# HEARING (RE)HABILITATION

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Hearing habilitation and rehabilitation is the area of knowledge which drives the therapeutic process of hearing function alterations. Hearing disability prevents and/or hinders the acquisition of oral language in children with pre-lingual hearing impairment, and causes communication difficulties in children, adults and the elderly with post-lingual hearing loss. This speciality emerged some decades ago along with audiology, but expanded after World War II.[1] It became better known with the appearance of professionals with a doctorate degree in the field.

After the diagnosis of hearing impairment and hearing aid (HA) selection and fitting, the hearing function must be developed or recovered, depending on the time of appearance of the disorder. In the case of acquired hearing loss, a rehabilitation process must be carried out, with the aim of repairing lost function. In the case of congenital hearing loss, habilitation is needed, to initiate the development of this function. It is worth noting that, both in the habilitation and rehabilitation of hearing function, the intervention is procedural, and requires a group of common procedures, beginning with the diagnosis of hearing loss, progressing to hearing aid selection and fitting, then extending to auri-oral speech pathology therapy, with family counselling and guidance.

*Children in auditory/oral language stimulation activities*
*Photo: Marta Maria Resegue and Joseli Soares Brazorotto, CPA USP Bauru*

The fitting of electronic devices provides the hearing impaired person with access to the speech signal, at audible levels, demonstrating a significant gain in hearing performance. Furthermore, it enables the development of individual potential for the construction of oral language at levels and pace quite close to those of a normal hearing child, introducing new acoustic information in the child's every day context. This is an essential element for oral language acquisition and monitoring of his/her own speech. This further urged speech pathologists to introduce a new therapeutic model to suit hearing skills.

The new therapeutic profile presents language situations in a model which allows the child to perceive concepts in structured situations and transpose them for use in everyday expressive language. Using this model, we intend to report what we have proposed in the area of hearing habilitation for hearing impaired children.

First, however, it is necessary to put the hearing habilitation and rehabilitation in the context of the Brazilian scene. Although this knowledge area emerged some decades ago, in our country it has been developed by a group of speech pathologists since the 1970s. It was in 2004, with the determination of the Ministry of Health's Hearing Health Policies, that auri-oral speech pathology therapy was included in the Public Health System. (We refer here to policies number 2073 GMMS, 587 SAS/MS and 589 SAS/MS available at http://portal.saude.gov.br/saude)

Attending to this governmental resolution, professionals committed to the area of need have presented proposals in all levels of services in hearing habilitation. Our programme offers services to children with disabling hearing impairments ranging from 40 dB up to 120 dB, in their early years, from birth to the age of seven. They attend the institution four times a week, part-time, where they are seen by a multi-professional team, and in the other period they attend a mainstream school. In the first months, we consider the area of oral language development through hearing, by means of auri-oral speech pathology therapy. Children whose oral language development is not sufficient for communication, those who cannot benefit from amplification, or those whose parents choose sign language, are referred to an educational programme that has bilingualism as its method, a programme within the same institution, but at another site and time. In this study, we will present the programme carried out with children who benefit from the use of hearing aids and auri-oral speech pathology therapy.

*Children in auditory/oral language stimulation activities*
*Photo: Marta Maria Resegue and Joseli Soares Brazorotto, CPA USP Bauru*

Considering hearing as the main route to acquiring oral language, the principles of this therapy include:

- Early intervention
- Effective use of the electronic device
- A structured, active family, open to the therapeutic process
- Specialised speech pathology therapy sessions, with an emphasis on the development of hearing skills and oral language.

Furthermore, it recommends the integration of the child in a regular school

with support of the speech pathologist and active parental participation.

In the therapeutic process, some tests are carried out for the beginning of auri-oral speech pathology therapy, including:

- Free field audiometry with amplification
- Speech recognition threshold (SRT)
- Speech detection threshold (SDT), with amplification
- Questionnaires - *Infant Toddler: Meaningful Auditory Integration Scale* (IT-MAIS)[2] and *Meaningful Use of Speech Scales* (MUSS)[3] and, also,
- Ling´s 6 sounds test (/a/, /i/, /u/, /s/, /ch/, /m/) for evaluation of detection, discrimination and recognition skills.

Other speech perception tasks, according to the age of the child, must be carried out as well. From these results, we establish the hearing and language category of each child, and start the work, monitoring his/her development. The Tables below present the synthesis of hearing categories proposed by Geers[4] and the language categories proposed by Bevilacqua et al.[5]

The children in this programme are attended by a multi-professional team, assisted by a speech pathologist and audiologist. Each member of the team performs in groups of 3 or 4 children, a programme proposed by the assistants that is similar to that proposed by SKI-HI Institute, (http://www.skihi.org/) or the curriculum of Clarke School for the Deaf (http://www.clarkeschool.org/) aiming at developing communication, language and hearing skills. Role-play and dramatisations of daily activities are widely explored, besides music, poetry, jokes, tales, among other educational games and incentives to encourage reading and writing from the age of five years. In addition, these children are given two weekly sessions of auri-oral speech pathology therapy, so that their specific difficulties can be worked out. These therapies may be individual or in groups, depending on the child's need.

