REVIEW ARTICLE

2014 CODEPEH Recommendations: Early Detection of Late Onset Deafness, Audiological Diagnosis, Hearing Aid Fitting and Early Intervention

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Comisión para la detección precoz de la hipoacusia

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KEYWORDS
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Hearing Screening;
Childhood;
Hearing aids;
Interdisciplinarity;
Family

Abstract The latest scientific literature considers early diagnosis of deafness as the key element to define the educational and inclusive prognosis of the deaf child, because it allows taking advantage of the critical period of development (0–4 years).

Highly significant differences exist between deaf people who have been stimulated early and those who have received late or improper intervention.

Early identification of late-onset disorders requires special attention and knowledge on the part of every childcare professional. Programmes and additional actions beyond neonatal screening should be designed and planned to ensure that every child with a significant hearing loss is detected early.

For this purpose, the CODEPEH would like to highlight the need for continuous monitoring of children’s auditory health. Consequently, CODEPEH has drafted the recommendations included in the present document.

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PALABRAS CLAVE
Hipoacusia (congénita; diferida);
Audición;

Recomendaciones CODEPEH 2014: detección precoz de la hipoacusia diferida, diagnóstico audiológico y adaptación audioprotésica y atención temprana

Resumen La literatura científica más reciente señala el diagnóstico precoz de la sordera como elemento fundamental para definir el pronóstico educativo y de inclusión del niño sordo, pues permite aprovechar el periodo crítico de su desarrollo (0–4 años).


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Early Detection of Late-onset Hearing Loss

Almost half of the newborns that have a hearing loss do not have any of the known factors of risk for this alteration: this fact backs up universal screening. When populations selected depending on specific clinical factors of high risk for hearing loss are studied, the incidence of hearing disorders is increased by between 10 and 14 times, with special follow-up being important for these patients. It should also be remembered that more than 95% of the parents of children with auditory deficiencies have normal hearing. The extensive implementation of programmes of neonatal screening for hearing loss can lead to thinking that, once this pathology is ruled out at that times, it can no longer affect the child throughout his/her development. This is a false belief that can seriously damage the future of these children, given that not infrequent postnatal factors can cause hearing loss. Several studies show that up to 0.75–0.77 per thousand preschool children present permanent hearing loss in spite of having passed neonatal screening. Added to these children are the 0.25–0.56 per thousand that acquire or present hearing loss in a postnatal period and that likewise need these check-ups to diagnose hearing problems. According to Watkin, the prevalence could exceed 2.52 per thousand at birth (any type and degree of hearing loss), rising to 3.64 per thousand in the primary education stage. It has been seen in wide cohorts of children that neonatal tests, even in the cases of highly sensitive ones, identify only 56–59% of school-age children with hearing loss. Consequently, up to 1 in 10 children with congenital hearing loss would need detection through postnatal check-ups in spite of having well-established screening protocols. The prevalence of childhood hearing loss in the school stage is therefore thought to double what is expected in the neonatal stage; however, there are other studies that raise this figure to 5 times higher, and there are even authors that indicate that the overall prevalence of late-onset hearing loss is 10% over all the infant hearing losses, possibly reaching 20%. All of this suggests the need for diagnostic protocols that make it possible to identify the cases of postneonatal hearing loss.

The majority of late-onset hearing loss cases in childhood seem to be due to genetic defects. For that reason,
the current diagnostic tendency should aim at performing genetic studies that allow simultaneous study of many genes involved in hearing loss (at the current time, there are more than 150 loci and 64 genes). This could open the door to genetic therapy in patients with a mutation related to hearing loss, which would totally change the current panorama. If genetics does not explain the auditory pathology in a specific case, other causes would have to be considered, such as congenital cytomegalovirus (CMV) infection or vestibular aqueduct disorders, which would make CMV infection study and complementary imaging studies necessary. Children with diseases or situations of risk of hearing loss with possible onset in infancy should be closely watched, following this classification of the types and causes of late-onset hearing loss.

- Conductive hearing loss (Table 1).
- Sensorineural hearing loss (Table 2).
- Central hearing loss (Table 3).

