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Screening for pre-school and school-age hearing problems: European Consensus Statement

Henryk Skarżyński, Anna Piotrowska *

Institute of Physiology and Pathology of Hearing, Zgrupowania AK "Kampinos" 1, 01-943 Warsaw, Poland

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ABSTRACT

Objectives: To formulate consensus statement and policies on structured hearing screening programs in pre-school and school-age children in Europe. This consensus will be brought before the European Union's Member States as a working and effective program with recommendations for adoption.
Methods: A distinguished panel of experts discussed hearing screening of pre-school and school-age children during the 10th Congress of European Federation of Audiology Societies (EFAS), held in Warsaw, Poland, on June 22, 2011. The panel included experts in audiology, otolaryngology, communication disorders, speech language pathology, education and biomedical engineering.
Results: Consensus was reached on thirteen points. Key elements of the consensus, as described herein, are: (1) defining the role of pre-school and school screening programs in the identification and treatment of hearing problems; (2) identifying the target population; (3) recognizing the need for a quality control system in screening programs.
Conclusions: The European Consensus Statement on Hearing Screening of Pre-school and School-age Children will encourage the appropriate authorities of the various countries involved to initiate hearing screening programs of pre-school and school-age children.

The recent introduction of neonatal hearing screening (NHS) has focused the childhood deafness literature on early identification of moderate of greater (>40 dB HL) hearing losses [1–4]. Neonatal hearing screening programs will not identify infants with delayed onset or acquired hearing loss [5,6]. Moreover, there is evidence that children with unrecognized and unmanaged unilateral hearing loss or minimal bilateral hearing loss have significant speech-language delays, negative educational consequences, and behavioral problems [7–12]. Therefore, it remains imperative that hearing screening programs be conducted for children of all ages [13–19].

A distinguished panel of experts discussed hearing screening of pre-school and school-age children during the 10th EFAS Congress, held in Warsaw, Poland, on June 22, 2011. The panel included experts in audiology, otolaryngology, communication disorders, speech language pathology, education and biomedical engineering.[1] Consensus was reached on the thirteen points and is reported here.

1. European Consensus Statement on Hearing Screening of Pre-school and School-age Children

1. Effective programs of neonatal hearing screening (NHS) are well established in most European countries [1]. However not all childhood hearing loss can be identified at birth. As neonatal screening typically screens for permanent hearing loss, the majority of which is sensorineural and a minority of which is permanent conductive hearing loss.
2. The prevalence of hearing loss increases with age and includes mainly conductive hearing loss, acquired and delayed sensorineural hearing loss and auditory processing disorders which are not targeted by NHS. Children with conductive hearing impairment may have either congenital or acquired middle ear pathologies. Some of the pathologies, such as a subtle middle ear abnormality with no apparent hearing loss and otitis media with effusion are insidious and may not be noticed by parents or caregivers as a problem with hearing. Sensorineural hearing loss can result from inner ear defects or damage to the auditory nerve. Known causes of acquired sensorineural hearing loss in childhood include viral and bacterial infections, ototoxicity and trauma such as the trauma due to head injury or excessive noise exposure. Noise-related hearing loss may be produced in early childhood and later, and is often serious [20]. Hereditary hearing losses, may manifest themselves from birth, but may

* Corresponding author. Tel.: +48 22 35 60 366; fax: +48 22 35 60 367.
E-mail address: a.piotrowska@ifps.org.pl (A. Piotrowska).

[1] Alvarenga AM (PT), Atas A (TR), Attias J (IL), Barajas J (ES), Coninx F (DE), Dauman R (FR), Dillier N (CH), Farkas Z (HU), Georgescu M (RO), Golubok-Abyzova T (UA), Grandori F (IT), Holgers KM (SE), Kiss JG (HU), Kochanek K (PL), Luxon L (GB), Mykkanen S (FI), Marn B (HR), Pascu A (RO), Piotrowska A (PL), Pitt T (IE), Profant M (SK), Raglan E (GB), Skarżyński H (PL), Snik A (NL), Stephan K (AT), Sułkowski W (PL), Sziklai I (HU), Tavartkiladze G (RU), Thodi C (CY), Van Kerschaver E (BE), Vatovec J (SI), Verschuure H (NL), Vik A (NO), Wajn J (DK).

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become worse after the time of neonatal screening. Auditory processing disorders seen in children can result from neuromorphological disorders, maturational delay of the central auditory nervous system and neurologic disorders [21]. These disorders typically manifest themselves in early childhood and well after the time of neonatal screening, which would not detect the disorders in any case.

3. Untreated hearing loss >20 dB HL can have a negative impact on speech, language, and cognitive development, and subsequently on academic achievements. School-age children even with mild hearing losses and who often appear to function normally in everyday situations, are nonetheless at considerable risk for academic, social and behavioral problems [11,16,17,22–24]. Therefore, identification of even mild hearing loss is important, so that effective treatments can be undertaken before significant damage is done [25].
4. The goals of a universal pre-school and school hearing screening program include:
   - Early and reliable detection and identification of hearing problems.
   - Adequate access to professional care for all children suspected of having a hearing loss or auditory processing disorders including children whose parent(s) or other caregiver(s) do not have the resources to pay for the care.
5. The primary target population for pre-school and school-age hearing screening is all children aged 4–7 years. Additionally students can be screened periodically in higher grades.
6. Pre-school and school hearing screening is not oriented to those children with diagnosed hearing loss and who are under current professional management of the loss.
7. If implemented correctly, screening for hearing losses is highly effective. Children should be screened when they first enter school and at any time concern is expressed regarding hearing abilities.
8. Evidence-based, scientifically evaluated and continuously adapted methods will be used for detection of hearing problems.
9. Pre-school and school hearing screening will produce over-referrals. For the benefit of the children being screened for hearing, such false positives are preferred over false negatives. The purposes and limitations of the tests should be explained to the parent(s) or other caregiver(s).
10. A system of quality control is essential. All personnel providing hearing screening must have adequate training and instructions.
11. The parent(s) and other caregiver(s) of all screened children shall receive written notification of the results. If a screening potential problem is identified by any of the results, the parent(s) or other caregiver(s) should be informed that an examination by a primary care provider, ENT physician or audiologist, is highly recommended. The parent(s) or other caregiver(s) should also receive the "referral report" to be completed by the primary care provider, ENT physician or audiologist.
12. School hearing screening programs are not universal across the European countries and should be an integral part of the school health program.
13. Although the healthcare systems in Europe differ from country to country in terms of organization and funding, this European Consensus Statement on Hearing Screening of Pre-school and School-age Children is aimed at encouraging the appropriate authorities of the various countries to initiate obligatory hearing screening programs of pre-school and school-age children. Those programs would help to assure equal educational opportunities for children in Europe who suffer from communication disorders.

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