

FM for Adults

Chapter 8

Improving Outcomes of FM Use by Adults: The Role of Counseling, Coaching and Instruction

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Introduction

A common complaint of adults with hearing loss is difficulty understanding speech in noise. To illustrate this point, consider the data in Figure 1, which shows the Words-in-Noise (WIN) (Wilson, 2003) performance of a typical patient in our clinics, WR. The top panel in Figure 1 shows the numbers of words correct on the left vertical axis and equivalent percent words correct performance on the right vertical axis as a function of signal-to-babble (S/B) ratio on the horizontal axis for adults with normal hearing. The bottom panel shows WR's performance. Note that a person with normal hearing would need an approximately 3.6 dB S/B ratio to achieve 50 % correct word recognition, while WR needs a 14.8 dB S/B ratio to achieve the same performance. Despite the use of state-of-the-art bilateral hearing aids, with adaptive directional microphones, digital signal processing noise reduction, and feedback cancellation, WR remains unsatisfied with the outcomes of hearing aid use, particularly in noisy situations.

FM technology provides a viable solution for patients such as WR. Indeed, the results of several studies demonstrate that speech recognition in noise performance by adults with hearing loss is better when an FM system is coupled to a hearing aid than when a hearing aid is used alone (Jerger, Chmiel, Florin, Pirozzolo, & Wilson, 1996; Boothroyd, 2004) even when the hearing aid utilizes current directional microphone technology (Lewis, Crandall, Valente, & Enrietto, 2004). In addition, both Jerger and colleagues (1996) and Boothroyd (2004) found that many of the participants in their studies expressed a preference for listening when the FM devices were coupled to hearing aids. Despite such positive findings, few participants in the Jerger et al (1996) study and none of

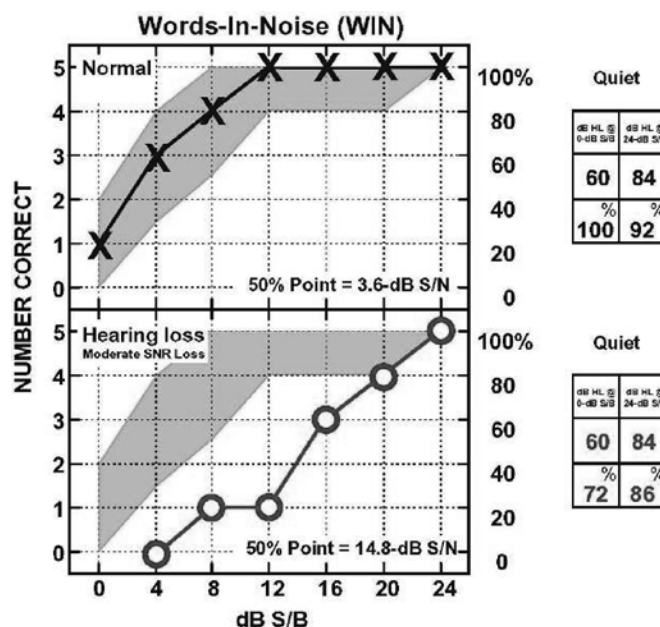


Figure 1. Performance on the Words-in-Noise (WIN) test for normal hearing listeners (top panel) and for a listener with a moderate sensorineural hearing loss (bottom panel).

the participants in the Boothroyd (2004) and Lewis et al (2004) studies elected to use FM systems at the end of the study trial period.

Boothroyd (2004) reported expecting cost would be an issue in the adult's decision to use FM systems, but none of the study participants asked about price. At the end of the study, many of the participants made comments indicating the initial explanation, demonstration, and instruction (both verbal and written) was

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inadequate for their optimal use of FM systems. This observation led Boothroyd (2004) to conclude that adults would need “considerable counseling, instruction, and coaching, extended over several sessions” (p. 32) for successful FM use. Lewis et al (2005) drew a similar conclusion after examining the self-report of benefit from hearing aids alone and hearing aids coupled to FM devices. Although they found no statistically reliable differences between the two conditions, they believed the lack of a differential benefit for FM use was due, at least in part, to the fact that participants were only given minimum training. Further, Lewis et al., postulated that outcomes likely would be improved if a focus was placed on the use of the FM to address an individual’s specific problems.