Among all these causes, the following stand out for their frequency and importance:

1. Cytomegalovirus (CMV): congenital CMV infection is the most common cause, with prevalence of 0.5% in newborns, of which more than 94% are asymptomatic; of these, 22% develop either neonatal or late-onset hearing loss. Approximately 6% are symptomatic and, of these, 33%–60% develop hearing loss. The hearing loss is progressive in 11%–50% of the cases and late-onset in 5%–18%. Early diagnosis is important for considering drug treatment with ganciclovir or valganciclovir, given that several studies have shown their usefulness for improving hearing loss or preventing its progression in these children.

2. Serious head injury.
3. Neonatal Intensive Care Unit stay greater than 5 days: All children admitted to intensive care for more than 5 days should be considered as at very high risk of hearing loss, given that many of the associated pathologies affect this group of patients.

4. Serous otitis.
5. Genetic auditory neuropathy: These can affect the hearing as the only clinical manifestation.

**CODEPEH Recommendations with respect to early detection of late-onset hearing loss:**

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**Table 1** Causes of Conductive Hearing Loss.

<table>
<thead>
<tr>
<th>Table 1 Causes of Conductive Hearing Loss.</th>
<th>Middle ear</th>
</tr>
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<tbody>
<tr>
<td>Outer ear</td>
<td>Inner ear</td>
</tr>
<tr>
<td>Congenital</td>
<td>Conductive</td>
</tr>
<tr>
<td>Infection</td>
<td>Infection</td>
</tr>
<tr>
<td>Trauma</td>
<td>Ruptured eardrum</td>
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<tr>
<td>Obstruction</td>
<td>Otosclerosis</td>
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</tbody>
</table>

**Table 2** Causes of Sensorineural Hearing Loss.

<table>
<thead>
<tr>
<th>Table 2 Causes of Sensorineural Hearing Loss.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congenital</td>
</tr>
<tr>
<td>Hereditary</td>
</tr>
<tr>
<td>Non-hereditary</td>
</tr>
<tr>
<td>Acquired</td>
</tr>
<tr>
<td>Prematurity</td>
</tr>
<tr>
<td>Hyperbilirubinemia</td>
</tr>
<tr>
<td>EMO</td>
</tr>
<tr>
<td>Neonatal hypoxia/asphyxia</td>
</tr>
<tr>
<td>Intraventricular Haemorrhage grades 3–4, periventricular leukomalacia</td>
</tr>
<tr>
<td>Infection</td>
</tr>
<tr>
<td>Ototoxic drugs</td>
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<tr>
<td>Exposure to noise</td>
</tr>
<tr>
<td>Traumatisms</td>
</tr>
<tr>
<td>Tumours</td>
</tr>
<tr>
<td>Neurodegenerative syndromes (Charcot Marie, Friedreich ataxia)</td>
</tr>
<tr>
<td>Intoxication with heavy-metals</td>
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</tbody>
</table>

EMO: extracorporeal membrane oxygenation.

**Table 3** Causes of Central Hearing Losses.

<table>
<thead>
<tr>
<th>Idiopathic neuropathy (30%)</th>
<th>Acquired neuropathy (30%)</th>
<th>Genetic neuropathy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Associated with sensory-motor processes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not associated with other processes</td>
</tr>
<tr>
<td>Hyperbilirubinemia with exchange transfusion, 50% (Shapiro et al., 2001)</td>
<td>Charcot-Marie- Tooth disease (Kovach et al., 2002)</td>
<td>Q829X Mutation in the OTOF gene</td>
</tr>
<tr>
<td>Infectious causes, 10% (Race, 2005)</td>
<td>Friedreich ataxia</td>
<td></td>
</tr>
<tr>
<td>Prematurity</td>
<td>Ehlers Danlos syndrome</td>
<td></td>
</tr>
<tr>
<td>Neonatal hypoxia</td>
<td>Refsum disease (Oysy et al., 2001)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erythrokeratodermia (López-Bigas et al., 2001)</td>
<td></td>
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</tbody>
</table>
1. Carrying out Primary Care monitoring is needed after neonatal screening.

2. At each periodic visit under the “Healthy Child Programme”, the following must be assessed: auditory skills, middle ear status and developmental milestones. Using the algorithm proposed by the CODEPEH is recommended, applying it at 6, 12, 18, 24 and 48 months of age (Fig. 1). Children not passing these assessments must be referred to an ENT specialist immediately.

3. Careful examination of the middle ear is required for the children in whom a serious otitis is found and, if it lasts for at least 3 consecutive months, the children must be referred for otological assessment.

4. Children with developmental and behavioural anomalies must be assessed in the auditory sphere at least once by the ENT specialist, paying special attention in this case to recurrent or persistent serious otitis that can make the prognosis worse.

