voice Carry Over

In some situations, an invisible relay service where the communication assistant is not heard is more desirable. For example, people who are not familiar with the relay service often think a telemarketer is calling and hang up on the caller. Using two-line VCO requires a bit of practice, but is worth it. There are several ways to set it up, but only one will be described here. The caller would need two telephone lines (i.e., two separate phone numbers, not just two phone jacks). One phone line would be connected to a TTY, and the other would be connected to a telephone that has hold and conference calling capabilities. The phone service on this line must also provide three-way conference calling. The individual would use the phone to call the relay service. When the CA answers the user would give the CA his other phone number. When the other phone rings, the user would answer the call and tell the CA that this is a two-line VCO call and put the CA on hold. The user would then place the call directly from his or her phone. When the person answers the user would take the CA off hold and would now have a three-way conference call. The two people speak directly to each other and the CA types the information for the caller to read. The hard of hearing person could still use amplification on his or her phone in addition to having the backup text to read from the TTY. The caller is in control of the conversation. There is no turn taking or use of "go ahead." If the CA misses something, he or she simply types [unintelligible] or [...]. If this happens to be something that the caller missed as well, it is up to the user to ask the person speaking to repeat the statement. Michael expressed his positive experience with this accommodation:

With two-line VCO I have been able to keep my job. I work for a department store and answer the customer service phone, which often means responding to complaints. When people are already upset, they do not want to repeat themselves. With two-line VCO, I was able to stay in my job and the accommodation was only the cost of an extra phone line. My employer was happy not to lose a trained employee. Callers do not even know I'm using a relay service.

Video Relay Services

Video relay services enable American Sign Language users to apply this language rather than English to communicate. By applying an inexpensive camera and a high-speed Internet connection, the caller connects to a video communication assistant who is a certified interpreter on his or her computer. The CA and the person with a hearing loss can see each other with the hearing caller connected via the regular phone. The CA voices what the individual is signing and signs the responses given by the hearing person. The incorporation of body language and facial expressions makes for a much more natural flow to the conversation than typing alone. Many states are establishing their own VRS component under their telecommunications relay service, which gives consumers the choice of a state-owned TTY or their own camera and the required software to access VRS. As high-speed Internet connections become more available and affordable, the popularity of these services will only increase. An additional benefit of Internet relay and VRS is that there are no long-distance charges and either can be set up as VCO or two-line VCO calls.

Videophones may be attractive to speech readers, regardless of their use of relay services. With high speed Internet technology, web cameras and videophones can make calling others with similar equipment much easier, as the user has access to sight and sound. D-Link i2eye is one such product, and requires a TV and a high speed Internet connection, or alternatively, it can be used with a computer.

Other Relay Options

There are also other specialized relay service options, such as hearing carry over for people who can hear but cannot speak clearly, telebraille for deaf-blind individuals, and foreign language relay services such as Spanish-to-Spanish.

CAPTEL

The captioned telephone or CapTel is a service resulting in seamless two-line VCO with a special CapTel phone (see Figure 8-14). When the caller picks up the phone the CapTel relay service is automatically called. The caller simply dials the other person's number. The connection is made when the CA comes on line. Whereas with the telecommunications relay services (TRS) described above the CAs are typing what is said, with CapTel, the CAs employ a speech recognition program. Thus, they repeat what the person being called says, and the program displays the words on a small screen on the CapTel phone.

Figure 8-14. Captioned Telephone or CapTel

Receiving calls was a bit more of a challenge because the caller needed to call the CapTel service instead of calling the hard of hearing person directly. There is now a two-line version of CapTel that makes including the CA on direct incoming calls possible without hanging up and redialing the call. Initially, CapTel was not an option included in the federally funded TRS. However, it has been added as an option, although not all states are offering it.[10] As with any non-Internet based service, long distance charges apply.

TEXT MESSAGING

Pagers, especially with alphanumeric displays, are common accommodations. Two-way pagers allow users to reply to text messages via email, as well as use the device as a traditional numeric pager or voice phone. Cellular phones have been able to send and receive text messages for several years now. The cost and availability of text messaging and two-way text messaging vary by service provider and calling plan. These kinds of devices offer simple solutions to what at one time would have been an insurmountable problem. With Internet access, users can utilize email, instant messaging, and even online relay services. Wyndtell was an early provider, but there are many others on the market now, including Blackberry, T-Mobile Sidekick, Treo Smartphone, and Nokia. Milo explains his situation:

Ironically, I work in telephone line repair. My office was frustrated that they could not call me on a cell phone to let me know of schedule changes or

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[10] As of this writing, CapTel is available in 35 states. However, it *is* available for all active or retired Federal personnel (civilian or military), veterans, and US Tribal members (of Federally recognized tribes) who are deaf, hard of hearing, deaf-blind, or have speech disabilities via the Federal Relay Services (FRS) in all 50 states and the US Territories. For more information, go to http://www.federalrelay.us. The advantage of FRS to Federal personnel is there are no long-distance charges. Besides CapTel, all other relay options (e.g., video, online, Spanish) are also available.

emergencies. This problem was easily solved with a two-way text pager. My office could send an email or text message to my pager and it would vibrate when I had new messages. I could respond with a text message, call through a relay service, or instant message with them to have a live conversation.

Email and instant messaging programs such as AOL Instant Messenger, or MSN Messenger have become incredibly popular. Email allows the person with a hearing loss to take as much time as needed to read and understand the sender's message. Instant messaging programs are usually free and are much like a TTY conversation, except that they are on computers and unlike TTYs, the font size can be changed so that it is easily readable. Most messaging programs also allow for small group discussions with multiple participants— similar to a conference call—and for file transfers assuming this is allowed by the network. Both email and instant messages can be saved and printed for review or reference at a later date and many have phone and Internet options.

MSN Messenger, which can be downloaded for free from http://www.msn.com/, is one instant messenger program that has an option for video conferencing. With high-speed connections, the video can be quite good and the cameras are less than $50. With modem connections the video is not as good for movement; nonetheless, it allows users to see the expressions and body language of the person with whom they are speaking, which helps add to their understanding of the conversation. By combining video via MSN Messenger and chatting via MSN Messenger at the same time, you can type a joke and be able to see the other person laugh instead of reading "haha." In order to use video, you must identify your computer's current IP Internet protocol address. This is the number that identifies your computer to the network, much like a phone number. It can be easily found by going to http://www.whatismyip.com/ from the computer whose IP you wish to identify.

CALLING 9-1-1

No matter which option of telephone service you prefer, you should always check with both the provider and the local non-emergency phone number to find out the most effective way to call for help. Cell phones do not transmit address information that is available in many areas if the call is made from a landline. Relay service call centers are not local to the call. If you use a relay service to call 9-1-1, there may be misunderstandings simply because the CA is not familiar with local city and street names. While some relay services are now advertising that they do transmit this address information to the 9-1-1 Call Center, it still takes more time than calling direct (Davis, 2003).

Closing Thoughts on Communication Technology

The following story was relayed in a statewide meeting of disability services providers:

> A service provider who was having difficulty locating a local CART provider came to me for suggestions. She researched remote CART services, got quotes, checked with her IT people, and performed the Herculean feat of getting the student's classroom changed to one that had Internet access. When she explained to the student that no one local was available but that she had (proudly) found a remote provider, the student responded, "I've heard that that doesn't work very well. I don't want that. I want you to find a local person." From that point on, the student blamed the service provider for not getting her the appropriate accommodation, and the service provider thought of the student as "difficult" and uncooperative. This is not effective self-advocacy.

There are a number of points consumers should keep in mind that are important to successful self-advocacy. The service provider must make rules and apply them fairly across students. The service provider also must work within a budget and restrictions set up by his or her administrators. Furthermore, service providers are most often responsible for providing accommodations for individuals across the range of disabilities, not specializing in a single disability group. They may have more information on accommodations for some disabilities than others.

Because not everyone will be well-versed in the needs of hard of hearing individuals, it is important that the individual consumer be aware of what works or what does not work for his or her particular loss AND is able to communicate this information to the service provider. Remember Irina's story. It just so happened that the service provider had some ideas that she thought would be helpful to Irina. It could have happened that Irina left the office with the tape recorder. This is the major difference between the laws providing for the K–12 settings vs. postsecondary education. In college settings the individual must self-disclose and request a specific accommodation, which documentation must support. The relationship between the above service provider and student would have been very different if the student had said, "Normally an ALD would be great, but my understanding is that this instructor relies almost totally on group discussion. Because people would not be speaking into a microphone, I am concerned the remote transcriber would not be able to follow the group discussion. I'm

open to other ideas, but the only thing I know of to accommodate this situation would be an on-site speech-to-text service." This statement is assertive, educational, and helpful to the service provider. Because we are talking about communication access, much more than the individual's audiogram must be considered to provide the appropriate accommodation. Indeed, the individual's needs will change from course to course and from year to year as the curriculum and instruction changes.

It is also important for students to trust the service provider. This is a concern that is often voiced. People with cochlear implants fear that others will think that their CI makes them "hearing" and that they no longer need assistance. Likewise, other students are reluctant to admit that in some classes they do not need CART, that for that specific situation ALDs work well, because they are afraid that the service provider will remove CART from other classes where it is vital.

ENCOURAGING THE USE OF ASSISTIVE TECHNOLOGY

Many times students who are unfamiliar with ALDs will be reluctant to use them. Encourage students to try out the equipment in safe environments outside of class or work, for example, with friends or watching television. They might request the equipment when attending movies or experiment with equipment in the comfort of their homes to see how the technology best combines with their hearing aids or cochlear implant. In fact, it may require a few extra visits to the audiologist to get the best programming or mapping of the technology for the kinds of specific listening situations the individual encounters.

Once they understand how helpful accommodations can be they are often more willing to accept them. Explore their fears. Provide coping skills needed to gain confidence so that it will be easier to handle any problematic situations that may arise. Support groups are great places to learn more about how to live with hearing loss from others in the same situation. Hearing Loss Association of America (HLAA), formerly Self Help for Hard of Hearing Persons (SHHH) and the Association for Late-deafened Adults (ALDA) are two such groups. If there are no local HLAA or ALDA groups, if the individual is uncomfortable, or just too busy, email lists may be the perfect contact option. Two excellent resources are Beyond Hearing and Say What Club. See the Resources section for information on how to join.

One of the best ways to see what is available is to request catalogs from companies that sell assistive technology. For example, LS&S Group sells technology for individuals with hearing loss and individuals with vision loss. It is very informative to browse through the catalog to learn more about what is available. The Beyond Hearing Aids website

(http://www.beyondhearingaids.com/) provides not only information on the specifics of the technology, but also functional information on how it can be used in day-to-day life. For on-the-job situations see http://www.onthejobwithhearingloss.com/. It is also useful to contact the company to learn if there are products available but not listed in the catalog, or if it is in an unexpected location. More companies selling assistive technology can be found in the Resources section.

If you are trying to accommodate a student in a career specialty field, be sure to check for online groups that may already be developed around the topic. Medical professionals with hearing loss (http://www.amphl.org/), audiologists (HOHAudiologists@yahoogroups.com), lawyers (http://www.deaflawyers.org/), musicians (http://www.aamhl.org/), government employees (http://www.dhhig.org/), and nursing (http://www.nond.org/) are just a few of the professions with electronic mailing lists.

It is very important to understand that technology does not resolve all communication access issues. Creating effective communication is not like building a wheelchair ramp. Because individuals are involved, both in sending the message and in receiving the message, care must be taken to create a successful communication environment. This involves not just the technology, but the attitudes, beliefs, skills, and knowledge of both the sender and receiver. Until users integrate the idea of accepting assistive technology into their identities, it will not come naturally to them. An accessible, 'hard of hearing friendly campus' makes this process achievable. Successful communication is an intricate dance made all the more interesting by all of the technology options available now and on the horizon. There are too many options available now not to provide communication access.

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Resources

The resources included in this publication represent only a portion of what may be available. Links were checked on February 8, 2007, but the list is ever changing. These resources are for the reader to consider when providing services to students who are hard of hearing, but they are not an endorsement by the Postsecondary Education Programs Network (PEPNet).

Resources Chapter 3

Accommodations: *see* **Assistive technology for students with hearing loss, Captioning, Tip sheets, and Notetaking**

Accommodations for Sports: see **Sports**

Acoustics: *see* **Classroom Acoustics**

Americans with Disabilities Act (ADA)

Americans with Disabilities Act: Responsibilities for Postsecondary Institutions Serving Deaf and Hard of Hearing Students

This is a desktop resource created for educators and administrators working in postsecondary institutions. (Source: PEPNet Resource Center, www.pepnet.org Item #1054)

Assistive technology for students with hearing loss

Assistive Technology Handbook

This handbook was written for consumers' use and explains the various types of assistive technology (AT) for persons with a hearing and/or vision loss. Includes a definition of AT, examples of various AT categories, a checklist to help make the appropriate selection and information on funding. (Source: PEPNet Resource Center, www.pepnet.org, Item #1161)

Using Technology to Enhance Educational Services for Students Who Are Deaf or Hard of Hearing in Postsecondary Education

This informative teleconference from September 26, 2002 covers leading edge technology designed to enhance the quality of services and educational experiences to students who are deaf or hard of hearing. (Source: PEPNet Resource Center, www.pepnet.org. Item #1134,)

Beyond Hearing Aids: Job Accommodations for Individuals Who Are Hard of Hearing and Deaf

This online ppt presentation covers an array of accommodation options available to help keep hard-of-hearing, late-deafened, and deaf workers on the job. (Source: PEPNet online document, wou.edu/education/sped/wrocc/bhaPEPNet_files/frame.htm)

Communication Accommodations for Students who are Deaf or Hard of Hearing

This site provides information about accommodations frequently used by students who are deaf or hard of hearing in postsecondary settings. (Source: PEPNet online document, mcpo.org/greg/)

Defining Communication Access for Students With a Partial Hearing Loss

Many Deaf and Hard of Hearing individuals request print accommodations in postsecondary settings. Support services personnel are often at a loss as to how to evaluate if this is an appropriate accommodation for the individual. The goal of this module is to help support services personnel develop an understanding of the strengths and weaknesses of various accommodations in the range of learning environments to help them better understand when print accommodations are appropriate. (Source: PEPNet Resource Center, www.pepnet.org, Item # 1127)

Demystifying Assistive Listening Devices: The Devil Is in the Detail

This online ppt presentation was developed to provide an overview of assistive listening devices and their use in postsecondary settings. (Source: PEPNet online document, wou.edu/education/sped/wrocc/demyst_files/frame.htm)

For Whom the Bell Flashes: Telecommunications Options for Hard-of-Hearing and Deaf Individuals

This online ppt presentation will spell out a variety of issues around phone use, from not being able to hear the ring, to picking up messages from an answering machine. For many problems a variety of possible solutions exist. This presentation covers a broad range of options available. It does not, however, recommend one brand or company over another. (Source: PEPNet online document, wou.edu/education/sped/wrocc/telecomm_files/frame.htm)

Hearing Aid Primer

Addressing the basic types of hearing aids (analog, digitally programmable, and fully digital), this article includes definitions and explanations about the variety of hearing aid technology available today. This brochure will be useful for anyone considering a hearing aid for personal use or to provide general information for anyone wanting to know more about hearing aid options. (Source: PEPNet online document, wou.edu/education/sped/wrocc/HA%20Primer%20-%20web2.pdf)

Hearing Aids: What is a Hearing Aid Evaluation?

Including definitions of common audiological terms, this article explains the process of being screened for a hearing aid, matching a hearing aid to a person's loss, and fitting the hearing aid to a user's audiological profile. (Source: PEPNet online document, wou.edu/education/sped/wrocc/Hearing%20Aid%20Eval%20-%20web%20.pdf)

National Center for the Dissemination of Disability Research

This website includes articles on assistive technology. It also includes descriptions of NIDRR-funded projects. (Source: NCDRR, www.ncddr.org/, then go to "assistive technology")

National Task Force Reports (1997)

Topics include Assistive Listening Devices, Note taking, Speech-to-Text Services, and others. (Source: PEPNet online documents, netac.rit.edu/publication/taskforce/)

Captioning

Providing Real-time Captioning, C-Print™ Speech to Print Transcription and Assistive Listening Devices – Video and Questions and Answers handbook

The videotape addresses issues related to setting up real-time captioning services using C-Print, speech-to-text services, and assistive listening devices in higher education. Content includes how to find and provide some of the most commonly requested services by deaf and hard of hearing students. The program panelists share their experience in working with the deaf and hard of hearing population in postsecondary education and offer guidance to college/university personnel responsible for setting-up services for those students. The handbook answers questions related to real-time captioning, C-Print and assistive listening devices. (Source: PEPNet Resource Center, www.pepnet.org, Item # 1097)

Speech-to-Text Services Network (STSN)

The mission of this Speech to Text Services Network (STSN) is to provide information and support to service providers, administrators, and consumers about this growing area of support services; and to foster excellence of service. STSN is an information resource for consumers, service providers, and administrators, promoting quality services through support of provider credentialing, continuing education and professional guidelines. (Source: STSN, www.stsn.org)

Classroom acoustics

Acoustics in Educational Settings

(Source: American Speech-Language-Hearing Association (ASHA, asha.org/members/deskref-journals/deskref/default)

Acoustical Performance Criteria, Design Requirements and Guidelines for Schools.

The American National Standards Institute (ANSI) introduced a standard for the acoustical design of schools, S12.60-2002. (Source: acoustics.com/ra_education_standard.asp)

College access guides for hard of hearing and deaf students

A Nuts and Bolts Guide to College Success for Deaf and Hard of Hearing Students.

This handbook is designed to provide Louisiana students with deafness or hearing impairments with information and strategies for successfully attending college. It begins by discussing the drop out rates for college students with disabilities and the rights of students with disabilities under federal laws. The following section addresses self-advocacy skills, and tips for communicating with people who are deaf and hard of hearing. Fact sheets are provided for communicating with an individual with deafness in a one-to-one situation, in a group, through an interpreter, employment interview, on the job site, in writing, and on the telephone. Subsequent sections discuss: (1) pre-college and transition, a suggested timeline chart for transition from high school to college, and questions to bring to your college's disability services offices; (2) financial aid, determining financial aid packages, major student financial aid programs, and scholarships; (3) accommodations, disability documentation, and testing accommodations; (4) academic issues, choosing your classes, improving your concentration, and preparing a resume; and (5) campus life, asking for dorm rooms to be made accessible, obtaining medical treatment, and reasons for participating in extracurricular activities. The final section lists resources for students with deafness or hearing impairments. (Source: PEPNet online document, http://sunsite.utk.edu/cod/pec/products.html#n)

Defining Communication Access for Students with a Partial Hearing Loss

This module explores the communication challenges that face individuals with hearing loss in postsecondary settings, how postsecondary communication requirements differ from other settings, and the range of accommodations that assist in bridging this communication gap. (Source: PEPNet online document, wou.edu/education/sped/wrocc/commaccess_files/frame.htm)

Orientation to Serving College Students Who are Deaf or Hard of Hearing

This online training module is designed to provide a basic understanding of hearing loss and its implications for communication and learning in a

secondary or postsecondary setting. (Source: PEPNet online document, www.pepnet.org)

Postsecondary Education Programs Network Resource Center and Catalog

The PEPNet Resource Center (PRC) was established in 1997 as a repository for training and informational materials on postsecondary education for individuals who are deaf or hard of hearing. It is an outstanding resource for colleges, universities, students with hearing loss, their parents, and faculty on a multitude of issues related to successfully supporting postsecondary students with hearing loss. (Source: PEPNet Resource Center, www.pepnet.org)

Procuring Services for the Hard of Hearing Students in Higher Education

Covers some of the issues facing people who are hard of hearing and late deafened. Viewers will better understand the unique adjustment factors related to the disability and how to provide appropriate educational accommodations. (Source: PEPNet Resource Center, www.pepnet.org, Item #1022)

Providing Services for Students who are Hard of Hearing - Questions and Answers

The information provided in this document is intended to serve as a guide in assisting service providers, working in colleges and universities, and others, in understanding the obligation of institutions of higher education to serve students who are Hard of Hearing. (Source: PEPNet Resource Center, www.pepnet.org, Item # 1119)

Resource Guide for Working with Hard of Hearing Students
(Source: PEPNet online document,
http://sunsite.utk.edu/cod/pec/products.html#r)

Virtual Learning and On-Line Services for Postsecondary Students Who Are Deaf or Hard of Hearing

This video covers proven best practices and on-line educational materials designed to enhance the quality of services and educational experiences for deaf or hard of hearing students. The panelists bring extensive experience in both current technology and working with students who are deaf and hard of hearing in the postsecondary setting. The program is designed for administrators, disabled student services managers, faculty, staff, and students. (Source: PEPNet Resource Center, www.pepnet.org, Item #1150)

Hearing loss – Understanding what it is

see also **Self-help materials for individuals with hearing loss**

Audiogram: How to Read an Audiogram

This article examines the parameters of frequency and intensity, explains the audiometer and the interpretation of audiograms. Beneficial for disability service providers, vocational counselors and anyone needing to understand or read audiograms. (Source: PEPNet online document, wou.edu/education/sped/wrocc/HT%20Read%20Audiogram%20web.pdf)

Health Insurance for Children

Insure Kids Now!

Insure Kids Now! is a national campaign to link the nation's 10 million uninsured children--from birth to age 18--to free and low-cost health insurance. Many families simply don't know their children are eligible. (Source: insurekidsnow.gov, 1-877-543-7669 by voice)

Hearing aids: *see* **Assistive technology for students with hearing loss**

Listening environment improvements: *see* **Classroom Acoustics**

Mental Health

Mental Health Services for Deaf People: A Resource Directory, (2003)

Available from both the Gallaudet Research Institute (gri.gallaudet.edu/Publications) and the Laurent Clerc National Deaf Education Center's "Info to Go" section on "Locating Providers of Mental Health Services for People who are Deaf and Hard of Hearing" clerccenter.gallaudet.edu/InfoToGo/mentalhealth.html

Mental Health Care Standards of Care for the Delivery of Mental Health Services to Deaf and Hard of Hearing Persons

(Source: www.deafhoh-health.org/resources/MHStandards/)

Substance Abuse Treatment Providers: National Directory of Alcohol and Other Drugs Prevention and Treatment Programs Accessible to the Deaf.

(Source: Rochester Institute of Technology rit.edu/~257www/national_directory/)

Notetaking

Notetaking: A to Z

A captioned videotape describing the basics of getting a notetaking program up and running. Includes policies and procedures, evaluation, hiring, scheduling and a demonstration of effective notetaking. (Source: PEPNet Resource Center, www.pepnet.org, Item # 1019)

Online Notetaker Training

Online training of student notetakers is presented in three modules. DSS Coordinators can access a toolkit for implementing a notetaker program that suggests selection criteria, policies, and practices for using student notetakers effectively. (Source: PEPNet online training, netac.rit.edu/onlinenotetakertraining.html)

Reasonable accommodations: *see* **Assistive technology for students with hearing loss, Captioning, Tip sheets, and Notetaking**

Recommended readings: (autobiographies, biographies, counseling guidance) for professionals, parents and students with hearing loss

On the Fence: The Hidden World of the Hard of Hearing
Drolsbaugh, Mark (Ed.), (2007). Springhouse, PA: Handwave Publications.

A very personal collection of autobiographical essays of the life experiences, poetry and practical tips for living with the hidden disability of hearing loss written by several individuals who are hard of hearing from throughout the US.

Between Two Worlds. A chapter from, <u>Odyssey of Hearing Loss: Tales of Triumph</u>
Harvey, Michael A. (1998). San Diego, CA: Dawn Sign Press, pp. 71-93.

Case review of hard of hearing adolescent referred for therapy who is grieving her hearing loss, coming to understand it, not ready for then

seeking connection to others like herself, finding she doesn't quite fit in the "normally hearing" world or "culturally Deaf signing" world.

Resilience to Trauma: An Inspirational Voice from Cyberpsace. A chapter from, <u>Odyssey of Hearing Loss: Tales of Triumph</u>
Harvey, Michael A. (1998). San Diego, CA: Dawn Sign Press, pp. 199-219.

Positive, uplifting, real-life account of the correspondence between Dr. Harvey and a 50-something, Ivy League college professor, who became deaf at age 21 through a car accident with a drunk driver. She later developed a full life including very successful career, marriage and family and recounts and describes the challenges and her resilience that helped her achieve healthy acceptance and integration of hear hearing loss into her person and life. Member of Association of Late-Deafened Adults (ALDA).

Dear Mom and Dad, If Only You Had Known. A chapter from, <u>Odyssey of Hearing Loss: Tales of Triumph</u>
Harvey, Michael A. (1998). San Diego, CA: Dawn Sign Press, pp. 13-48.

Case review of hard of hearing adult who later resolves longstanding grief and anger towards parents who never understood her struggle with living with hearing loss as a hard of hearing person.

Counseling Persons with Communication Disorders and their Families, 4th Ed.
Luterman, David M. (2001). Austin TX: Pro-Ed.

Hidden Frustrations
Mann, Maureen. (2004). Omaha, NE: Boystown National Research Hospital.

The author shares her experiences growing up a hard of hearing girl in mainstream education. Her stories address the impact on self esteem, education, and provides guidance and hope to families describing how their love and support can anchor children with hearing loss through their childhood.

Alone in the Mainstream: A Deaf Woman Remembers Public School
Oliva, G. A. (2004)**.** Washington, DC: Gallaudet University Press.

The author shares her personal experiences and results of her retrospective survey of solitary deaf and hard of hearing students on their experiences in mainstream public education. She describes well the experience of many deaf and hard of hearing children in mainstream education and the emotional impact experienced by many.

Missed Connections: Hard of Hearing in a Hearing World
Stenross, Barbara (1999). Philadelphia, PA: Temple University Press.

The author shares many common experiences of hard of hearing people, suggestions for productive coping strategies and provides information on practical solutions for effective day to day living with a hearing loss.

Rehabilitation services

Strategies for Community Rehabilitation Programs to Serve Consumers Who Are Deaf, HOH, Late Deafened or Deaf-Blind

This book provides guidance for administrators and service delivery staff of Community Rehabilitation Programs to serve consumers who are deaf, hard of hearing, late deafened or deaf blind. (Source: PEPNet Resource Center, www.pepnet.org, Item # 1179)

Role models who are hard of hearing

Achieving Goals! Career Stories of Individuals who are Deaf of Hard of Hearing.

Great website to browse brief summaries of the careers of successful Deaf and hard of hearing adults. Contact information is offered for many of these adults. (Source: PEPNet online resource, netac.rit.edu/goals/)

Deaf Mentor Video Series: Volumes 1 to 5

Presents information and interview clips from different Deaf and Hard of Hearing people working in various career fields. (Source: Increasing Career Choices at California State University, Northridge, available through the PEPNet Resource Center, www.pepnet.org, Item# 1162)

Self-assessments

Self-test for a hearing loss from the American Speech-Language-Hearing Association (ASHA)

Information on hearing loss, finding an audiologist, noise induced hearing loss and more. (Source: ASHA, asha.org, 10801 Rockville Pike, Rockville, MD 20852, Phone: 800-638-8255 or 301-897-5700 Voice or TTY)

Self-Assessment of Communication – Adolescent and Significant Other Assessment of Communication – Adolescent. Elkayam, J., & English, K. (2003).

Counseling adolescents with hearing loss with the use of self-assessment/significant others questionnaires. Journal of the American Academy of Audiology, 11(9), 485-499.

Excellent questionnaire for the adolescent with hearing loss and their significant others to complete (best friends, siblings, parents, teachers) to promote discussion with the teen about how hearing loss may be affecting their access to learning and social situations, and about solutions (effective communication strategies, environmental accommodations and assistive technology) that can be used to make their communication experiences as effective and accessible as possible.

Self-help materials for individuals with hearing loss

Dr. Sam Trychin has developed a variety of publications related to living with hearing loss. Several of them are listed below. Additional information and resources, including purchasing information, may be found on his website at www.trychin.com.

Living with Hearing Loss: At School by Sam Trychin, Ph.D. and Janet Trychin, Au.D. (Forward by Mark Ross, Ph.D.) 2003. Book.

Living with Hearing Loss: Workbook by Sam Trychin, Ph.D. 2003. Book.

Communication Rules by Sam Trychin, Ph.D. 2003. Book.

Communication Rules by Sam Trychin, Ph.D. Videotape or DVD.

Getting Along by Sam Trychin, Ph.D. Videotape or DVD.

SPEAK OUT! Tips on public speaking for people who are hard of hearing by Sam Trychin, Ph.D. 2003. Book.

Actions speak louder! Tips for putting on skits related to hearing loss by Sam Trychin, Ph.D. 2003. Book.

Sports

Time Out! I Didn't Hear You.

Palmer, C. V., Butts, S. L., Lindley, G. A., Snyder, S. E. (1996). Pittsburgh, PA: Sports Support Syndicate, Inc.

Excellent resource guide for accommodating an athlete with hearing loss for almost every popular sport. Information included on technology and strategies recommended, environmental impact upon hearing and communication, legal requirements of schools and public athletic

organizations, checklists for evaluating communication needs of various athletic activities and specific suggestions for accommodating hearing loss in almost every popular sport. Available on-line at www.pitt.edu/~cvp/timeout.pdf

Student self-administered guides/training modules

Planning for College Success

This is a curriculum model for a course intended to assist deaf and hard of hearing students during their initial introduction to college life. The model includes self-rating scales for analyzing areas of personal strengths, getting better grades, making wise choices, problem-solving steps, personal responsibilities, time management, goal setting, and other information for an incoming first year student. (Source: PEPNet online document, sunsite.utk.edu/cod/pec/products/pcsuccess.pdf)

Gates to Adventure

Gates to Adventure is a series of four e-learning transition modules created by PEPNet to assist high school students and first-year college students with their successful transition from high school to college. (Source: PEPNet online training, www.pepnet.org)

Ready, Set, Go (Module 1)

Ready, Set, Go is a transition awareness module designed to provide students age 14-21 with awareness level knowledge of skills and information they will need to successfully transition to postsecondary education or work. (Source: PEPNet online training, www.pepnet.org)

First Year College Success - Be the One (Module 2)

First Year College Success - Be the One is designed to provide senior high school students and first year college students skills they will need to successfully transition to their first year of college. (Source: PEPNet online training, www.pepnet.org)

It's My Life: Essentials for College Living (Module 3)

It's My Life: Essentials for College Living uses three fictional students as examples to improve skills in time management, studying, goal setting, and working with postsecondary disability services providers. Examples include deaf and hard of hearing students in different types of colleges demonstrating diverse ways to

solve problems, identify resources, and strategize for success in college. (Source: PEPNet online training, www.pepnet.org)

eFolio – Your Electronic Showcase (Module 4)

With diverse types of secure online portfolios, Efolios offers students and professionals a chance to organize and share their resumes, interests, goals, and skills. Students may also create a transition Efolio that organizes all their transition information. (Source: PEPNet online training, www.pepnet.org)

Student information guides

College Living: Essentials of College Living

This booklet is a curriculum guide for a deaf and hard-of-hearing student orientation to college. (Source: PEPNet online document, sunsite.utk.edu/cod/pec/products/essentials.pdf)

Financing Your Education

This downloadable PowerPoint presentation provides information about how Deaf and hard of hearing students can find funding and finance their college/postsecondary education. (Source: PEPNet online document, netac.rit.edu/publication/financing_your_education/powerpoint.html)

Starting Off on the Right Foot: Transition to College: Planning Advice from Professionals and Deaf and Hard-of-Hearing Students

This package (booklet, handbook, and videotape) is designed to assist teachers of the deaf, parents, guidance counselors, audiologists, and other professionals in providing comprehensive information on critical issues relative to successfully transitioning to college. (Source: PEPNet Resource Center, www.pepnet.org, Item # 1175)

Student websites

Hear Our Voices

This is a website for teenagers who are hard of hearing and use speaking and listening only. (Source: AG Bell Association, http://hearourvoices.org/DesktopDefault.aspx)

World Around You Deaf Teen Webzine

The World Around You deaf teen webzine offers more features, stories, and news about the world. (Source: Gallaudet University, Laurent Clerc National Deaf Education Center clerccenter.gallaudet.edu/worldaroundyou/index.html)

Substance abuse recovery resources: *see* **Mental Health**

Summer Camps, Internship Opportunities

ENTRY POINT!

ENTRY POINT! is a program of the American Association for the Advancement of Science (AAAS) offering Outstanding Internship Opportunities for Students with Disabilities in Science, Engineering, Mathematics, Computer Science, and some fields of Business. (Source: American Association for the Advancement of Science, http://ehrweb.aaas.org/entrypoint/)

Explore Your Future

Explore Your Future (EYF) is a six-day career exploration program at the National Institute of the Deaf in Rochester, New York for high school sophomores and juniors. (Source: NTID, www.ntid.rit.edu/ntidweb//prospective/eyf.php)

Leadership Opportunities for Teens

Leadership Opportunities for Teens (LOFT) program of the Alexander Graham Bell Association (Source: AG Bell, www.agbell.org, type in "LOFT" at search bar).

Summer camp opportunities

National listing of summer camp opportunities can be found at the Laurent Clerc National Deaf Education Center (Source: Gallaudet University, clerccenter.gallaudet.edu, search "summer camps").

Summer Adventure at the Mainstream Center at the Clarke School for the Deaf (Source: clarkeschool.org/content/programs/index.php)

<u>Tip sheets</u>

Oral Transliterating Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

The Role of Assistive Listening Devices Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

Teaching Students Who Are Hard of Hearing Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

The Role of Assistive Listening Devices Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

Serving Deaf Students Who Have Cochlear Implants Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

Captioning Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

C-Print: A Notetaking System Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

Computer Aided Realtime Translation (CART) Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

Notetaking Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

Classroom Technology: How to Use AV Equipment for Visual Learners Tipsheet

(Source: PEPNet online document, netac.rit.edu/publication/tipsheet/)

Training packages for supporting hard of hearing students

Access: How Best to Serve Postsecondary Students Who are Hard of Hearing

This in-service training package explains hearing loss and its effects on students' education, demonstrates assistive technologies, and offers communication strategies. PowerPoint®, handouts, and audiotape. (Source: PEPNet Resource Center, www.pepnet.org, Item #1022)

National Clearinghouse for Rehabilitation Training Materials

Excellent resource for inexpensive training materials for educational, rehabilitation and mental health professionals working with students with a variety of disabilities. Many publications specific working with to deaf and hard of hearing individuals. (Available at http://ncrtm.ed.usu.edu)

Self-Advocacy for Students Who are Deaf or Hard of Hearing.

English, K. M. (1997). Austin, TX: Pro-Ed.

Excellent ready-made small group training curriculum with session outlines and handouts for training teens with hearing loss about their rights in high school under Individuals with Disabilities Education Act and in post-secondary educational settings under the Americans with Disabilities Act and Section 504 of the 1973 Rehabilitation Act, and to develop self-advocacy skills for obtaining needed accommodations for equal access to their learning environments.

Vocational rehabilitation: *see* **Rehabilitation**

Resources Chapter 4

American Academy of Hearing Loss Support Specialists

The American Academy of Hearing Loss Support Specialists (TM) is a new educational program from Hearing Loss Association of America. The Academy provides education and oversight for the Certificate in Hearing Loss Support. This program establishes a set of core knowledge and understanding for individuals who work with, or wish to work with, people affected by hearing loss. (Source: Hearing Loss Association of America, www.hearingloss.org)

Connections workshop materials

This product explains the important relationship between educators and vocational rehabilitation counselors. Videotape and handbook of curriculum is included. (Source: PEPNet Resource Center, www.pepnet.org. Item # 1084)

Communication Questionnaire

(Source: Beyond Hearing Aids, Inc., 6900 Houston Rd., Bldg. 500, Suite, Florence, KY 41042, www.beyondhearingaids.com)

Let's Make It Clear

Illustrating the everyday difficulties posed by hearing loss and offers clear and useful tips for effective communication, this video is ideal for service providers, family members, etc. (Source: Texas Dept. of Assistive and Rehabilitative Services (DARS), www.dars.state.tx.us/dhhs/index.shtml)

Self-help materials for individuals with hearing loss

Dr. Sam Trychin has developed a variety of publications related to living with hearing loss. Several of them are identified in the resource list for Chapter 3. Additional information and resources, including online training and purchasing information, may be found on his website at www.trychin.com.

On the Job with Hearing Loss: 10 Steps to Successful Accommodations

Rebecca Morris, 2006. (Source: Beyond Hearing Aids, Inc., www.beyondhearingaids.com)

Rehabilitation of Individuals Who Are Hard of Hearing and Late Deafened: Practitioner's Guide. Hot Springs, AR: Region VI Rehabilitation Continuing Education Program, University of Arkansas, 1993. (Source: http://www.rcep6.org/)

Rehabilitation of Individuals Who Are Hard of Hearing and Late Deafened: Trainer's Guide. Hot Springs, AR: Region VI Rehabilitation Continuing Education Program, University of Arkansas, 1993. (Source: http://www.rcep6.org/)

Other communication and hearing loss assessment scales and tools are identified in the resource list for Chapter 3.

Resources Chapter 5

REMOTE SPEECH-TO-TEXT SERVICE PROVIDERS

BayFirst Solutions, LLC
6856 Eastern Ave NW
Suite #350
Washington, DC 20012
202-234-2899
www.deafaccess.com

Caption First
P.O. Box 1924
Lombard, IL 60148
800-825-5234
www.captionfirst.com

Caption Reporters, Inc.
9450 Pennsylvania
Avenue—Suite 20
Upper Marlboro, MD
20772
301-599-1899
www.captionreporters.c
om

*Captions Unlimited of
Nevada, Inc*
P.O. Box 20905
Reno, Nevada 89515
775-746-3534
www.captionsunlimited.
com

Carolinas Captioning
3635 Stokes Avenue—
Suite B
Charlotte, NC 28210
704.552.6753
www.carolinas-
captioning.com

Cart Excellence,LLC
866-212-9704
http://www.cartexcellence.com/

*Communique Interactive Solutions,
Inc.*
540-775-7742 v—540-775-1533 tty
www.text2u.com

Hear Ink
St. Louis, MO 63114
314-427-1113
www.hearink.com

PantherCom Project
University of Wisconsin—
Milwaukee
PO Box 413; Mitchell Hall 120
Milwaukee, WI 53201
414-229-2343
www.uwm.edu/dept/panthercom

Quick Caption/
4927 Arlington Avenue
Riverside, CA 92504
951-779-0787
www.quickcaption.com

RapidText
1801 Dove Street—Suite 101
Newport Beach, CA 92660
949-399-9200 v—949-399-9273 tty
www.rapidtext.com

RealTime Reporters
831-335-7792
www.rtreporters.com

*Texas Closed
Captioning*
310 East 34th Street
Austin, TX 78705
512-480-0210
www.texascaption.com

Viable Technologies
9401 Fox Hollow Drive
Potomac, MD 20854
877-219-0662
http://www.viabletechno
logies.com/

Resources Chapter 6

Noise Induced Hearing Loss

Dangerous Decibels—a website that discusses the disturbing increase in noise-induced hearing loss

(Source: www.dangerousdecibels.org)

Universal Design

Universal design for instruction is Universal design is an approach to the designed products and environments, including instruction, that takes into consideration the the variety of abilities, disabilities, racial/ethnic backgrounds, reading abilities, ages, and other characteristics of the student body. (Source: Disabilities, Opportunities, Internetworking, and Technologies (DO-IT) website, www.washington.edu/doit/Faculty/Strategies/Universal/)

Classroom Environment

ANSI Classroom Acoustic Standard (ANSI S12.60-2002).

(Source: Acoustical Society of America, http://asastore.aip.org/)

Classroom Acoustics II: Acoustical Barriers to Learning

Nelson, P., Soli, S., and Seltz, A., (2002) (Source: Acoustical Society of America, http://asa.aip.org/classroom/bookletII.pdf)

Classroom Acoustics: A resource for creating learning environments with desirable listening conditions

Seep, B., Glosemeyer, R., Hulce, E., Linn, M. and Aytar, P. (2000, August) (Source: Acoustical Society of America, http://asa.aip.org/classroom/booklet.html)

Classroom Acoustics

(Source: Access Board, www.access-board.gov/acoustic/index.htm)

Quiet Classrooms

Quiet Classrooms is an alliance of non-profit organizations working to create better learning environments in schools by reducing noise. (Source: www.quietclassrooms.org/)

Classroom Lighting

Guide for Educational Facilities Lighting (2000). (Source: Illuminating Engineering Society of North America, www.iesna.org)

Sound Field Systems

Teachers find that mikes amplify learning. (Source: The Herald-Tribune, Feb. 3, 2006, www.heraldtribune.com/apps/pbcs.dll/article?AID=/20060203/NEWS/602030395)

Assistive Technology

Accessible Computers. The TRACE Center at the University of Wisconsin-Madison

(Source: http://trace.wisc.edu/)

Electromagnetic Interference and How to Prevent It

(Source: www.access-board.gov/research/interference.htm)

Time Out! I Didn't Hear You.

Palmer, C. V., Butts, S. L., Lindley, G. A., Snyder, S. E. (1999). Pittsburgh, PA: Sports Support Syndicate, Inc. Available on-line at www.pitt.edu/~cvp/timeout.pdf

Captioning for Movies and in Theaters

DTS Digital Entertainment information about captioning

(Source: www.dts.com/cinema/dtsaccess/)

Insight Cinema website

(Source: www.insightcinema.org/)

Rear Window Captioning website
(Source: http://ncam.wgbh.org/mopix/)

Personal Captioning System website
(Source: www.personalcaptioning.com/)

Sound Associates website
(Source: www.soundassociates.com/products/icaption.jsp)

Caption Display website
(Source: www.captiondisplay.com/)

Financial Aid

Scholarships for Students with Hearing Disabilities
(Source: www.uni.edu/neuhaus/sertoma/scholarshipshearing.html)

Interviewing and Hearing Loss

Hearing Loss in the Workplace – Part One.
(Source: Hearing Loss Web,
www.hearinglossweb.com/Issues/Employment/hl_and_work.htm)

Hearing Loss in the Workplace
(Source: Hearing Loss Web,
www.hearinglossweb.com/res/hlorg/alda/cn/2000/work.htm)

Hearing Loss in the Workplace
(Source: Quiet Corner SHHH, http://qcshhh.tripod.com/id19.html)

Suggested Resources for "Living with Hearing Loss" Class

Local chapters of the Hearing Loss Association of America (www.hearingloss.org) or the Association of Late-Deafened Adults (www.alda.org) may be able to suggest local resources to assist with this class. Those interested may also contact the author of Chapter 6 at larry@hearinglossnetwork.org for additional information.

Psychosocial Aspects of Hearing Loss

The Psychology of Hearing Loss

(Source: ASHA, www.asha.org/about/publications/leader-online/archives/2002/q1/020319d.htm)

Psychology of Hearing Loss

(Source: Hearing Loss Web, www.hearinglossweb.com/Issues/psych/psych.htm)

Odyssey of Hearing Loss: Tales of Triumph

(Source: Michael Harvey (1998), DawnSign Press)

A Quiet World: Living with Hearing Loss

(Source: David Myers (2000),Yale University Press)

Hearing Loss Acceptance

Reflections of a Hard of Hearing Audiologist

(Source: Mark Ross, www.hearingresearch.org/Dr.Ross/Reflections_HOH_audiologist.htm)

Coping with a Hearing Loss

(Source: Mark Ross, www.hearingresearch.org/Dr.Ross/coping_with_a_hearing_loss.htm)

Coping with a Hearing Loss

(Source: Sam Trychin, www.ifhoh.org/papers/trychin.htm)

The Importance of Self-Advocacy

Self-Advocacy for Deaf and Hard of Hearing Students
(Source: Hands & Voices,
www.handsandvoices.org/needs/advocacy.htm)

Self Advocacy and Self-Determination Synthesis Projects
(Source: IDEAs that Work, www.uncc.edu/sdsp/)

Rights of Students with Hearing Loss

Your Rights under Section 504 of the Rehabilitation Act
(Source: Office for Civil Rights, www.hhs.gov/ocr/504.html)

Section 504 of the Rehabilitation Act
(Source: www.section508.gov/index.cfm?FuseAction=Content&ID=15)

American with Disabilities Act Home Page
(Source: www.usdoj.gov/crt/ada/adahom1.htm)

Hearing Aids

hearing aids for people with hearing loss.
(Source: Hearing Loss Web,
http://www.hearinglossweb.com/tech/ha/ha.htm)

Hearing Aid Types and Styles
(Source: Laine Waggoner, www.vitalco.net/Hearing/Types.htm)

Hearing Aids
(Source: Hearing Planet, www.hearingaidhelp.com/hearingaids.html)

Hearing Assistance Technology (Assistive Listening Devices)

National Center for Hearing Assistive Technology.
(Source: Hearing Loss Association of America,
http://www.hearingloss.org/learn/hat.asp)

Assistive Technology – What are Assistive Listening Devices?
(Source: ASHA,
www.asha.org/public/hearing/treatment/assist_tech.htm)

assistive listening devices (ALDs) for people with hearing loss.
(Source: Hearing Loss Web,
http://www.hearinglossweb.com/tech/ald/ald.htm)

Telecommunications Devices

Arizona Telecommunications Equipment Distribution Program
Equipment Catalog
(Source: AzTEDP, www.aztedp.org/products.asp)

California Telephone Access Program—Equipment
(Source: CTAP,
www.ddtp.org/CTAP/services_and_equipment/products.asp#products)

Alerting Devices

Alerting Devices
(Source: www.nchearingloss.org/alert.htm)

alerting devices (ALDs) for people with hearing loss.
(Source: Hearing Loss Web,
http://www.hearinglossweb.com/tech/alrt/alrt.htm)

Emergency Planning for Students with Hearing Loss

Emergency Preparedness: Emergency Evacuation of People with
Disabilities
(Source: University of Wisconsin, Milwaukee,
www.uwm.edu/Dept/EHSRM/EMERGENCY/evacada.html)

Emergency Planning for People with Hearing Loss
(Source: Hearing Loss Web,
www.hearinglossweb.com/Issues/EmergPlan/emerg_plan.htm)

Community Emergency Preparedness Information Network website
(Source: www.cepintdi.org)

Hearing Loss Organizations

Alexander Graham Bell Association for the Deaf and Hard of Hearing website
(Source: www.agbell.org)

Association of Late Deafened Adults website
(Source: www.alda.org)

Hearing Loss Association of America website
(Source: www.hearingloss.org)

SayWhatClub website
(Source: www.saywhatclub.com)

Communications Strategies

What is Speechreading?
(Source: Gallaudet University, Laurent Clerc National Deaf Education
Center http://clerccenter.gallaudet.edu/InfoToGo/011.html)

Speechreading
(Source: Mark Ross, www.therubins.com/geninfo/speechrd.htm)

National Cued Speech Association website
(Source: www.cuedspeech.org/)

Institution's resources for students with hearing loss

PEPNet

The Postsecondary Education Program Network (PEPNet) is the national collaboration of four regional centers (Northeast, Midwest, South, West) that assist educational institutions in more effectively addressing the postsecondary, vocational, technical, continuing, and adult education needs of individuals with deafness, including those who are deaf with co-occurring disabilities. Each Center provides technical assistance and dissemination activities, personnel development activities, and technology use activities. The Centers are supported by contracts with the U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of Special Education Programs. (Source: PEPNet, www.pepnet.org)

Resources Chapter 7

Books

Carmen, R. (2004). *The consumer handbook on hearing loss and hearing aids: a bridge to healing*. Sedona, AZ: Auricle Ink Publishers.

Chorost, M. (2006). *Rebuilt: my journey back to the hearing world*. Boston: Mariner Books.

Harvey, M. (2001). *Listen with the heart: relationships and hearing loss.* San Diego, CA: Dawnsign Press.

Harvey, M. (2004). *Odyssey of hearing loss: tales of triumph.* San Diego: CA: Dawnsign Press.

Hearing Loss Organizations

Alexander Graham Bell Association website
(Source: www.agbell.org/)

American Tinnitus Association website
(Source: www.ata.org/)

Association of Medical Professionals with Hearing Losses website
(Source: www.amphl.org/)

Association of Late-Deafened Adults website
(Source: www.alda.org/)

Hearing Loss Association of America website
(Source: www.hearingloss.org)

League for the Hard of Hearing website
(Source: www.lhh.org)

Professional Organizations

Academy of Rehabilitative Audiology website
(Source: www.audrehab.org/

American Speech-Language-Hearing Association website
(Source: www.asha.org/)

American Academy of Audiology website
(Source: www.audiology.org)

Educational Audiology Association website
(Source: www.edaud.org)

National Board Certification of Hearing Instrument Specialists website
(Source: www.hearingnbc.org/)

Software/Simulations

Hearing Loss Demonstrator
(Source: www.phon.ucl.ac.uk/resource/hearloss/)

Hearing Loss Demonstrations
(Source: Phonak Hearing Systems,
www.phonak.com/consumer/hearing/hearinglossdemo.htm)

Websites

Hearing Loss Web
(Source: www.hearinglossweb.com/)

Rehabilitation Engineering Research Center on Hearing Enhancement website
(Source: www.hearingresearch.org/)

Resources Chapter 8

Assistive Listening Devices

Direct Audio Input (DAI)—defines direct audio input and provides an image. Very user-friendly website with lots of hearing loss information.
(Source: North Carolina Self Help for Hard of Hearing People, Inc., www.nchearingloss.org/dai.htm)

Assistive Listening Devices for People with Hearing Loss: A guide for performing arts settings.
(Source: The Kennedy Center, http://nadc.ucla.edu/AssistiveListeningDevicesGuidePerformingArtSettings.pdf)

Hearing Assistive Technology Online Guide: A resource for rehabilitation counselors and people with hearing loss.
(Source: Michigan Department of Labor and Economic Growth, www.michdhh.org/assistive_devices/doc/HATOnLine.pdf)

On the Job with Hearing Loss. A manual for employers and employees.
(Source: B. Morris, www.onthejobwithhearingloss.com)

Ross, M. (2006). Telecoils are about more than telephones. *The Hearing Journal,* 59(5), 24-28.
www.audiologyonline.com/management/uploads/articles/HJ2006_05_pg24-28.pdf

Technology Access Project website includes articles and research about all the latest technology and articles and research about all the latest technology.
(Source: Gallaudet University, http://tap.Gallaudet.edu)

WROCC Outreach Site at WOU. Website includes numerous materials on Hearing Assistance Technology including Internet Resources Related to Hearing Loss, and several on-line PowerPoint presentations with speaker's notes Demystifying Assistive Listening Devices, For Whom the Bell Flashes: Telecommunication Options, You Don't Know What You've Been Missing: Alerting and signaling devices.
(Source: www.wou.edu/wrocc and click on "Training Materials")

Assistive Device Companies

Beyond Hearing Aids. This is a great site with very helpful functional information and articles about using ALDs.
(Source: www.beyondhearingaids.com)

Cochlear Implant & Hearing Aid Interface Systems.
(Source: www.cihais.com)

DeVilbiss DeVelopment Co., LTD. A source for custom-made neckloops, CI patch cords
(Source: http://members.tripod.com/~DeVilbissG/index-4.html)

General Technologies. A source for assistive technology
(Source: www.devices4less.com)

HARC Mercantile. Accessolutions for the hard of hearing and deaf.
(Source: www.harcmercantile.com)

Harris Communications, Inc. Offers a selection of over 1,000 products, including TTYs, amplified telephones, signalers, vibrating clocks, wireless pagers, assistive listening devices, and sign language CDs, DVDs, books, and videos.
(Source: www.harriscomm.com)

Hear-More. A source for assistive technology.
(Source: www.hearmore.com)

LS&S Group. Specializing in products for the visually and hearing impaired.
(Source: www.lssproducts.com)

Weitbrecht Communications Products. Designed to enhance everyday sounds and events, assisting people with hearing loss in their daily activities.
(Source: www.weitbrechtcom.com)

Alerting Devices

Hearing Dogs

Assistance Dogs of America, Inc.
(Source: http://adai.org)

Assistance Dogs International.
(Source: www.adionline.org/hearing.html)

Assistance Dog Model State Law.
(Source: www.adionline.org/model.html)

Canine Companions for Independence.
(Source: www.caninecompanions.org/)

The Delta Society.
(Source: www.deltasociety.org)

Dogs for the Deaf.
(Source: www.dogsforthedeaf.org)

Fidos for Freedom.
(Source: www.fidosforfreedom.org)

Paws with a Cause.
(Source: www.pawswithacause.org)

Emergency Alerts

D.E. Sievers & Associates, Ltd. (Source:
http://members.tripod.com/~firesafety/index-2.html)

Fair Housing Act Information (Source:
www.hud.gov/offices/fheo/FHLaws/yourrights.cfm)

Communication Access

Aarts, N.L. (2004). *T-Coils: Getting the Most Out of Your Hearing Aid.*
(Source:
www.healthyhearing.com/articles/pf_arc_disp.asp?id=250&catid=1054)

Acoustical Standards for the Classroom.
(Source: www.acoustics.com/ra_education_standard.asp)

Hard of Hearing Audiologists.
(Source: HOHAudiologists@yahoogroups.com)

Hearing Aids 101. An independent website to help consumers learn
about the variety of hearing aids and similar products on the market
today.
(Source: www.hearingaids101.com/)

Yetter, C. (2005). *A hearing aid primer*.
(Source: www.wou.edu/education/sped/wrocc/HA%20Primer%20-
%20web2.pdf)

Yetter, C. (2005) *How to read an audiogram.* (Source:
www.wou.edu/education/sped/wrocc/HT%20Read%20Audiogram%20w
eb.pdf)

Yetter, C. (2005). *What is a hearing aid evaluation?*
(Source:
www.wou.edu/education/sped/wrocc/Hearing%20Aid%20Eval%20-
%20web%20.pdf)

Electronic Mailing Lists and Consumer Groups

Association of Adult Musicians with Hearing Loss.
(Source: www.aamhl.org)

Association of Medical Professionals with Hearing Losses.
(Source: www.amphl.org)

Beyond Hearing.
(Source: www.geocities.com/heartland/prairie/4727/bhframe.htm)

Deaf and Hard of Hearing in Government.
(Source: www.dhhig.org)

Deaf Lawyers.
(Source: www.deaflawyers.com)

Exceptional Nurse.
(Source: www.exceptionalnurse.com)

Hearing Loss Web. Distributes HOH-LD News.
(Source: www.hearinglossweb.com)

Say What Club
(Source: www.saywhatclub.com/)

Federal Law and ADA Training Materials

ADA Title I.
PowerPoint presentation developed by John Evans. Includes Definition
of Disability, Americans with Disabilities Act Introduction Essential
Functions, Pre-Employment Inquiries, Medical Examinations &
Inquiries, Qualified Individual with Disability, Reasonable
Accommodations, Undue Hardship. Direct Threat, Rehabilitation Act
Reauthorization and information on the 1998 Amendments to Section
504 of the Rehabilitation Act of 1973 (Workforce Investment Act).
(Source: WROCC at WOU, **www.wou.edu/wrocc** and click on
"Training Materials")

Assistive Listening Systems, Bulleting 9A: For Consumers.
(Source: Access Board, www.access-
board.gov/adaag/about/bulletins/als-a.htm)

Assistive Listening Systems, Bulleting 9B: For Installers.
(Source: Access Board, www.access-
board.gov/adaag/about/bulletins/als-b.htm)

Assistive Listening Systems, Bulleting 9C: For Providers.
(Source: Access Board, www.access-board.gov/adaag/about/bulletins/als-c.htm)

Survey Form 15: Assembly Areas.
(Source: Access Board, www.access-board.gov/adaag/checklist/AssemblyAreas.html)

Federal Communications Commission: Section 255 of the Telecommunications Act of 1996.
(Source: www.fcc.gov/cgb/dro/section255.html)

Job Accommodations Network
(Source: Office of Disability Employment Policy, www.jan.wvu.edu/)

Speech-to-Text

Caption Central. Compiled by Gary Robson.
(Source: http://captioning.robson.org/index.html)

Caption Mic. Speech recognition captioning.
(Source: ULTECH, www.ultech.com)

Applications of Automatic Speech Recognition with Deaf and Hard of Hearing People
(Source: Frank W. Lovejoy Symposium, www.rit.edu/~ewcncp/Lovejoy.html)

iCommunicator. Technology for speech to text, speech to computer-generated voice, and speech to video sign language.
(Source: www.myicommunicator.com/)

Liberated Learning Consortium. Identifying strategies to advance speech recognition technology. (Source: www.liberatedlearning.com/)

Captioning Videos

Described and Captioned Media Program. Offers a huge library of captioned films. Enter a title and see if they have a captioned version of it. Great site for educators!
(Source: www.cfv.org)

Captioning Web. Lists many different companies for captioning services and software.
(Source: www.captions.org/softlinks.cfm)

ClosedCaptionMaker. They add closed-captions to video programming and offer a special rate for VHS tapes used in the classroom.
(Source: www.CCmaker.com)

National Captioning Institute (NCI).
(Source: www.ncicap.org)

WGBH/National Center for Accessible Media.
(Source: http://ncam.wgbh.org)

<u>Digital Media and Web-based Video</u>

Amazing Slow Downer. Slows digital audio without distortion to simplify the transcribing process.
(Source: Roni Music, www.ronimusic.com/slowdown.htm)

Camp, C & Stark, B. (2006). *More than Words on the Screen.*
(Source: PEPNet online document,
http://dss.jsu.edu/pp/wordsonscreen_files/frame.html)

Communique Interactive Solutions. Provides remote realtime captioning through TextStreaming via the internet.
(Source: www.text2u.com)

Digital Captioning. A manual for using the free program MAGpie for captioning digital video.
(Source: High Tech Center Training Unit,
www.htctu.net/trainings/manuals/web/Digital_Caption_MAGpie2.pdf)

Klatt, J., Gugerty, JJ., Castaneda, M., & Smith, A (2006). *Campus Capacity Building Toolkit: Web Accessibility for All.* Madison, WI: Center on Education and Work.

Media Access Generator (MAGpie). Free tool for captioning digital video.
(Source: National Center for Accessible Media,
http://ncam.wgbh.org/webaccess/magpie)

MAGpie training kit.
(Source: PEPNet online document,
http://sunsite.utk.edu/cod/pec/products/magpiekit.html)

National Center for Accessible Media (CPB/WGBH)
(Source: www.wgbh.org/ncam)

National Court Reporters Association. Lists qualified CART providers.
(Source: www.ncraonline.org)

Portable laptop stand.
(Sources: Stenograph, www.stenograph.com/, and insTand,
www.instand.com/)

RapidText Services. Includes captioning videos, producing transcripts of videos, and remote realtime captioning.
(Source: www.rapidtext.com/)

Captioning for Quicktime. On-line manual for captioning Quicktime videos to create accessible web videos.
(Source: WebAIM,
www.webaim.org/techniques/captions/quicktime/web.php.

