

DOI: 10.36648/aural-rehabilitation.5.1.24

# “We Teddy”: A Device to Connect Speech Pathologists, Audiologists, and Caregivers Throughout Aural (Re)Habilitation Management

**Weaam Al-Ameer**

Sinad City For Special Education along with Tatweer Education Holding Company, Saudi Arabia

**Corresponding author:** Weaam Al-Ameer, Sinad City For Special Education along with Tatweer Education Holding Company, Saudi Arabia, Tel: 966541122107; E-mail: weaamalameer@gmail.com**Received Date:** April 20, 2021 **Accepted Date:** May 20, 2021, **Published Date:** June 10, 2021**Citation:** Weaam Al-Ameer (2021) “We Teddy”: A Device to Connect Speech Pathologists, Audiologists, and Caregivers throughout Aural (Re) Habilitation Management. J Surgery Emerg Med Vol.5 No.1:24**Copyright:** © 2021, Weaam Al-Ameer, This is an open access article distributed under the terms of creative Commons Attribution Licence which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Abstract

Exchange of information about an individual's care that occurs between a team of multidisciplinary care providers and clients is called effective clinical communication. Effective clinical communication must be continuous and provide a timely, accurate, and appropriate transfer of information that leads to open, honest, and respectful relationships with ample opportunities for clarification and feedback. Moreover, communication among multidisciplinary specialists with caregivers is essential for sharing patient data, developing management plans, and updating client cases. However, speech-language pathologists, audiologists, and caregivers can struggle to communicate effectively without a sufficient device or system to keep them connected.

Communication between a multidisciplinary team, a client, and a caregiver facilitates better service and increases understanding of a client's case. In contrast, a lack of teamwork and inadequate documentation in healthcare results in misdiagnoses, inappropriate management plans, and inadequate care outcomes that negatively impact a hearing-impaired client's quality of life, including educational opportunities and social bonds. Moreover, a delayed transfer of information or a late referral also affects the quality of client care and the timeliness of management. Therefore, multifaceted communication is fundamental to inform, research, discuss, and evaluate a client's ongoing condition.

The “We Teddy” device is designed to provide care professionals and caregivers the opportunity to effortlessly communicate about client results and progress, leading to better client outcomes. “We Teddy” is specified for aural (re)habilitation clients and the professionals who manage their cases, especially speech-language pathologists and audiologists. The device can serve in healthcare settings as the basis for communication between speech-language pathologists and audiologists to keep them updated with the latest client diagnoses and progress.

The “We Teddy” device is shaped like a bear with a memory card inside its ear and three buttons on its stomach designated for the speech-language pathologist, the audiologist, and a music player for the client, respectively. The main component of the device is the memory card that saves all client data from every

specialist, allowing any specialist, a caregiver, or a client to review necessary data for understanding and collaboration. Additionally, the ear-shaped camera can aid specialists in quickly diagnosing hearing status (including severity and type) for both ears.

Moreover, the three buttons provide access to pre-recorded audio that function with the memory card, electronically storing data and playing music at different frequencies for the benefit of the client. Data is stored either via a wired or wireless device with limited information about client status and progress. The “We Teddy” device comes in two sizes: a regular size for clinician usage and a smaller size to provide the caregiver with ease of transport.

The “We Teddy” device benefits client awareness of diagnoses and management plans, facilitating enthusiasm to achieve goals by cooperating with clinician-prescribed regimens. Caregivers of pediatric clients can also be comforted by knowing care plans and schedules without missing critical elements. Moreover, clinicians can also be at ease, knowing the diagnoses of other team members that significantly affect the progression of cases to promote effective collaboration and coordination to ensure successful results.

To conclude, clinical communication is essential for multidisciplinary teams to promote desired outcomes for clients. In this way, the “We Teddy” device can offer access to clinical diagnoses from the source rather than asking caregivers and clients to carry vital documentation with them that can be forgotten, damaged, or lost. The saved diagnoses on the memory card by a specific specialist cannot be edited nor deleted by another specialist, the caregiver, nor the client.

Finally, the two sizes of the “We Teddy” device offer equal benefits: the regular size facilitates clinician usage. At the same time, the smaller size provides convenience for caregivers by functioning as a key chain that carries the memory card to and from medical appointments. This following article introduces the “We Teddy” device as a conduit for interprofessional communication in a healthcare setting to promote effective results.

**Index terms:** speech-language pathologist, audiologist, caregiver, client, aural rehabilitation, “We Teddy” device, interprofessional communication.