5. All children with an indicator of risk for hearing loss (Table 4), regardless of the findings in their check-ups, must be sent for audiological assessment at least once between 24 and 30 months of age. Children with indicators of risk that are closely associated with late-onset hearing loss, such as extracorporeal membrane oxygenation or a CMV infection, must undergo more frequent hearing assessments.

6. Confirming a hearing loss is a child is considered a factor or high risk with respect to the siblings, who must undergo audiological assessment.

7. All children whose family or teachers are particularly concerned about their hearing or communication, whatever their ages, must be referred immediately for the relevant assessments of hearing and language.

**Table 4** Factors of Risk for Childhood Hearing Loss.

| Family suspicion of hearing loss | Bacterial meningitis*
|-----------------------------|-----------------------------
| Family history of hearing loss | Syndromes with hearing loss*
| Hypothyroidism               | Neurodegenerative diseases*
| NICU stay of more than 5 days | Craniofacial anomalies*
| Exposure to ototoxic substances | Extracorporeal membrane oxygenation*
| Assisted ventilation         | Serious head injury*
| Chronic otitis               | Hyperbilirubinemia with exchange transfusion
| Perinatal infections (CMV, herpes, rubella, syphilis and toxoplasmosis) | Chemistry*

NICU: Neonatal intensive care unit.
* Very high risk factor for postnatal hearing loss.

**Infant Audiological Evaluation and Hearing Aid Adaptation**

The audiological diagnostic process, together with aural and language habilitation, have the same priority and have to be carried out in the first months of life to maximise the child’s optimum development. Both processes begin sequentially, but they develop simultaneously. The methods used for assessment vary in function of the age and the child’s acquisition of different skills and capacities for participating...
in the evaluation. Assessment protocols change with age. Six months is the age at which the electrophysiological tests are given, as the primary procedure for threshold estimation, in behavioural methods, which provide reliable results.

The brainstem auditory evoked potentials (BAEP) are usually the first test applied, although this should not be in isolation, without other tests. The reason for this is that the responses to the clicks correlate better with audiometric findings in the high frequency range, between 1000 and 4000 Hz.17-19 And, given that the click responses cannot be considered as referring to a specific frequency, they are unable to detect disorders at particular frequencies. That is why isolated BAEP use can lead to underestimating or not detecting a hearing loss at a specific frequency, depending on the degree and configuration of the hearing loss.20,21 However, the prediction of the audiogram through the auditory evoked potentials is possible, as long as they are obtained within the appropriate conditions and parameters. Behavioural thresholds correspond well to those obtained through potentials, with there being a difference around 10 or 20 dB.20,21,22 The auditory steady-state evoked potentials (ASSEP) have the advantage of predicting specific thresholds for different frequencies in the patients when they are unable to be obtained reliably and validly.20-24 It is an objective test, not only because it requires no collaboration from the patient, but also because the presence or absence of the response is based on statistical analysis and not in methods of visual assessment such as the BAEP. The ASSEP are used to complement the BAEP, not as a single test, to estimate the thresholds, given that sufficient information about and experience with them is unavailable as yet. Another advantage of the ASSEP is that they make it possible to test both ears simultaneously. Predicting thresholds using the ASSEP has been shown to be reliable for estimating the results of behavioural audiometry.27,28 The thresholds in adults with normal hearing or with hearing loss are estimated with this test with an error of between 10 and 15 dB.29 There is less information for children, but the test is known to obtain, generally speaking, a reliable prediction of thresholds in moderate hearing loss and in normal hearing in children.25

Tymanometry. Using high-frequency waves (1000Hz) offers more reliable results on middle ear function in children younger than 4 months old.30

Behavioural audiometry. Audiometry through observing behaviour provides information about the type of responses that the child produces and about his/her auditory development. For children aged more than 5 or 6 months, the technique of choice is visual reinforcement audiometry. For the conditioning, a good place to start is to use a verbal stimulus, because children find that more interesting than a tonal stimulus and respond naturally by turning their heads, which can be reinforced. The presentation of the frequencies, alternating lows and highs, will make it possible to construct an audiogram that contains part (if not all) of the information needed to predict the threshold of hearing loss. If the child becomes conditioned, his/her developmental and maturation level will not affect the thresholds found. Play audiometry is a term used to describe a technique in which playing is used to obtain the thresholds. It can be used from the age of 24 months, but it is more indicated at 2.5 years or 3 years. Conditioning is achieved after showing the child 4 or 5 guided responses or demonstrations. Conventional audiometry can be used when the child reaches the age of 5 or 6 years. The response is typically the same as that used for adults, showing the child to raise his/her hand when the stimulus is heard. As in all behavioural techniques, chronological age is not decisive in the test, the child's developmental level is.

