

# Bridging the gap between early identification and intervention in the paediatric population with hearing impairments

The principles of early hearing detection and intervention (EHDI) state that hearing loss should be identified and amplification fitted by the age of 6 months.<sup>1</sup> The fact that the first decade of life is the most crucial time for communication development and maximum learning provides a strong rationale for the provision of effective early intervention (EI) services at as young an age as possible.<sup>2</sup> The need for EHDI has been well documented and professionals have come to realise that the development of communication skills begins in infancy, long before the emergence of the first words.<sup>3</sup> Professionals have also realised the impact that delays in intervention have on a child's personal, social, academic and vocational growth, hence highlighting the need for comprehensive and efficacious services to this population. EI has dramatic benefits for the child with a hearing impairment, especially when compared with the profoundly negative effects associated with lack of it.<sup>4</sup>

## Early detection

As a result of limited budget allocation and resources, universal newborn hearing screening (UNHS) is extremely limited in developing countries such as South Africa.<sup>1</sup> However, there has been a growth in support for early identification of hearing loss in the paediatric population.<sup>5</sup> Data on the prevalence of infant hearing loss in SA is limited, although the estimated annual rate of hearing loss is 6 612 on the national sector.<sup>6</sup> The global prevalence data on paediatric hearing loss estimate that 6 of every 1 000 babies born present with a significant hearing loss.<sup>7</sup> This is considerably higher than any other birth defect.<sup>8</sup> Sub-Saharan Africa has a significant amount of permanent congenital and early-onset hearing loss.<sup>9</sup> In South Africa hearing loss has the second highest prevalence rating on the disability scale,<sup>10</sup> with the reported prevalence of sensorineural hearing loss estimated to be as high as 10%.<sup>11</sup>

There is therefore a critical need for early identification and intervention to avoid drastic effects on the paediatric population. The South African Speech, Language and Hearing Professional body (SASLHA) and the Health Professions Council of South Africa (HPCSA) have developed a Hearing Screening Position Statement as a measure to assist in the universal newborn hearing screening campaign.<sup>8</sup> The aim of this statement was to screen 98% of newborn infants by 2010. However, a study in 2008 indicated that only 27% participants in South African hospitals were conducting newborn hearing screening.<sup>12</sup> Research has indicated that the success of an early identification and intervention programme depends on parental knowledge and attitudes regarding paediatric hearing loss.

## Early intervention

South African children with hearing loss deserve the opportunity to develop according to their potential as much as their peers without a hearing loss.<sup>6</sup> The intervention process is vital for the management of the hearing loss. Paediatric patients who are fitted with amplification before 6 months will be enabled to achieve effective communication skills.<sup>8</sup>

As positive as the proven benefits of EI are, its application in practice among South African children with hearing

impairments continues to be limited. Beliefs and experiences of professionals involved in EI may influence the nature of adequate EI practices, especially in developing countries. Moreover, for EI to be effective in any context, a well-articulated system must be in place with EI professionals who function within a multidisciplinary and interdisciplinary team while ensuring that the principles of EI are practised and observed. This system must include adequate screening, referral routes, intake assessments, continuous monitoring of the intervention, intensive planning and programme evaluation.<sup>12</sup> Even though extensive literature is available on the practices and models of EI in developed countries, there is a considerable lack of research in developing countries, and the research that has been conducted highlights that policy and practices are largely inadequate.<sup>13</sup> Because of lack of resources there also appears to be a large discrepancy between what is known and what can be done.<sup>12</sup>

Clear evidence in the literature supports the fact that children with hearing loss who are not fitted with hearing aids early will not develop effective communication skills equivalent to that of their hearing peers.<sup>14</sup> The need for binaural hearing aid fittings in this population is essential,<sup>15</sup> as the benefits ensure that the listener is able to localise to the sound source and this sound source will have the benefit of increased amplification.<sup>16</sup>

## The gap between identification and intervention

Although South Africa has intensified its efforts towards early identification, efforts seem to be shaped by restricted budgets for the purchase of hearing aids in state hospitals. This has an effect on when an identified hearing-impaired child can be fitted with hearing aids. Insufficient financial resources and funding are among the obstacles to providing hearing-impaired children who depend on the public health care sector with the appropriate hearing amplification apparatus to manage their hearing loss effectively. Children may wait for up to 2 years until these funds become available, with undesirable consequences for the development of speech, language and communication skills.

In other words, South African children who are diagnosed with hearing loss may be identified early but may not be fitted with hearing aids timeously (Gauteng State Hospital Audiologists, personal communication, 2010).

## Bridging the gap

In developing countries there is a paucity of published literature on programmes to bridge the gap between identification of hearing loss in the paediatric population and intervention, including provision of amplification. Hearing aid loan programmes have long existed in developed countries such as the USA and have recently been established in some provinces in South Africa.

In 2008 the possibility of a hearing aid loan bank began to be discussed between university staff members (audiologists, speech therapists and social workers), public sector therapists

(audiologists and speech therapists) and parent advisors from the Wits Centre for Deaf Studies HI HOPES programme, to facilitate the achievement of EHDI principles. This was envisaged as an alternative service provision model that advocated public-private partnership, thereby bridging the significant gap between detection of hearing loss and actual intervention.

The Wits HAB (hearing aid bank) project was envisaged as a collaborative model involving a university audiology department, state hospitals and parent advisors, with the aim of establishing a pilot HAB programme in Gauteng. This could serve as a motivation for developing countries to begin exploring public-private partnerships in order to ensure that the goal of provision of EI services within the critical period for language development is realised.

The Wits HAB aims to provide hearing instruments and ear moulds for infants and toddlers (newborn to 6 years) who need immediate amplification but do not have access to it. These children would be waiting for their own hearing instrument(s) through a state hospital, be awaiting a cochlear implant evaluation, or require a trial with amplification based on a diagnosis of auditory neuropathy/dyssynchrony. The aim is to provide the hearing instruments on a loan basis for a period of up to 6 months.

The Wits HAB was established to reduce delays in making amplification available to young children, thus demonstrating the benefits of early intervention.<sup>17</sup> Ideally the aim is to fit children with binaural amplification if there is bilateral hearing loss, so that communication and educational benefits are maximised.<sup>18</sup> The bank is situated at the Emthonjeni Centre on East Campus, University of the Witwatersrand. Loaned hearing instruments are fitted, verified and validated at the Emthonjeni Centre and the Audiology Department. The Wits HAB is a community engagement initiative by the Emthonjeni Centre, which is part of the School of Human and Community Development (SHCD). The SHCD includes the professions of speech-language therapy, audiology, psychology and social work.

### Service, training and research

Children aged 6 and under who have an immediate need for hearing instruments are candidates for the Wits HAB. Each child is booked into the audiology clinic via the Emthonjeni Centre. Confirmed diagnosis of hearing loss is required from the referring hospital. Preference is given to first-time hearing aid users. Final-year student clinicians work with an audiologist who supervises and conducts the hearing aid fitting, orientation and verification.

The Wits HAB currently owns over 80 hearing aids, donated by private entities. When the hearing aids are fitted, every effort is made to match the technology of the hearing aids supplied by the state hospital. The standard length of the loan is 6 months, but each case is viewed independently depending on the individual circumstances. A parent or legal guardian who borrows a hearing aid becomes the custodian of the hearing aid and is expected to return it to the Wits HAB as soon as the loan period expires or a suitable permanent hearing aid is received, whichever occurs first.

In addition, the Wits HAB aims to give students from the disciplines within the SHCD the opportunity to work within a multidisciplinary framework with young children who are hearing impaired as well as their families, adding value to student training.

Finally, the project enables research into hearing loss in children, early amplification and intervention services, as evidence-based research informs models of best practice.

### Conclusion

The Wits HAB is a much-needed team effort in the process of bridging the gap and upholding the principles of EHDI. It is recommended that partnerships between public and private sectors be explored in other areas too as a possible means of sustaining this successful bridge between silence and sound.

**Conflict of interest.** The authors declare that they have no competing interests.

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### References

1. Swanepoel D, Ebrahim SJA, Friedland PL. Newborn hearing screening in a South African private health care hospital. *Int J Pediatr Otorhinolaryngol* 2007;71(6):881-887.
2. Reynolds AJ. Research on early childhood interventions in the confirmatory mode. *Children and Youth Services Review* 2004;26:15-38.
3. American Speech-Language-Hearing Association. Communication-Based Services for Infants, Toddlers, and Their Families. Technical Report. ASHA, 1989.
4. Swanepoel DW, Hugo R, Louw B. Implementing infant hearing screening at maternal and child health Clinics: context and interactional processes. *Health SA* 2005;10(4):3-15.
5. Olusanya BO, Luxon LM, Wirz SL. Benefits and challenges of newborn hearing screening in developing countries. *Int J Pediatr Otorhinolaryngol* 2004;68:287-305.
6. Swanepoel D, Storbeck C. EHDI Africa: advocating for infants with hearing loss in Africa. *Int J Audiol* 2008;47(1):S1-2.
7. Palmer CV, Ortmann AMS. Hearing loss and hearing aids. *Neurologic Clinics* 2005;23:901-918.
8. Swanepoel DCD, Delpont SD, Swart JG. Universal newborn hearing screening in South Africa - a First-World dream? *S Afr Med J* 2004;94(8):634-635.
9. Olusanya BO. Priorities for early hearing detection and intervention in sub-Saharan Africa. *Int J Audiol* 2008;47(1):S3-13.
10. Ross E, Deverell A. Psychosocial Approaches to Health, Illness and Disability: A Reader for Health Care Professionals. Van Schaik, 2004: 327.
11. Swanepoel DCD. Audiology in South Africa. *Int J Audiol* 2006;45:262-266.
12. Guralnick MJ. The Developmental Systems Approach to early Intervention. Michigan: Paul H Brookes, 2005: 655.
13. Gopal R, Hugo SR, Louw B. Identification and follow-up of children with hearing loss in Mauritius. *Int J Paediatr Otorhinolaryngol* 2001;57:99-113.
14. Swanepoel D. Infant hearing loss in developing countries - silent health priority. Presented at the 44th South Africa ENT and Audiology Congress, 2-5 November 2008.
15. Dillon H. Hearing Aids. Thieme, 2001: 370-404.
16. Jerome GA, McCarthy PA. Rehabilitative Audiology: Children and Adults. Lippincott Williams & Wilkins, 2000: 349-351.
17. Johnson CE, Danhauer JL. Handbook of Outcomes Measurement in Audiology. Cengage Learning, 2002: 347-350.
18. Wetmore RF. Pediatric Otolaryngology: The Requisites in Paediatrics. Elsevier Health Sciences, 2007: 64-76.