## Introduction

In the fields of speech-language pathology and audiology, the need for practitioners to stay connected with each other and caregivers is essential to monitor client progress effectively. A speech-language pathologist (SLP) often experiences significant difficulties in communicating with other practitioners and caregivers about aural (re)habilitation management sessions. For instance, during a speech-language evaluation, a pediatric client may be referred for a speech disorder; however, if the SLP and the audiologist (Aud) do not communicate, a client's hearing loss may remain undiagnosed; unfortunately, this can and does occur. Because SLPs and Auds share a vital connection in the management of clients with hearing impairments, SLPs are often concerned about the lack of direct contact with Auds, who are responsible for the results of the client's hearing test (audiogram) and ear pressure test (tympanogram). These two tests are the foundation of an aural (re)habilitation program and measure the severity of the client's hearing loss. Thus, after the Aud's assessment, the SLP begins the (re)habilitation program.

Aural (re)habilitation (AR) is "a problem-solving process aimed at minimizing disability and avoiding or minimizing the resultant handicap" (Stephens, 1996, p. 57). Hearing impairment seriously affects an individual's communicative and social functions (Kyle et al., 1985; Nobel, 1986), leading to emotional problems that severely impact the quality of life (Carmen, 2001; Hull, 1995; Roykjar & Pedersen, 1997; Skollerud, 1996; Tesch-Romer, 1996). Therefore, the union of auditory training, socializing approaches, speech-language assessment and treatment, and counseling therapy can enhance a client's quality of life. Creating a working environment where SLPs and Auds collaborate within the scope of their practices leads to successful communication and trust between team members, caregivers, and clients. In such an environment, the collaboration between SLPs and Auds is the primary relationship necessary for the success of therapeutic outcomes (Montano, 2014). Therefore, improving the joint contributions of these specialists will benefit both care providers and clients, leading to increased provider satisfaction and optimal client care. According to Health Force Ontario (2010), the successful establishment and implementation of interprofessional collaboration are dependent on the collaborative efforts of various individuals and organizations, including, but not limited to, government, regulatory bodies, policymakers, health and social care professionals, health care professional organizations, educators, researchers, clients, and families.

Because of the need for direct connection, the "We Teddy" device supports multidisciplinary teamwork, including caregivers, to help clients reach their goals efficiently. In keeping with the development of evidence-based interventions in scientific communication and deficits (Bernstein Ratner, 2006; Finn, 2011), practitioners must theorize methodical approaches to choose and use technology. Moreover, SLP training programs are responsible for teaching and modeling critical technology-related skills for practitioners. Therefore, to achieve advanced communication and academic goals, assistive technology increasingly plays a significant role in helping hearing impaired clients with communication difficulties.

"We Teddy" is an electronic device that aims to help health care professionals stay connected and updated with each other despite the differences in professional settings. Furthermore, "We Teddy" helps caregivers and clients remain well informed about results given and improvements made during management sessions. Every "We Teddy" device has a memory card that saves all client results and progress reported by SLPs and Auds; consequently, caregivers and clients can benefit from having their own "We Teddy."

To illustrate the effective use of the "We Teddy" device, consider a scenario where the Aud first saves audiogram and tympanogram results on the memory card, followed by the SLP saving the first stages of AR (e.g., detection, discriminations of sounds, etc.) along with an individualized client plan. "We Teddy" can then share the notes from the Aud and SLP with the caregiver and client, allowing them to review results and outcomes at home. In this manner, "We Teddy" can keep specialists updated and connected about the client's case while helping the caregiver review results and plans at home with the client.

### Potential uses for the "We Teddy" device

Effective communication between SLPs and Auds can help to inform the caregiver and maximize the client's quality of life with an established treatment plan that targets relief from suffering due to hearing impairment and ineffective communication. In 2020, the World Health Organization (WHO) reported "that approximately 466 million people worldwide have disabling hearing loss, and 34 million of these are children". The "We Teddy" device can serve this significant population in the following ways:

#### For audiologists

- Save all test results on the memory card
- Maintain a copy of the last hearing aid programming input on the memory card
- Facilitate the review of SLP progress and feedback notes about hearing aids and cochlear implants
- Save updates on client progress

#### For speech-language pathologists

- Facilitate connections with other primary professionals (e.g., otolaryngologists and neurologists)
- Allow for the review of the Aud's test results
- Provide an overview of the basics stages of aural (re)habilitation
- Facilitate the sharing of home programs with caregivers and clients

#### For caregivers

- Raise awareness of the collaboration of the multidisciplinary team
- Facilitate the review and implementation of home programs with the client
- Contribute to the client's awareness of results and progress

Moreover, "We Teddy" is also appropriate for use in other medical applications, including otolaryngology management, psychology management, and hearing aid and cochlear implant specialization.