Childhood Hearing Aid Adaptation

It has been demonstrated that all hearing loss causes modifications in the central auditory system and that early hearing aid adaptation will make these lesions revert. This phenomenon is known as "auditory acclimatization".31 At present, the need for bilateral adaptation is extensively documented; auditory amplification is also recommended for monaural hearing losses, independently of their level, although individualisation depending on each situation is required in severe cases.32

Deciding to proceed to a hearing aid adaptation has to be based on audiological data, on language development and on the child’s family, school and social environments. These data can also contribute to the decision-making process in selecting a device for the children with hearing loss.33 Each hearing aid adaptation for a child must be accompanied by proper long-term speech therapy treatment, as well as including the educational sphere. The Ear, Nose and Throat (ENT) specialist is in charge of coordinating all the activities of the interdisciplinary team and is the only one that can indicate the surgical or hearing aid treatments that are necessary (Royal Decree 414/1996, 1 March, regulating medical devices). Hearing aid establishments are considered medical establishments and, as such, they have to comply with the requirements (local, professional, resources, etc.) specified in the standards regulating them. They also have to have material for performing specific childhood audiometric diagnosis, such as a sound-proof booth and calibrated toys. Among the main functions of hearing aid establishments are: interpreting hearing aid prescriptions, determining anatomical and physiological ear characteristics, carrying out audiometries and all the actions required for adaptation, such as taking the impressions for the moulds and control and follow-up of the hearing aid adaptation. The results and responses of the child perceived during the hearing aid adaptation process must be contrasted with the teaching and speech therapy assessment carried out by the child’s speech therapists and teachers. Fundamentally, the adaptation and follow-up programme is developed in 3 areas: medical (ENT), hearing aid and speech therapy.

At present, with the programmes for early detection of hearing loss, a clear diagnosis of hearing loss is reached at very early ages. Consequently, the hearing aid specialists have to face very small ear canals and children that are incapable of indicating if they perceive the sounds or not; the specialists therefore have to orient themselves through observing the children’s reactions and physiological tests.34 It is undeniable that amplification is indicated when the loss exceeds 35 dB.35 In the case of profound hearing loss, adaptation for at least 3 months is recommended.
so that, if the response is inadequate, the hearing aid specialist can indicate the desirability of a cochlear implant. Unilateral hearing, even if mild, produces problems in the binaural integration of the message and in discrimination in noisy environments, as well as in proper sound location. Adaptation is currently indicated in these cases, given that amplification in this ear could be beneficial. Using hearing aids for a trial period is recommended, with follow-up during the first years of life.

The 3 steps that have to be implemented in childhood hearing aid adaptation are: selection, verification and validation. (a) Selection: the response to hearing aid adaptation is conditioned by the auditory pathology, the type of hearing loss and other neurological alterations, and not as much by the intensity of the loss. The correctly selected hearing aid is the one that provides the best amplification, bearing in mind the residual hearing of the child. Until the child is 10–12 years of age, conventional hearing aids have to be retroauricular and different types of moulds should be available to be able to achieve correct adaptation of the mould to the external acoustic meatus, especially for infants. In middle ear problems, such as ageneses or chronic suppurating lesions, bone conduction adaptation is usually necessary. With infants (who usually crawl around), directional microphones are not the best choice; omnidirectional ones are preferable. Mould design is also extremely important when children are involved. Great care is needed, given that their physical-acoustic characteristics vary according to the hearing loss, the volume of the external acoustic meatus and the hearing aid output pressure. Consequently, they have to be replaced when these parameters change. (b) Verification: the programme for hearing aid adaptation is normally established by the audioprosthologist. However, a consensus must be agreed with the ENT specialist, give that follow-up concerns them both; the programme has to be crossed-checked with the speech therapist as well. The basic references are found in Northern and Downs, who follow the criteria of “from shorter time of use to longer, from less sound exposure to greater sound exposure and from less complexity of sounds to greater complexity”. In the adaptation of small children, it is always good to be a bit conservative, because we do not have adequate information in early phases about recruitment thresholds of discomfort and about other factors, which will gradually be discovered as the child grows. (c) Validation: validation is the continuous process that tells us the benefits and limitations of correct hearing aid adaptation. The goal is for the audioprosthologist to ensure that the child receives the optimum signal, of both his/her own emission and that of the other people. It involves supervising both the hearing aid and the behaviour of the child during its use.