Evidence Counseling, Coaching and Instruction Improves FM Outcomes

Chisolm, Noe, McArdle and Abrams (2007) reported positive real-world outcomes for adult FM users who were provided with systematic patient education and counseling centered on individual treatment goals. Counseling, instruction, and coaching regarding FM use was provided over a 6-week trial period to veterans who were eligible to receive FM systems through the VA National Hearing Aid Program at no cost to the individual. Thirty-six veterans (58–85 years old) with moderate to profound hearing losses were recruited for the study. Participants wore bilateral behind-the-ear (BTE) hearing aids and reported a lack of satisfaction with hearing aid use in listening situations where FM systems could help (e.g., in noisy situations, listening in meetings, riding in cars, etc). Participants were fitted bilaterally with Phonak Microlink FM systems and individualized goals were developed, using the Client Oriented Scale of Improvement (COSI) (Dillon, James, & Ginis, 1997). In addition to providing routine instruction regarding the use and care of the FM systems, participants were given individualized verbal and written instructions

focusing on how to use the FM system to achieve each goal.

Role-playing was also utilized to demonstrate appropriate use of the FM system for achieving the goals. At the end of the 6-week

trial period, positive outcomes of FM use were obtained for the self-perception of communication performance, in both average and adverse listening situations in the home, work, and in social settings, as measured through the Communication Performance subscales of the Communication Profile for the Hearing Impaired (CPHI) (Demorest & Erdman, 1987); and, in terms of satisfaction with device use in

a variety listening situations, as measured through the MarkeTrak survey instrument (Kochkin, 1990). Perhaps most important, all 36 participants elected to keep and utilize FM systems at the end of the trial period. At 12–18 months post the trial period, 30 of the 36 veterans continued successful use of the FM systems.

Based on the positive outcomes of the Chisolm, Noe, McArdle and Abrams(2007) study, there was an increase in the number of veterans considered for a trial period of FM use at the VA Healthcare Center, Bay Pines, FL (Chisolm & McArdle, 2007). The clinical protocol consists of 2–3 visits over a 2–4 week period of time. The primary criterion for patient referral for an FM trial period is a lack of satisfaction in a situation where an FM system could be useful. Individualized COSI goals are established for FM use and patients are provided with verbal and written instructions focused on the goals. Each patient receives graphic support in the form of a pocket-sized laminated index card containing a picture of each component of the FM system utilized, with simple written instructions for how to set and/or use the device in specific listening situations. In addition, role-playing is utilized as needed. After an initial instructional session, patients return in two weeks to determine if further follow-up is needed. Follow-up occurs if COSI goals are not met or if it appears that reinstruction is needed. When either occurs, the patient is provided additional instruction and guidance and rescheduled for return in two weeks. If, at the third visit, goals are still not met or the patient continues to have

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difficulty with the FM system, the device is returned and other approaches to intervention are considered. Retrospective analysis of the first 100 participants referred for a trial period of FM use revealed that 9 records were incomplete. Of the 91 complete records, 6 veterans refused a trial period when shown the FM devices. Seventy-one (71) of the remaining 85 participants were judged to be “successful” FM users and 14 as “unsuccessful”. Success was determined by (a) meeting individualized goals for FM use as measured through the Communication Scale of Improvement (COSI) (Dillon et al., 1997); and (b) continued use of the FM system at the end of the trial period.

In attempting to determine if there were characteristics associated with unsuccessful vs. successful FM system use, Chisolm and McArdle (2007) noted that statistically significant differences were found between the groups in terms of both age and hearing loss, with unsuccessful FM users being older and having greater hearing losses, on average, than successful FM users. Caution was suggested, however, in generalizing from these findings to individual patients, as among the successful FM users was an 86 year old man, with a right ear 3-frequency pure tone average (PTA) at 500, 1000, and 2000 Hz equal to 105 dB HL and no measurable hearing in the left ear. In addition there were two successful FM users who were in their 90s and four individuals whose 3-frequency PTAs exceeded 100 dB HL in both ears, as well as six individuals whose 3-frequency PTAs were in the 40-50 dB HL range, bilaterally. The heterogeneity of successful adult FM users highlights the importance of utilizing the criterion of lack of achievement of success with well-fit hearing aids for meeting individualized goals as indicative of the need for a trial period of FM use.

Although it is clear that high uptake rates for FM use can be obtained when systematic patient education and counseling centered on individual treatment goals is provided, research with the veteran population may not be generalizable to patient populations who must pay out-of-pocket for devices. As a first step in determining if systematic counseling, coaching and instruction would result in positive outcomes and increased uptake rates in the private pay

sector, the first author undertook a pilot project in which 16 private practice audiologists and two university based audiologists participated between November 2006 and March 2007. Audiologists were asked to develop individualized goals for FM use and were provided with written guidelines and materials for addressing the patients’ goals. Of 35 patients reported to participate in FM trial periods, decision data for purchase of FM systems was not reported for seven. Of the 28 for whom the purchase decision was reported, 25 (89 %) obtained FM systems, with 12 individuals also purchasing new hearing aids.

In addition to purchase decision, outcomes data from the International Outcomes Inventory-Hearing Aids (IOI-HA) (Cox et al., 2000) for hearing aid alone and for FM use were available for 16 of the 25 post-trial FM users. The IOI-HA consists of seven items assessing outcomes in the domain areas shown on the horizontal axis in Figure 2. Each item has five possible responses, each with a separate response continuum. For all items, higher numbers are associated with more favorable responses.

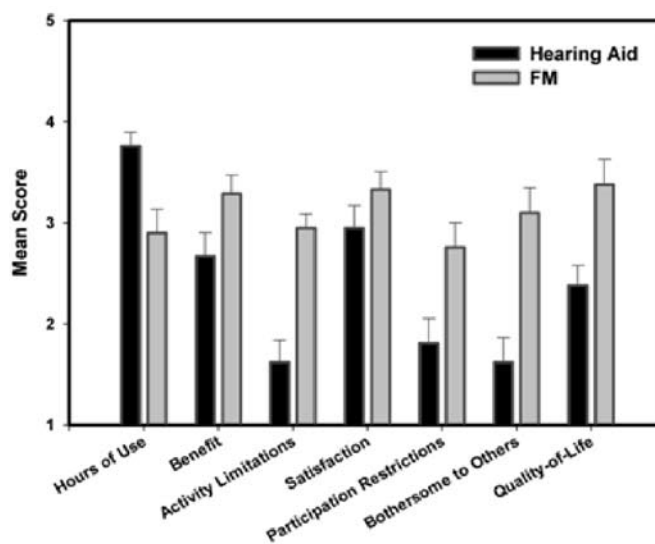


Figure 2. Means and standard errors for responses to the International Outcomes Inventory (IOI) for Hearing Aid use alone and for the use of FM systems with hearing aids.

As shown in Figure 2, mean responses for all items, except “hours of use”, were higher for FM systems than for hearing aids alone. The results of statistical analyses confirmed that FM system use resulted in significantly better outcomes in all domains except “hours of use” and “device satisfaction”. For “hours of use”, the patients reported wearing hearing aids alone significantly more time than with FM systems. This finding was not surprising as similar results were reported by Chisolm, Noe, McArdle and Abrams (2007). For “device satisfaction”, the mean score for FM system use was higher than for hearing-aid use alone, although the difference was not statistically significant. Taken as a whole, the results of the pilot study suggest that with the use of a systematic approach to counseling, coaching, and instruction, positive outcomes and high uptake rates for FM use by adults can be obtained in the paying population.

Strategies for optimizing counseling, coaching and instruction

The importance of systematic approaches to instruction and counseling for improving outcomes is not specific to FM devices. As discussed by Chisolm, Smith, McArdle and Reese (2007), there is a large body of patient education and counseling literature focusing on methods for enhancing comprehension and recall for many health-related behaviors. Indeed, before a patient can act on our recommendations for FM

use in daily life, the patient must understand the information we are providing. While healthcare professionals often believe that their patients comprehend their messages, research shows that the information provided is often unfamiliar to patients and is presented via technical terminology and complex sentence structures which can inhibit understanding (e.g., Ley, 1997). The problem often is compounded when the patient is in a stressful situation, or when he or she perceives a power and/or educational imbalance, resulting in a hesitancy to admit any lack of understanding (e.g., Ley, 1997).

Even if we find ways to ensure that the information provided about FM systems is understood clearly, successful outcomes will not occur unless our patients remember what we tell them. Unfortunately, research data indicate that 40–80 % of information delivered by healthcare providers is forgotten immediately (Kessels, 2003). Indeed, research shows that new hearing aid users often forgot important information regarding use and care (Reese & Hnath-Chisolm, 2005; Reese & Smith, 2006). Thus it would be logical to assume that a new user of an FM system also will forget important information.

Margolis (2004) pointed out that we can help our patients understand and remember the nature of their hearing disorders and how to manage them through the use of: (1) simple, easy to understand formats for information presentation; (2) organization of information into specific

categories, with introduction of each category; (3) supplementation of verbal presentation with written and graphical materials, such as cartoons and pictures; (4) the making of specific not general recommendations; (5) the use of clear language with simple sentence structures; and, (6) asking patients questions to make sure they understand.

Recently Yanz (2006) suggested considering principles of adult learning to enhance memory for hearing aid information. Specific recommendations involved: (1) considering individual experiences and needs, through informal discussion or use of a procedure such as the COSI; (2) providing experiential learning opportunities; (3) sharing of real-life experiences; (4) use of multiple learning modalities; and, (5) provision of multiple exposures to new information.

Positive outcomes for FM use also can be enhanced if training and counseling approaches consider the importance of self-efficacy for health-related behaviors. Self-efficacy, which is defined as a person’s confidence that he or she can perform a set of skills required for the successful completion of specific tasks and goals, influences an individual’s motivational level, the acquisition of new knowledge, and the development of new abilities (Bandura, 1997). Research shows that self-efficacy for many health-care activities (e.g., diabetes management, weight control, balance function, etc.) is related to good compliance and positive

outcomes, including improvement in quality of life (Smith & West, 2006).

Self-efficacy beliefs for hearing technologies, including FM systems, can be improved by providing patients with mastery and vicarious experiences, through the use of verbal persuasion, and through attending to the individual’s physiological and affective states (Smith & West, 2006). Mastery experiences involve the patient successfully completing a task itself. Strategies which can enhance the provision of mastery experiences include: (1) working with simple skills first; (2) provision of extensive practice in the use of new skills; (3) the use of role-playing activities; and, (4) development of clear, specific goals.

Vicarious experiences occur when the patient observes others being successful with skills, as can be demonstrated through: (1) having peers or significant others practice the new skills; (2) showing video demonstrations of other adults successfully engaging in the targeted behaviors; and, (3) promoting the use of cognitive rehearsal (e.g., as would occur by asking an individual to think about the steps needed to successfully use an FM system in a restaurant before practicing the actual steps). Verbal persuasion occurs when others express belief in the capabilities of an individual to accomplish a task through the use of appropriate and encouraging feedback. Finally, a person’s physiological and emotional reactions while attempting new tasks can influence self-efficacy beliefs. Strategies which can be used to control emotional and physical states during orientation and training with FM devices include (1) allowing for plenty of time; (2) taking breaks when stress occurs; (3) focusing on simpler tasks first; and, (4) provision of a calm training atmosphere.

Application of healthcare memory, adult education, and self-efficacy principles to counseling, coaching and instruction in FM use.

In our work we have utilized techniques and recommendations from the memory and healthcare, adult education, and self-efficacy literature to guide our approach to counseling, coaching, and instruction of adult patients being fitted with FM systems. A summary of our approach is provided in Table 1.

Table 1. Techniques from the memory and healthcare, adult education, and self-efficacy literature applied to work with adults using FM systems.

- Realistic, individualized goal setting
 - Use of the COSI procedure
- Provision of practice
 - Work with simpler skills first
 - Allow for mastery
 - Use of role-playing activities
 - Involve communication partners
 - Enhance vicarious experiences
- Provision of at-home practice
 - Written materials
 - Graphic support cards
- Provide follow-up instruction

The first step in our approach involves setting individualized goals for FM use. We find the use of the COSI (Dillon et al, 1997) procedure particularly useful for setting of clear, specific and realistic goals. Having realistic, achievable goals allows for the provision of guidance and motivation to the individual throughout the learning process.

Provision of practice is perhaps the most important strategy to facilitate mastery of FM system use. We begin with simpler tasks first and break training into sequential steps. For example, we

might begin by having the patient simply turn the FM transmitter on and off. Once the patient demonstrates success with this simple task, we would progress to a more difficult task, such as attaching the FM receiver(s) to the hearing aid(s).

The use of role-playing can be an important instructional approach. By observing the patient engaging in role-playing activities, the dispensing professional can assess how well a patient comprehends and recalls relevant information. Because FM system use often involves a communication partner, such as a spouse, we find it extremely beneficial to include that person during instruction, particularly during role-playing activities. An important aspect of role-playing is that it can allow the patient to experience success relative to the individualized goals, thus increasing self-efficacy beliefs.

At home review of information can be enhanced through the use of supplemental written materials. Bernier (1993) provides several guidelines for the development of effective written materials, including the use of: (1) large, clear font such as 14-point Arial or Times New Roman; (2) both upper and lower case letters; (3) content free of complicated terminology; (4) short, simple sentences; (5) clear graphics or illustrations; and, (6) bulleted information as opposed to lengthy text. As discussed, in our clinical work with FM systems, we provide step-by-step written instructions for how to use specific equipment to meet each person's individualized goals, as well as small, laminated index cards showing the pictures of each FM component with instructions for using the device.

Recall that in our initial exploration into improving the uptake rate and outcomes of FM use in the adult population we utilized a protocol that included four follow-up visits (Chisolm, Noe, McArdle & Abrams., 2007). Because such an approach was difficult for implementation in our clinics, we developed a protocol which consisted of 1-2 follow up visits (Chisolm & McArdle, 2007). By assuring that at least one, and if needed, two follow-up visits are routinely provided patients are assured of having multiple learning opportunities. By allowing for the provision of

reinstruction at the first follow-up visit, the success rate for the first 85 patients for whom data were available equaled 84 % (71 of 85 patients). Such a success rate would justify any additional clinical time needed for the provision of FM systems to the adult population.

Summary and Conclusion

FM device use can be successful for adult patients, allowing them to successfully meet individualized communication goals. Successful use of FM systems requires the provision of systematic counseling, coaching, and instruction. To optimize our approach, it is important that we learn about methods that can improve our patients' comprehension, recall, and self-efficacy regarding use of FM devices. Through the setting of individualized goals, provision of practice, use of appropriate supplemental written materials, and the provision of multiple opportunities for learning we can assist our patients in achieving successful outcomes from FM system use.

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