To conclude, if primary care professionals can clearly and easily communicate with each other and caregivers, clients with hearing impairments that require a prolonged treatment process may experience earlier interventions and a more rapid increase in communication skills.

## Objective

The objective of this study is to help health care professionals, namely SLPs and Auds, communicate directly with each other, caregivers, and clients through the "We Teddy" device. Moreover, caregivers and clients may also benefit from the "We Teddy" device through the review of updated results from all practitioners.

### Scope of the project

When clients have a hearing impairment, whether unilateral or bilateral, they are unable to communicate effectively. This study focuses on easing communication between different service providers and clients to help them stay connected and more easily follow the process of AR, thereby making treatment more accessible and successful.

## Methodology

The “We Teddy” device is useful for hearing-impaired clients and health care professionals to communicate. “We Teddy” is an electronic device with two sizes and is shaped like a small bear to attract users who are mostly children. The material of this original design is metal, with disk and cotter pins (twistable fasteners) that attach the legs, arms, and head to a body that is firmly stuffed to support the pins. The internal parts consist of voltage regulators and a radio frequency (RF) module. “We Teddy” also includes a memory card with software that stores client information. The design is functional for use in a clinical setting and is easily sterilized for safe use with all clients.

“We Teddy” has multiple purposes: it serves as reinforcement for pediatric clients, an audiology button, a speech-language pathology button, and an information storage unit for client case files and reports. The six ling sound music check on “We Teddy” device acts as a reinforcement for the child to determine a hearing aid’s adequacy. The audiology button allows other clinicians to access the most updated audiological information about a client case, such as the type of tympanogram and the level and type of hearing loss. Auds provide this shared information through proprietary software downloaded from the “We Teddy” memory card; moreover, Auds can select present options with a limited number of answers for each client related to the clinician’s most common audiological concerns.

The speech-language pathology button allows SLPs to access information about the client’s most recent achievement levels, and SLPs can set and edit levels using the “We Teddy” software, which offers predefined levels of AR (e.g., level one, which includes detection of sounds and recognition of different environmental sounds). Lastly, “We Teddy” also has a memory card that saves all patient reports, data, and hearing aid/cochlear implant programming and includes a photograph of the ear showing the severity and type of hearing loss, which allows Auds to examine the type and severity of hearing loss manually.

The smaller size of “We Teddy” is solely made of fabric and weighs less than the larger size so that the caregiver can easily carry it as a key chain. This smaller-sized model contains a simple memory card for data saving. This version of “We Teddy” connects with practitioners in three possible ways: (1) through a wireless Bluetooth connection, (2) through a wired connection via USB cable, or (3) through the insertion of a memory card into a computer. Moreover, the practitioner can transfer information back to the caregiver via the memory card. This exchange of information allows “We Teddy” to facilitate necessary communication between practitioners while helping caregivers implement successful treatment plans for clients.

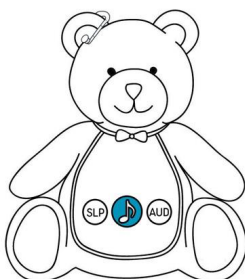


Figure 1. Three buttons for clinician use (SLP, AUD, and Music)

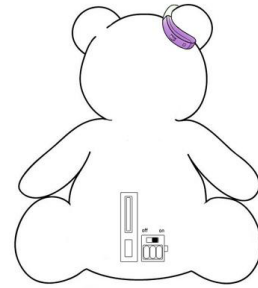


Figure 2. The posterior view, with the location of the memory card, battery, and USB port

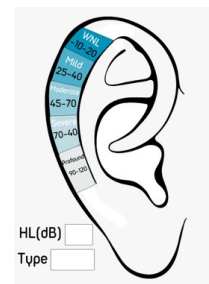


Figure 3. The included ear image to facilitate general diagnosis

## Results

The “We Teddy” device provides a convenient way for practitioners, caregivers, and clients to stay connected. Once data is stored and processed in the device, users may access this data via one of the three buttons shown in Figure 1, allowing for aural playback of the desired information.