CODEPEH Recommendations related to audiological assessment and hearing aid adaptation:

1. The processes of audiological diagnosis and auditory accommodation are of the same priority and need to be developed in the first months of life to maximise optimum development of the child. These 2 processes begin sequentially, but they must be developed simultaneously.
2. The follow-up periods are as follows: for the first 18 months of life, continuous as demanded by each situation: from 18 months to 3 years, every 3 months; from 3 to 6 years, every 6 months; children aged over 6 years with stable hearing losses, each year.
3. The ENT specialist is the one in charge of coordinating the actions of the multidisciplinary team involved in hearing aid adaptation, together with the audioprosthologist and the speech therapist; the ENT specialist is responsible for indicating the hearing aid treatment.
4. Work groups should be formed for the diagnosis and comprehensive treatment of the children with hearing losses.
5. It is essential to involve the parents the treatment process of children with hearing deficiencies. To do so, throughout the entire process, the parents should be given extensive, understandable and true information, which adjusts expectations about the prognosis.
6. The results of the brainstem auditory evoked potentials (BAEP) should be complemented by performing auditory steady-state evoked potentials (ASSEP).
7. The results obtained in the brainstem auditory evoked potentials and those of steady-state have to be rounded out and confirmed through behavioural audiometry appropriate for the age of the child.
8. To perform a tympanometry on children younger than 4 months old, the use of high-frequency waves (1000 Hz) is recommended.
9. Until the child is 10–12 years of age, the conventional hearing aid must be retroauricular. Different types of moulds have to be available to be able to achieve correct adaptation of the mould to the external acoustic meatus, especially in infants.
10. The most appropriate hearing aids for infants are those with omnidirectional microphones, because they are always in the correct position to receive the sounds.
11. Binaural adaptation must always be carried out, unless the child shows behaviours that lead one to think that the adaptation in the poorer ear reduces the overall performance.
12. It is important to individualise each case, given that there may be children in whom a poor hearing aid performance can be explained by the presence of auditory neuropathy or because they present central lesions in the auditory areas.

Early Intervention

In relation to the treatment and follow-up of the child that is found to have a hearing problem, the 2010 CODEPEH Recommendations concluded that the action protocol should be followed under the following premises: immediacy of intervention with respect to the time of diagnosis; existence of referral itineraries that are easily identifiable by families and professionals; interdisciplinary coordination, with the intervention of qualified specialists and Early Intervention experts, as well as specialists in attention for children with hearing losses and family support; and the forecast of healthcare, educational and social benefits, which help the families.

Early Intervention are included in and affected by, to a greater or lesser extent, an extensive legal framework
produced in Spain since the beginning of the 1980s. The most relevant documents of the last 3 decades emphasise an evolution from a concept of intervention focused on the child, to a wider and overall concept that covers the child, his/her family and his/her environment. In this scenario, we must currently include the international Convention on the Rights of Persons with Disability (2006), a binding international standard ratified by Spain. This document, fully in force since 2008, highlights everything that Spanish legislation had already anticipated, although still insufficiently, from another less interactive and less social model.

Almost 15 years after the publication of the White Paper on Early Intervention in Spain, there is still no basic state regulation on this material. The development of standards by the various autonomous communities is uneven, in both forecasts and in precepts, as well as in the application of resources and funding. The White Paper on Early Intervention provided a necessary framework and produced sufficient technical consensus, evolving from the concept of “early stimulation” to that of “early attention”, and defined this as “The set of interventions aimed at the child population of 0–6 years in age, at the family and the environment, with the objective of answering as quickly as possible the transitory or permanent needs that children with developmental disorders or at risk of having such disorders present”. Another of its considerations was that “the modern conception of early intervention makes it necessary to have integrative diagnostic models available that consider, in addition to health pathologies, developmental and learning aspects and the other emotional and environmental contextual factors that affect the growth, maturation and development of the child”. Added to this is the fact that early intervention is not only indicated when the deficiency is already present, but also in cases at risk of developing it. This implies vigilance over the factors of risk that can cause the condition. These are goals inherent in this attention: reduce the effects of a deficiency or deficit on a child’s overall development; optimise, to the extent possible, the course of the development of the child; introduce the necessary mechanisms of compensation, elimination of barriers and adaptation to specific needs; prevent or reduce the appearance of secondary or associated effects or deficits produced by a high-risk disorder or situation; stretch a hand out to and cover the needs and demands of the family and of the environment in which the child lives; and consider the child as an active subject in the intervention.

In turn, the European Agency for Development in the Education of Students with Special Educational Needs indicated 3 priorities with respect to Early Intervention in 2010: 1. Reach the entire population that needs Early Intervention and support, and do so as soon as possible. 2. Guarantee the quality of the offer within specific quality standards, well defined and assessable, homogeneous in all of the State, without territorial differences signifying an added handicap. 3. Respect the rights of the boys and girls and their families, configuring responsible, family-centred services.

In early diagnosis of hearing loss, notable advances have been made under this change in paradigm, where (going beyond the purely clinical aspects) both support for the families as well as the hearing aid and speech therapy adaptation process are taken into account, incorporating them as part of the whole that constitutes comprehensive treatment for children with hearing loss. The Programme for Early Detection of Infant Hearing Loss, approved by the Spanish Ministry of Health and by the Autonomous Communities in 2003, is the most advanced country in our setting in this aspect. And, today, we can say that it is fully in agreement with the contemporary concept of Early Intervention and the social model that the International Convention on the Rights of Persons with Disability supports.

Hearing loss is a clear example of how what is specific to each administrative sector that intervenes in these ages (Healthcare, Social Services and Education), together with the different professionals (paediatrician, ENT physician, audioprosthologist, speech therapist, teacher, etc.) have to come together and participate, from a comprehensive, interdisciplinary focus, about the child and his/her family in a joint action that is planned, coordinated and convergent in resources, benefits and services.

As provided for in the programme jointly approved in 2003 by the Ministry of Health and the Autonomous Communities, the Public Administrations must guarantee this itinerary of attention and the continuity of the process, by interdisciplinary coordination through Reference Units.

According to the Report of the European Agency for the Development of Special Educational Needs (2003/04), in the countries in our European setting the policies related to attention and support for individuals with disabilities are planned based on 4 fundamental agreements: take action as soon as possible, guarantee the continuity of the process, avoid lack of coordination between services and benefits, and prevent the families’ bewilderment and searching from place to place.

From what has been presented, we can deduce the relevance of having an itinerary that is easily recognisable by all those involved and that can provide a coherent, appropriate and sufficient response to the needs and demands of the children with hearing loss and their families. Along these lines, nobody debates the scientific role that the family plays any longer; this role is unequivocally recognised and studied with interest. This is because it is no longer possible to understand or take care of a case without paying due attention to the family that lies behind it. It is accepted that attention, guidance and support for the family forms part of the treatment for and attention to the child with disability.

**CODEPEH Recommendations related to early intervention for child with hearing loss and his/her family:**

1. The regulation and universalisation of early intervention, establishing the ages of 0–6 years as the scope of attention.
2. The inter-administration and inter-sector coordination necessary.
3. The plurality of responses in attention to diversity.
4. The updating of competencies and specialised training for the professionals from the different settings that converge in the attention for the child with hearing loss and his/her family.
5. The incorporation of the families into the systems that concern them in relation to their children with hearing losses and their involvement at each level of intervention.
6. The establishment of referral circuits and itineraries of attention for the child and for his/her family; these are resources that are to be easily identified and coordinated, and that guarantee the continuity of the process.

7. The participation of the family association movement that acts as an agent and as a social network, developing family support programmes.

8. The creation of a basic common registry of the results from applying the Programme for Early Detection of Infant Hearing Loss in the entire country.

9. The establishment of scientific, terminological, procedural, technical (etc.) agreements that make it possible to describe and classify the needs existing in the child population affected or at risk.

10. The social information and awareness-raising, as well as among the agents involved, of the transcendence of early detection and diagnosis, of follow-up and monitoring of the factors of risk, and of the need to act as quickly as possible.

11. The continuous, exacting evaluation of services, resources, procedures and results, with quantitative and qualitative measurement using indicators of efficacy.

Conflict of Interests

The authors have no conflicts of interest to declare.

References