When children are able to continue developing oral language in a natural and relaxed manner, the therapies focus only on the improvement of speech production and broadening of language, alongside hearing aid monitoring. Nevertheless, when the child does not accomplish such skills, we utilise more didactic and formal strategies for language development. [6]

In the case of children who do not present any development in a 3-4 month period, all proposals are revised, starting with the following initial questions:

- Is the hearing aid appropriate for the child?
- Is the auri-oral speech pathology therapy proposal appropriate?
- Are there serious external factors which are negatively influencing the therapy?
- Has the professional been able to interact correctly with this child and his/her family?

## Guiding Principles of Auri-Oral Speech Pathology Therapy

A hearing aid listening check must be carried out daily at the beginning of every session, as well as the child's response to the Ling's 6 sounds test,[7] which verifies sounds reception across the speech frequency range. In case the child does not perform as expected, the hearing aid and earmould are sent for a complete technical evaluation.

| Table 1: Language Categories |
|---|
| **1** – Does not speak. |
| **2** – Emission of isolated words. |
| **3** – Emission of simple phrases. |
| **4** – Emission of complex phrases. |
| **5** – Fluency. |

Therapeutic activities promote the construction of oral language, prioritising the hearing function and the determination of therapeutic goals which will allow the generalisation of other skills. Orientation and counselling are also provided during the role-play of some daily situations, in a demonstration house.

The whole habilitation process is interspersed with cognitive aspects which aid in the development of hearing functions and acquisition of oral language, such as attention, memory and hearing processing, which refer to the skills of hearing sequencing, hearing comprehension and temporal and spectral resolution. These skills favour the recognition of simple acoustic contrasts and segmental and supra-segmental traces, which are prerequisites for better speech intelligibility and understanding of complex linguistic structures.

The development of the hearing function allows the child to discover the rules of the language within his/her daily experiences (morphosyntatic structures), while acquiring oral language in situations that encourage a richer vocabulary and more natural spontaneous expression.

Speech pathologists must be facilitating agents, as are the parents, who focus on changing the child's reality, by helping him/her to improve hearing and communication performance, thus enriching the therapeutic process.

Parents are the first models for the development of oral communication, and the role of speech pathologists is to help them to provide productive and positive experiences in the construction of language through hearing. They must be capable of understanding the impact of hearing impairment, transforming the family routine, by developing suitable skills in the use and guidance of techniques that aid the development of language, speech and communicative

| Table 2: Hearing Categories |
|---|
| **0** – No detection of speech sounds. |
| **1** – Detection of speech sounds. |
| **2** – Perception pattern (standard). |
| **3** – Initiating the identification of words. |
| **4** – Identification of words through vowel recognition. |
| **5** – Identification of words through consonant recognition. |
| **6** – Recognition of words in open set. |

situations at home. The speech pathologist should guide them to:

1. Interpret the meaning of the child's first expressions.
2. Take notes, videotape and discuss his/her progress.
3. Interpret objectives, short and long term.
4. Develop confidence in relations with the child.
5. Inform their decisions.
6. Encourage hopes and courage to change their 'listening.'
7. Take always the child's interests and benefits into account.

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# INTERVENTION FOR HEARING IMPAIRED CHILDREN IN HEARING HEALTH PROGRAMMES IN BRAZIL


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In September, 2004, a Brazil Government resolution by the Ministry of Health established the National Policy of Hearing Health Attention.[1] This introduced guidelines for procedures and evaluation for promotion; prevention and identification of hearing disorders; diagnosis; hearing aid dispensing, and intervention for hearing impaired subjects of all ages.

The resolution aims to:

1. Offer comprehensive attention to the client, starting with identification programmes, diagnosis, provision of hearing aids and therapy.
2. Offer follow-up for unlimited time, as needed.
3. Establish referral networks within the public system.
4. Implement continuing education for professionals within the Health System.

There has been a great effort to implement more comprehensive programmes - to guarantee that the personnel and infrastructure exist to fulfill the needs of a child or adult diagnosed with a hearing impairment. For adults, this intervention is more closely related to adjustment to amplification and communication strategies in different environments, over a set time period. For children, however, the intervention process is much more complex. First of all, the hearing aids are adapted to provide auditory stimulation aiming at oral language development. Therefore, it is just the starting point of a rehabilitation process that will last for many years.

We firmly believe that an intervention programme should be in place before an identification programme for hearing disorders is implemented, as rehabilitation will be the main route for the flow of children diagnosed as hearing impaired. However, technology and short term results have attracted professionals and investments into diagnostic and hearing aid dispensing services, rather than implementing rehabilitation services.

*Deaf child during language stimulating activities using a story book. Centro Audição na Criança - DERDIC/PUC São Paulo, SP, Brazil*

*Photo: Beatriz Novaes*

The following require investment in personnel and are a long term commitment:

1. A multi-professional team for rehabilitation.
2. Support services for families.
3. School placement and support for mainstreaming programmes or special education.