Remote CART

Communication Access Information Center.
(Source NCRF, www.cartinfo.org/remotecart.html)

Caption First CART and Captioning Services.
(Source: www.captionfirst.com)

Captions Unlimited of Nevada, Inc.
(Source: http://www.captionsunlimited.com/)

EduCaption
(Source: www.educaption.net/)

Remote C-Print

PantherCom Project. Provides remote interpreting and C-Print
captioning services in Wisconsin.
(Source: University of Wisconsin, Milwaukee,
www.uwm.edu/Dept/DSAD/SAC/February2003SAC_NEWS.html
and http://mason.cuir.uwm.edu/panthercom/)

<u>Telecommunications</u>

CapTel. Information on Captioned Telephones and Captioned
Telephones with USB ports for individuals with low vision.
(Source: www.ultratec.com)

Cellular Telecommunications & Internet Association. Information on
how wireless technology works in general, as well as information on
hearing aid use with wireless technology.
(Source: The Wireless Assocation,
www.accesswireless.org/brochure/audiologist_brochure.htm)

Bluetooth Headsets & Hearing Aids.
(Source: Neil Ferguson, http://gfern.com/btha/btha.html)

Digital Cell Phones and Hearing Aids FAQ
(Source: Linda Kozma-Spytek,
www.hearingloss.org/learn/cellphonetech.asp)

How Stuff Works. Great site useful for many topics, but in particular
provides info on cell phones and services.
(Source: www.howstuffworks.com)

Information on Cell Phones (including neckloops and other
attachments, use with TTYs):

Cingular.
(Source: http://www.cingular.com/about/disability-
resources/hearing-aid-compatibility.jsp)

Verizon Wireless.
(Source: http://aboutus.vzw.com/accessibility/products.html)

Nokia.
(Source: www.nokiaaccessibility.com/hearing.html)

2-line voice carry-over demonstrations
(Source: Jay Wyant, http://www2.bitstream.net/~jwyant/2lvco.html)

A Wearable Bluetooth Device for Hard-of-Hearing People.
(Source: Yanz, J. L., Roberts, R., & Sanguino, J.A. *Hearing Review*,
2005;12(5):38-41.)

The Promise of Bluetooth for the Hearing Impaired.
(Source: Jerry L. Yanz,
http://www.elihearing.com/Resource/TechReport.pdf)

Wireless Advisor. Search for wireless carriers by entering your zip
code.
(Source: www.wirelessadvisor.com)

Wireless TTY Calling.
(Source: www.ultratec.com/support/ttycell.php)

Internet Relay Providers

AT&T Relay Services.
(Source: www.consumer.att.com/relay)

CSD.
(Source: www.c-s-d.org)

Go America i711.
(Source: www.i711.com/)

Hamilton Relay.
(Source: www.hiprelay.com)

IP Relay.
(Source: www.ip-relay.com/)

Instant Messaging

AOL Instant Messenger.
(Source: www.aim.com/)

MSN Messenger.
(Source: www.msnmessenger-download.com/)

Yahoo Messenger.
(Source: http://messenger.yahoo.com/)

Two-Way Pagers

Audex. Amplified cordless phones, cell phones, adapters.
(Source: www.audex.com)

T-Mobile. Sidekicks, BlackBerrys and handhelds.
(Source: www.t-mobile.com)

PalmOne. Handhelds and wireless phones, previously known as PalmPilot).
(Source: www.palmone.com)

Print Resources

Anderson, G.B. & Watson, D. (Eds.) (1995). *Partnerships 2000: Achieving a Barrier-Free Workplace: The first national forum on employment of deaf and hard of hearing people.* Little Rock: University of Arkansas Rehabilitation Research and Training Center for Persons who are Deaf or Hard of Hearing.

Flexer, C., Wray, D., Leavitt, R., & Flexer, R (Eds.). (1996). *How the Student with Hearing Loss can Succeed in College: A handbook for students, families, and professionals.* Washington, D.C.: Alexander Graham Bell Association for the Deaf.

Cagle, S. & Cagle, K. (1991) *GA and SK etiquette: Guidelines for Telecommunications in the Deaf Community.* Bowling Green, OH: BG Press.

Castle, D. (1988). *Telephone Strategies: A technical and practical guide for hard-of-hearing people.* Bethesda, MD: SHHH.

Hamlin, L. (2006). Emergency preparedness and you. *Hearing Loss Magazine*, 27*(3)*, 10–14.

Putkovich, K. (2006) Emergency warnings saves lives. *Hearing Loss Magazine*, 27*(2)*, 40–42.

Ross, M. (Ed.) (1994). *Communication Access for Persons with Hearing Loss: Compliance with the Americans with Disabilities Act.* Baltimore: York Press.

Silverman, F. (1999). *The Telecommunication Relay Service (TRS) Handbook*. Newport, RI: Aegis.

Spiers, E. (2006). Emergency preparedness and people with combined vision and hearing loss. *Hearing Loss Magazine*, 27*(5)*, 18.

Appendix A

Chapter 4: Self-Analysis Questionnaire

Self-Analysis Questionnaire

(Answer True/False)

1. I recognize clients/ students who are hard of hearing even if they do not self-identify.

2. I explore the extent to which clients/ students who are hard of hearing have accepted their hearing loss and how well they are coping with their personal, classroom, and work environments.

3. I discuss communication with my clients/ students who are hard of hearing and make appropriate adjustments to accommodate their preferred style, mode, or needs.

4. I am familiar with assistive listening devices from which my clients/students may be able to benefit in the classroom, and home, and dormitory.

5. I discuss technology accommodations with my clients/students who are hard of hearing.

6. Our offices and classrooms are equipped with a listening system (loop, FM, etc.) to encourage full participation of hard of hearing students in one on one and group situations.

7. I frequently check to be certain I am being understood completely by my clients/students who are hard of hearing.

8. I assist teachers and other peers in facilitating effective communication with clients/students who are hard of hearing.

9. I provide counseling to clients/students who are hard of hearing regarding hearing aid expectations.

10. I counsel clients/students in techniques for handling stress and coping with people and situations made difficult by their hearing loss.

Appendix B

Chapter 4: Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING

Purpose

In order to advance, improve and expand employment outcomes for people with hearing loss, the Council of State Administrators of Vocational Rehabilitation (CSAVR) and <u>NAME OF ORGANIZATION</u>, herein commit themselves to work cooperatively in implementing the objectives set forth in this Agreement.

The CSAVR, an advisory body of the Rehabilitation Services Administration in the U.S. Department of Education on policy, regulations and the administration of programs affecting persons with disabilities, provides a forum for the collective deliberation of State Vocational Rehabilitation agencies on issues affecting the provision of vocational rehabilitation services to persons with disabilities; and informs the public about the effect of disability on the lives of persons with disabilities, particularly with respect to employment and economic independence.

BRIEF DESCRIPTION OF ORGANIZATION, HISTORY, AND GOALS HERE

Statement of Need

The <u>STATE AGENCY</u> and <u>ORGANIZATION</u> believe that quality employment outcomes for people with hearing loss can be substantially increased and improved through a closer working relationship between State Vocational Rehabilitation Agencies (VR) and state organizations and <u>ORGANIZATION</u>

It is projected that the number of people disabled by hearing loss will continue to increase in proportion to the total population of the country due to the aging of our society and ongoing exposure to harmful noise. The "Baby Boomer" population consisting of individuals born during the 20 years following the end of World War II in 1945 is now rapidly moving into the age group where hearing loss becomes considerably more prevalent.

With this, there needs to be a growing awareness of the multitude of variables which impact on the functional communication capabilities of those persons disabled by hearing impairment. The general community, as well as rehabilitation professionals and consumers themselves, need to understand the ramifications of this insidious condition, especially as it relates to employment issues at all levels.

The ongoing creation and development of new technological devices and systems which can be used for improved communication access can play a

major role in improved rehabilitation services to people with hearing loss. However, a greater focus must be placed on how to best encourage people, customers and professionals alike, to fully utilize these products. The willingness to use available assistive technology is an integral part of effective coping strategies, and unfortunately this is a quality that is much too often not found within this population. Adjustment to the communication obstacles and related problems can be the most difficult part of rehabilitation.

Terms of Cooperative Agreement

The <u>STATE AGENCY</u> and <u>ORGANIZATION</u> will communicate to their respective networks the desire for the State agencies and local chapters to establish agreements and the intended outcome of such agreements. To encourage a better understanding of hearing loss and how it can affect people, <u>STATE AGENCY</u> and <u>ORGANIZATION</u> will work together as outlined within this agreement in order to <u>STATE GOAL OF AGREEMENT HERE</u>.

STATE HERE HOW THE TWO ORGANIZATIONS WILL WORK TOGETHER TO ACHIEVE THE GOALS OF THE AGREEMENT

Throughout the life of the Agreement, <u>ORGANIZATION</u> will undertake to:

1. Establish and maintain ongoing channels of communication with appropriate staff and administrators of <u>STATE AGENCY</u>, addressing specific rehabilitation needs and concerns of individuals with significant hearing disabilities, as well as providing those hard of hearing consumers with relevant information regarding the availability of the various rehabilitation resources in their communities;

Encourage <u>ORGANIZATION</u> members at the state and local chapter levels to establish and maintain close working relationships with State VR agencies, including local offices, engaging in mutual referral activities that will result in the provision of increased service delivery to individuals who previously would not have been able to access services on their own for a variety of reasons;

Encourage <u>ORGANIZATION</u> members at all levels to participate in the State Rehabilitation Council activities as members of the Council or attendees at the SRC meetings, offering meaningful input towards the improvement and increase of appropriate VR and related services leading to more successful employment outcomes.

Authority

This agreement does not in itself authorize the expenditure or reimbursement of any funds. Nothing in this agreement shall obligate the parties to expend

appropriations or other monies, or to enter into any contract or other obligation

Further, this agreement shall not be interpreted to limit, supercede, or other wise affect either party's normal operations or decisions in carrying out its mission, statutory or regulatory duties. Nothing in this agreement shall be interpreted as altering any eligibility requirements for the public VR program authorized under Title I of the Rehabilitation Act.

Effective Date/Duration

This agreement shall become effective upon the signature of the underlined parties. This agreement may be terminated at any time upon 30 days advance notice by one party to the other, and may be amended by the written agreement of both parties and their designees.

_____

STATE AGENCY Director   Date

_____

ORGANIZATION PRESIDENT/DIRECTOR   Date

Appendix C

Chapter 4: Core Professional Competencies for the RCDs

Core Professional Competencies for the RCDs

Working for the California Department of Rehabilitation:

These competencies were developed by the Deaf & Hard of Hearing Services Section in conjunction with the Deaf and Hard of Hearing Advisory Committee.

Area One: Knowledge of medical, psychological and social impact

- Identify the appropriate communication mode used by the client (ASL, PSE, SEE, CASE, Cued, Close Proximity, Tactile, etc.)
- Assess speech reading/listening skills and respond appropriately for full and accurate communication
- Understand Adult Onset Hearing Loss
- Understand Cochlear Implants
- Understand mental health issues and substance abuse concomitant to hearing loss
- Work with clients from minority and underserved culture concomitant to hearing loss
- Understand clients with hearing loss who are Deaf-Blind, have a dual diagnosis and are HIV/AIDS
- Understand the potential of family dysfunction, such as the disintegration of traditional family roles
- Discuss the most frequent causes of hearing loss including etiology
- Discuss most frequently used medical treatment and surgical procedures including Cochlear Implants and Bone Attached Hearing Aids
- Understand medical terminology and terms used in audiological exam reports and the terminology used to describe severity of hearing loss (i.e.; deaf, hard of hearing, severe, profound, pre-lingual, etc.)
- Understand the knowledge of types and causes of deaf-blindness including Ushers Syndrome

Area Two: Knowledge of effective career assessment and counseling strategies

- Use techniques used for vocational and psychological evaluation.
- Insure an ability to use language appropriately to meet the individual's communication needs in all correspondence and written materials including letters, Individual Plans for Employment (IPE), Annual Reviews, and Case Closure Reports

- Develop communication skills
- Insure familiarity with appropriate terminology as it relates to deafness, hard of hearing, late-deafened, and deaf-blind
- Understand the potential pf family dysfunction, such as the disintegration of traditional family roles
- Demonstrate the ability to counsel clients regarding their social interactions and relationship building
- Ability to assess client aptitudes and skills specifics to the individuals with heating losses
- Familiarity with and ability to counsel clients in the SSI/SSP and SSDI programs and the implications of employment on such benefits
- Insure understanding of Ethics – Dual relationships, confidentiality
- Develop Case Management skills (priority setting) and Conflict Resolution
- Insure knowledge of Self Reliance and Advocacy

Area Three: Knowledge of education, career and employment opportunities

- Identify Private agency training programs, vocational and prevocational training programs, specialized community resources such as Center for communicative Development, ToolWorks, and hearing Impaired Lab and National Technical Instituted for the Deaf (NTID), Gallaudet University, and California State University, Northridge and other post-secondary training programs for the deaf and hard of hearing
- Insure familiarity with which AT devices are applicable to the various educational and employment settings
- Insure familiarity with the local labor market, jobs availability, skills employments are seeking; hiring trends, pay ranges, cost of living etc.
- Demonstrate an ability to conduct job task analysis to identify essential job functions and make recommendations for appropriate job accommodations and assistive technology
- Demonstrate an ability to form networks with employers
- Insure knowledge of and ability to prepare clients by instructions in writing resumes, preparing for interviews, appropriate professional demeanor, good grooming, etc.
- Develop special job placement and retention strategies for use with clients with a hearing loss

- Identify client attitudes and work behaviors and understanding and overcoming employer resistance

- Develop knowledge of job coaching services and the ability to determine when such services are needed

- Address job access/modification issues in the placement of clients with hearing losses

- Develop knowledge of and ability to refer or connect clients and employers with resource for and after the case is closed

- Insure familiarity with and ability to apply the Workforce Investment Act (WIA) and the Ticket to Work and Work Incentives Improvement Act (TWIIA)

- Insure Knowledge of and ability to utilize Regional Centers, Supported Employment, Workability, TPP, and 504 Plans.

Area Four: Knowledge of resources for community integration

- Identify the appropriate communication mode used by the client (ASL, PSE, SEE, CASE, Cued, Close Proximity, Tactile, etc.)

- Insure knowledge of the role and functions of sign language interpreters, interpreter training, and their type of certifications

- Demonstrate the ability to match the client with the most appropriate interpretation services to meet each individual's communication needs

- Demonstrate the ability to assess speech reading/listening skills and respond appropriately for full and accurate communication

- Demonstrate the ability to use language appropriately to meet the individual's communication needs in all correspondence and written materials including letters, Individual Plans for Employment (IPE), Annual Reviews, and Case Closure Reports

- Insure knowledge of Activities of Daily Living (ADL), Communication skills, Personal management skills and Supported Living skills

- Insure familiarity with the most commonly used adaptive devices (i.e.; Assistive Listening Devices, pagers, TTYs, amplifiers)

- Understand the development and provision of Homemaker Plans

Area Five: Knowledge of Assistive Technology (AT) as a resource for consumers

- Insure knowledge of the sources of AT aids and services

- Insure familiarity with AT devices are applicable to the various educational and employment settings

- Insure familiarity with alternative communication techniques and assistive listening device training

- Be able to research AT information and maintain knowledge of the latest developments in AT and insure knowledge of the source for AT aids and services

- Familiarity with which AT devices are applicable to the various educational and employment settings

- Familiarity with available AT assessment and evaluation resources

- Familiarity with alternative communication techniques

- Understanding of and ability to proceed with the Department's purchasing policies and procedures for AT and prepare appropriate supportive justifications

Appendix D

Chapter 5: Sample Accommodation Agreement for Speech-to-Text Accommodations

SAMPLE ACCOMMODATION AGREEMENT FOR SPEECH-TO-TEXT ACCOMMODATIONS

Georgia Perimeter College, Atlanta, GA.
Center for Disability Services

Accommodations Agreement

For

Services for Students Who are Deaf or Hard of Hearing (D/HH)

2006–2007

Classroom Accommodations

In order to provide accommodations in a timely manner, it is necessary for students who are Deaf or hard of hearing to:

Identify yourself to the Center for Disability Services (CDS) and provide documentation of a disability.

Meet with a counselor to register with CDS and determine appropriate accommodations.

Register for classes as soon as possible, and provide CDS with a copy of your schedule. *Accommodations may not be available if a student registers less than two weeks before classes begin.*

Notify CDS if your schedule changes in any way (temporary or permanent). This includes room changes, time changes, etc.

On the first day of class or in any new situation, please identify yourself to the Interpreter or Captionist. Exchange contact information.

If the Interpreter or Captionist does not come to class, notify CDS immediately. If problems arise between the student and the service provider, discuss them together. If assistance is needed, contact the Coordinator of D/HH Services. Avoid discussing the issues with friends and/or other interpreters because this can cause awkward and stressful situations.

If you need to be absent or are running late to class, contact your Interpreter or Captionist immediately. If you do not show up in class, the person providing the accommodation will wait for 20 minutes, then leave. This will be considered an absence from class.

If you need to be absent from class for ANY reason you must ALSO contact CDS at _____.

If a student misses three classes without notifying CDS, accommodations will be suspended until the student communicates with the Coordinator of D/HH Services.

Follow class attendance policies. If a student is late or absent from a class, he or she is responsible for getting the information missed and making up the work. Interpreters/Captionists/Notetakers are not responsible for providing information missed when the student was not present. You will need to contact the instructor or a fellow student during the break or after class to get caught up.

**CDS staff and students must adhere to Georgia Perimeter College policies. Georgia Perimeter College polices take precedence over all CDS policies.

Requesting accommodations outside of the classroom

Contact CDS and fill out an accommodations request form at least three days prior to the event. Request forms are available at CDS.

You must know the date and start/end time as well as the location of the assignment. The more information you can provide the better.

Inform CDS if any changes occur regarding the request for accommodations ASAP.

If you need to meet *briefly* with an instructor or other students after class, ask the Interpreter/Captionist if he or she is available. If not, you will need to make an appointment and request the service.

I have read and understand the above policies and agree to follow them in order to receive appropriate accommodations in a timely fashion.

Student—Print Name _____
Date_____

Signature_____

CDS representative _____

SAMPLE ACCOMMODATION AGREEMENT FOR SPEECH-TO-TEXT ACCOMMODATIONS

Harper College, Palatine, Illinois

Speech to Text Services

Responsibilities of Captionists

Harper College Captionists are expected to conduct themselves in a manner consistent with the C-Print Standards established by the National Technical Institute for the Deaf (i.e. Captioners shall maintain confidentiality, render the message faithfully, refrain from interjecting personal opinions, and function in a manner appropriate to the situation, etc.)

Captionists may at times need to share classroom accommodation-related issues with other campus staff on a 'need to know' basis. The deaf/ hard of hearing program staff regularly uses a team approach in collaboration and sharing of work-related information. As a result, there will be time when Captionists share confidential information about students and work experiences for the purpose of improving the quality of services.

In case of a student 'no-show,' Captionists should wait 10 minutes for daytime classes, and 15 minutes for evening classes. If the student does not show up, please return to the ADS office (for daytime assignments) and check with the Scheduler. For evening assignments, please call the Scheduler immediately. You will be compensated for the class time.

The policy for students is that if they must miss a class, they need to contact the ADS office at least two hours before the start of the class. Students may have services suspended for missing more than 3 classes without informing the ADS office in advance. In case of suspended services, Captionists will receive 50% pay, providing that they are available to accept alternate assignments, and there are no alternate assignments to be filled. This won't apply to final exams or class dates that were previously cancelled.

ADS implements a 48-hour cancellation policy. If you are not notified 48 hours in advance of a class cancellation, you will receive payment for that assignment.

If the Captionist has concerns about speech to text accommodations as an appropriate service for the student (e.g. student continuously disregards the captioning, etc.), the captionist should consult with the Scheduler.

Captionists are expected to develop dictionaries of technical vocabulary for each class captioned. It is the Captionist's responsibility to contact instructors to request any course materials that would assist in developing

dictionaries for the class. If course texts are not available from the instructor, the Captionist should notify the Scheduler for assistance in obtaining printed materials from publishing companies.

Captionists are not expected to transcribe visual information presented on blackboards, etc., for students. It is the student's responsibility to ensure that visual information is gathered (either by the student or a designated notetaker).

In team captioning situations, each Captionist has a cooperating, active role in the process by alternately providing service and back-up support. The team is to work out the logistics and cues to ensure a smooth, effective process prior to starting the class.

Captionists will provide the class transcripts to the students via a computer disk, or via email attachment. It is the student's responsibility to bring a disk to class and copy the transcript at the end of the class.

Class transcripts are to be shared only with the assigned student. No other students, even if they identify themselves as an ADS student, are to be given transcripts without prior approval by the Scheduler.

The Captionist is responsible for submitting bi-weekly timesheets in a timely fashion to the Scheduler.

In case of any questions/ situations that are not addressed in this document, please consult with the Scheduler and/or Coordinator of Deaf/ Hard of Hearing Services

I have read the above document and agree to follow the guidelines that delineate my responsibilities as a Captionist for students receiving support services from Access and Disability Services at Harper College.

Signature: _____

Date: _____

Communication Questionnaire

Instructions for the client:

- Please write or print clearly with a pen.
- Take your time answering these questions with as much detail as possible.
- Add comments, especially if you are having extra trouble in an area.
- Try to answer all of the questions you can, don't skip any.
- **Return this questionnaire to your counselor.**

Instructions for the Counselor:
(If you want a formal evaluation and report)

- IMPORTANT - review this questionnaire before sending it.
- Add any comments or insights that you may have.
- Include a recent audiogram and hearing aid evaluation.

Mail to: **Fax to:**
Beyond Hearing Aids, Inc.   859-371-1363
6900 Houston Rd., Bldg. 500, Suite 3
Florence, KY 41042

Purpose for this questionnaire:

Hearing aids offer a tremendous improvement to hearing in everyday situations. But hearing aids alone are not always enough when you face a difficult listening situation. There are products called assistive devices that can enhance the benefits of your hearing aids and improve the areas that you find difficult.

All the information you provide will be used to help evaluate which technology will work most effectively for you. **That's why it is critical that both you and your counselor provide as much information as possible.**

All information contained herein is strictly confidential.

Beyond Hearing Aids, Inc.
6900 Houston Rd., Bldg. 500, Suite 3 • Florence, KY 41042 • 1-800-838-1649 Voice/TTY • 859-371-1363 fax
www.beyondhearingaids.com

Communication Questionnaire

Client Information: Today's Date _____ Audiogram Attached ☐

Name _____ Date of Birth _____

Address _____

City _____ State _____ Zip _____

Daytime Phone No. (____)_____ Evening Phone No. (____)_____

If we have any questions, may we call you directly?

Referred by _____ Counselor _____

How do you most often communicate?	How would you describe your overall hearing loss without hearing aids?
____ Sign language	
____ Fingerspelling	___ Mild ___ Severe
____ Speaking & listening	___ Mild to moderate ___ Severe to profound
____ Speechreading & lip reading	___ Moderate ___ Profound
____ Tell people how to talk to me	___ Moderate to severe ___ Don't know

Please answer the following miscellaneous questions:

When was your last audiogram? _____

How old were you when you started experiencing a hearing loss? _____

How many years have you been wearing hearing aids? _____

Are you in the process of receiving new hearing aids? _____

Do you live alone or with others? (please list) _____

Do you have vision problems? _____

Do you live in a: ☐House ☐Condo ☐Apartment ☐Mobile Home ☐Dorm?

Do you have a working doorbell? ☐ Yes ☐ No

Are you attending school or training classes? Please describe: _____

_____

Are you experiencing any problems communicating in class? Please describe:

_____

Are you using any support services during classes? Please describe: _____

_____

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www.beyondhearingaids.com

Communication Questionnaire

Please describe your experiences with hearing aids

Please check the statement that best describes your situation:

☐ I do not own a hearing aid, and

    ☐ I am interested in finding out if one can help me.

    ☐ I am not interested in getting a hearing aid at this time because:

    _____

☐ I owned a hearing aid at one time but don't use it now.

    Why did you stop wearing the hearing aid?

    ☐ I felt the aid was physically uncomfortable

    ☐ I did not know how to operate and/or maintain the aid

    ☐ I did not find the aid very helpful

☐ I own a hearing aid and use it: (mark how often you use the hearing aid)

    ☐ All day, every day ☐ Off and on during the day ☐ Only on special occasions

☐ I would use my hearing aid more often if... (write in ways you think your hearing aid could work better for you): _____

Circle the type of hearing aids or Cochlear Implant you use:

Programmable?   ☐ Yes   ☐ No

Behind the ear	In-the-ear	Totally-in-the-ear
Completely-in-the-canal	Eyeglass	Body hearing aid
Ear level speech processor	Bodyworn speech processor	

Left Ear	**Right Ear**
Make and model: _____	Make and model: _____
Age of aid: _____	Age of aid: _____
Telecoil or direct audio input?	Telecoil or direct audio input?
_____	_____

Communication Questionnaire

Please tell us about work

Occupation _____

Place of employment _____

I work ☐ Full time ☐ Part time

I travel overnight for my job _____ nights a month

My major job duties include (list) _____

_____

_____

Describe in detail how hard it is to communicate with the following people when doing your job and include notes if background noise is a problem.

Boss _____

_____

Co-workers _____

Customers _____

_____

Do you regularly attend meetings and have problems

participating because it's difficult to hear? ☐ Yes ☐ No

How many meetings do you attend a month? _____

How many people are in the meetings? _____

Are the meetings held in the same or different rooms? _____

Please list any assistive devices you now find helpful

_____

_____

_____

_____

Communication Questionnaire

Please tell us how you use the phone

Do you use the telephone with your hearing aids? ☐ Yes ☐ No   Cell phone ☐ Yes ☐ No
If No, explain why: _____
If Yes, I use my hearing aid(s) when listening on the phone by:
    ☐ Using the "T" (telecoil or telephone switch)
    ☐ Holding the telephone receiver next to the hearing aid microphone
My hearing aid(s) squeal when I use the telephone this way. ☐ Yes ☐ No

Brand & model of cell phone _____
Brand & model of work phone _____
Do you use a headset? ☐ Yes ☐ No   Type: _____

Please rate the level of difficulty in these areas

I have difficulty hearing/understanding sounds in the following situations.
Circle examples and locations that apply and note any further details at the right.

Scale: **N** - Never   **S** - Sometimes   **O** - Often   **A** - Always

Home	Work	Difficulty hearing…	Please circle When hearing aids are:			Notes & details
☐	☐	My telephone ringing	IN	OUT	BOTH	
☐	☐	Conversations on my telephone	IN	OUT	BOTH	
☐	☐	My alarm clock	IN	OUT	BOTH	
☐	☐	Someone knocking at the door	IN	OUT	BOTH	
☐	☐	Someone ringing the doorbell				
☐	☐	The television, stereo, radio				
☐	☐	The smoke detector or fire alarm				
☐	☐	One-on-one conversations at home, work, doctor's offices, banks				
☐	☐	In small groups (5 or less) at restaurants, family gatherings, meetings				
☐	☐	In large groups (6 or more)				
☐	☐	At a meeting w/one main speaker				
☐	☐	In a place of worship, church, synagogue, meeting room				
☐	☐	At work with my co-workers				
☐	☐	While in a car				

Beyond Hearing Aids, Inc.
6900 Houston Rd., Bldg. 500, Suite 3 • Florence, KY 41042 • 1-800-838-1649 Voice/TTY • 859-371-1363 fax
www.beyondhearingaids.com

Communication Questionnaire

If you have difficulty hearing the phone or doorbell ring at home, please sketch the layout of your home below, indicating where the phone jacks are located.

Do you have an existing doorbell? ☐Yes ☐No

Please describe the situations that are most difficult for you that you would like to see improved. If you have difficulty at work, be sure to describe those areas. Feel free to make any notes and write any thoughts.

_____

_____

_____

_____

_____

_____

Thank you for filling out this form.

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www.beyondhearingaids.com

Chapter 6 Appendix—Communications Tips

Communications Tips for the Speaker

1. This sheet consists of two parts. Part one discusses what a speaker can do to promote clear communication with a person with hearing loss. Part two discusses what the person with hearing loss can do to promote clear communication with a speaker

2. Get the person's attention before you speak. If you start talking before they are looking at you, chances are they won't understand what you say.

3. Do look at the person you're speaking to. Do not put obstacles in front of your face. This includes coffee cups, hands, pencils, facial hair, etc. Many people with hearing loss rely on speechreading to assist their understanding.

4. Do not have things in your mouth. This includes gum, candy, cigarettes, etc. You don't want the person with hearing loss speechreading your gum chewing!

5. Speak clearly and at a moderate pace. Speak slowly, but naturally. Do not shout.

6. Use facial expressions, gestures, mime, and whatever else helps make your message visible.

7. If you are not understood, try to say the same thing using different words. If that doesn't work, writing a few key words may help the person with hearing loss understand. If that doesn't work, write the whole sentence.

8. If the person with hearing loss doesn't understand what you said, don't dismiss it with something like "It's not important." or "I'll tell you later." Try saying it a different way.

9. When you change the subject, be sure the person with hearing loss knows what the new subject is.

10. Do not stand with your back to a source of light. The glare from the light can make it difficult for the person with hearing loss to see you. If they can't see you, they can't speechread you.

11. When in doubt, ask the person with hearing loss what you can do to improve communications.

Communications Tips for the Person with Hearing Loss

This sheet consists of two parts. Part one discusses what a speaker can do to promote clear communication with a person with hearing loss. Part two discusses what the person with hearing loss can do to promote clear communication with a speaker.

1. Pick an appropriate place to communicate. Someplace with good lighting, little background noise, and few distractions is good.

2. Anticipate difficult situations and enter them with an appropriate strategy. This includes things like trying to anticipate what terms might be used, what questions you might be asked, how to improve the environment. Be proactive and set things up for communications to succeed.

3. Tell the hearing person how she can best communicate with you. She will probably appreciate it.

4. Ask for rephrasing and written key words if you're not understanding.

5. If you don't understand something, be as specific as you can be in explaining what you missed. Say something like, "I understood everything up #ame of the street."

6. Try to arrange breaks if the conversation or meeting is a long one.

7. If you discover that you've said something that doesn't fit the conversation (and you will), use humor to make everyone (including yourself) feel at ease. This doesn't mean that you should make fun of yourself, but that you recognize that the situation is amusing.

8. Don't monopolize the conversation. That's boring for everyone.

9. If it's just not working, arrange to try again when the probability of success is better, perhaps in a better environment or when you're less tired.

10. Do not bluff! If the conversation is important enough for you to participate, it's important enough for everyone to know that communication happened!

Appendix E

Chapter 7: Example of an Audiological Report

EXAMPLE OF AN AUDIOLOGICAL REPORT

Ears To You Hearing and Balance Center

Name: Dave I. Kanthear
Evaluation Date: 06/06/06
Address: 1234 Future M.D. Drive
        Anytown, NY 11111
Sex: Male
Age: 20 years
D.O.B: 6/25/86
Phone: (101) 101-1100
Referred by: Ima Campus, M.D.
Patient ID # 12345

History and Observations

Mr. Kanthear was referred to Ears To You Hearing and Balance Center for a hearing evaluation by Ima Campus, M.D. Mr. Kanthear was accompanied to today's visit by his fiancé, Janelle. Mr. Kanthear reported recently experiencing sudden hearing loss in both ears. He noted that he first noticed the hearing loss while sitting in his anatomy and physiology class last week. He stated that his professor's lecture began to sound fuzzy and nearly inaudible. Mr. Kanthear reported that following the sudden hearing loss, he began to feel dizzy and nauseous. Mr. Kanthear reported visiting Dr. Campus after class who prescribed him with steroids in an attempt to preserve and/or restore his hearing.

Mr. Kanthear stated he had his hearing tested in elementary, middle and high school and the test results always indicated that he had completely normal hearing in both ears. Mr. Kanthear perceived that he has experienced a high-pitched ringing in his ears since the start of the sudden hearing loss. He reported a history of both occupational and recreational noise exposure, while working on construction jobs in the summer and as an avid right-handed hunter. He has never used hearing protection. He also stated that he frequently listens to his iPod at moderately loud listening levels. Mr. Kanthear does not indicate a family history of hearing loss. He stated that other than his recent hearing loss and tinnitus, he is very healthy. He does not report any problems with headaches, head injuries, ear infections or surgeries. Additional history is unremarkable at this time.

Hearing Test Results

Otoscopic Examination: Otoscopy revealed clear ear canals with normal appearing tympanic membrane landmarks bilaterally.

Immittance Testing: Jerger Type A tympanograms were obtained for the right and left ears, indicative of normal middle ear function bilaterally. Ipsilateral and contralateral acoustic reflexes (reference stimulus ear) were performed at 500, 1000, and 2000 Hz. Ipsilateral and contralateral reflexes were present at elevated levels at 500 Hz and absent at 1000 and 2000 Hz in both ears.

Pure Tone Audiometry: Pure tone results were obtained using insert earphones. Pure tone testing revealed a mild sloping to severe sensorineural hearing loss bilaterally. Uncomfortable loudness levels (UCLs) for pulsed tones were obtained at 95–115 dB HL for octave frequencies from 500–4000 Hz bilaterally.

Speech Audiometry: Speech reception thresholds (SRTs) were obtained at 55 dBHL bilaterally, which are consistent with pure tone findings in both ears. Word recognition scores were 96% correct in the right ear and 92% correct in the left ear for monosyllabic words presented at adequate listening levels (95 dB HL) in a quiet environment. Most comfortable listening levels (MCL) to speech were obtained at 85 dB HL in the right ear and at 90 dB HL in the left ear. Uncomfortable loudness levels to speech were obtained at 100 dB HL in both ears.

Summary and Impressions

Today's results indicate that Mr. Kanthear exhibits a significant sensorineural hearing loss with normal middle ear function in both ears. Acoustic reflexes were consistent with Mr. Kanthear's degree of hearing loss in both ears. Today's findings are consistent with Mr. Kanthear's hearing complaints. This was Mr. Kanthear's first visit; therefore, previous test results were not available for comparison. Mr. Kanthear may be a good candidate for amplification in the future; however, otologic follow-up is necessary at this time due to the sudden onset of Mr. Kanthear's hearing loss.

Recommendations

We discussed the results of today's evaluation with Mr. Kanthear and his fiancé and agreed upon the following recommendations:

He should schedule an appointment with an ENT physician as soon as possible in order to determine the cause of his hearing loss.

He should return for a hearing aid evaluation if it is determined that his hearing loss is permanent. Amplification options will be discussed at that time.

He should utilize the communication strategies discussed with him today.

He should immediately contact the Student Access Center at his university.

Please do not hesitate to contact me with any questions or concerns that may arise.

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Anne B. Clark, Au.D., CCC-A

Doctor of Audiology