## Discussion and conclusion

In the fields of speech-language pathology and audiology, practitioners require easy access to each other and caregivers to provide coordinated and updated client care. However, SLPs and Auds currently lack this ability to collaborate due to the unavailability of a system that provides direct communication. The “We Teddy” device offers an assistive and effective method of communication between hearingimpaired clients, health care providers, and caregivers. “We Teddy” allows a variety of practitioners to be concurrently aware of the client’s long-term progress while allowing the caregiver to express concerns, ideas, and needs about the treatment plan to a multidisciplinary team. Furthermore, “We Teddy” uses simple components, such as pushbuttons, voltage regulators, and an RF module, creating a cost-effective solution to a long-standing need.

### Acknowledgment

Special thanks to Rawan Abdulaal, a speech-language therapist and friend, for the current design of the “We Teddy” device.

## References

- ASHA. (2020). Augmentative and alternative communication: Key issues. Retrieved 27 April 2020, from [https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942773&section=Key\\_Issues](https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942773&section=Key_Issues)
- Carmen, R. E. (2001). Hearing loss and depression in adults. *The Hearing Review*. March: 74-79.
- Drager, K., Light, J., & McNaughton, D. (2010). Effects of AAC interventions on communication and

- language for young children with complex communication needs. *Journal of Pediatric Rehabilitation Medicine*, 3(4), 303-310. <https://doi.org/10.3233/prm-2010-0141>
- Eaton, B., & Regan, S. (2015). Perspectives of speech-language pathologists and audiologists on interprofessional collaboration. *Canadian Journal of Speech-Language Pathology and Audiology*, 39(1), 6-18.
- Edwards, J., & Dukhovny, E. (2017). Technology training in speech-language pathology: A focus on tablets and apps. *Perspectives of the ASHA Special Interest Groups*, 2(10), 33-48. <https://doi.org/10.1044/persp2.sig10.33>
- Falkenberg, E. (2007). Holistic aural rehabilitation: A challenge. *Scandinavian Journal of Disability Research*, 9(2), 78-90. <https://doi.org/10.1080/15017410701201329>
- Finn, P. (2011). Critical thinking: Knowledge and skills for evidence-based practice. *Language, Speech, And Hearing Services in Schools*, 42(1), 69-72. doi: 10.1044/0161-1461(2010/09-0037)
- HealthForceOntario. (2010). Implementing interprofessional care in Ontario.
- Hull, R. (1995). Hearing in aging. Singular Pub. Group.
- Montano, J., & Spitzer, J. (2014). Adult audiologic rehabilitation.
- Montano, J., & Spitzer, J. (2014). Adult audiologic rehabilitation. *New Electronics*. (2020). Latest in-depth technology news. Retrieved 27 April 2020, from <https://www.newelectronics.co.uk/electronics-technology/>
- Poobrasert, O. (2017). Educational assistive technology for students with communication disorders. *Journal of Communication Disorders, Deaf Studies & Hearing Aids*, 5(2). <https://doi.org/10.4172/2375-4427.1000178>
- Ratner, N. (2006). Evidence-based practice: An examination of its ramifications for the practice of speech-language pathology. *Language, Speech, And Hearing Services in Schools*, 37(4), 257-267. doi: 10.1044/0161-1461(2006/029)
- Rega, A., Somma, F., & Simeoli, R. (2018). A Review of scientific studies on the effectiveness of speech generating devices to stimulate communication in people with autism. *ICERI2018 Proceedings*. <https://10.21125/iceri.2018.2182>
- Roikjær, S. Pedersen, S. (1997). Aldring + Høretab = Presbycusis [Aging + hearing loss = Presbycusis.] University of Copenhagen.
- Saunders, G., & Chisolm, T. (2015). Connected audiological rehabilitation: 21st-century innovations. *Journal of the American Academy of Audiology*, 26(9), 768-776. <https://doi.org/10.3766/jaaa.14062>
- Skollerud, S. (1996). Kommunikativ kompetanse hos voksne som får nedsatt hørsel [Communicative competence in adults with acquired hearing loss]. University of Oslo.
- Tesch-Romer, C. (1996). Psychologische Aspekte der Schwerhörigkeit im Alter [Psychological aspects of hearing impairment in the elderly]. *Audiologische Akustik* 2: 46-58.
- Welling, D. R., & Ukstins, C. A. (2013). Fundamentals of audiology for the speech-language pathologist. Jones and Bartlett.
- World Health Organization. (2020). Deafness and hearing loss. Retrieved 28 April 2020, from <https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss>