Building a government financed Auditory Verbal Therapy program in Denmark – a case study

Hallstrøm MK, MSc. in Public Health, Sigtryggsdóttir I, MSc. in Service Systems Design.
Affiliations: Decibel – Patient Organisation for Children and Adolescents with Hearing Loss, Hellerup, Denmark

Background

In 2013, Decibel – Patient Organisation for Children and Adolescents with Hearing Loss launched a research project investigating the outcomes for 55 Danish children with hearing loss (HL) participating in a three-year Auditory Verbal Therapy (AVT) program. The results indicated that 80% of the children achieved age-equivalent language after three years. Among children who received standard rehabilitation, previous research showed that 30% achieved age equivalent language (1). Based on these results, the Danish government decided to implement a three-year AVT program at three Danish hospitals starting September 2017.

Model 1

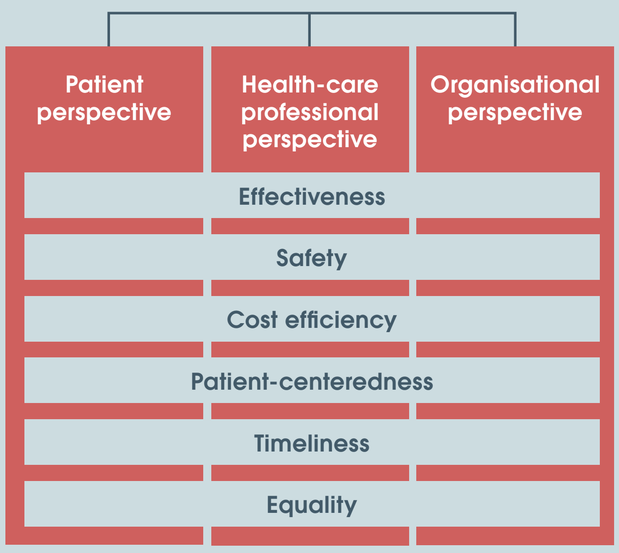
Objectives

To describe the implementation of a three-year Auditory Verbal Therapy (AVT) program at three hospital units in Denmark and present preliminary results of outcomes and characteristics of children included in the program.

Methods

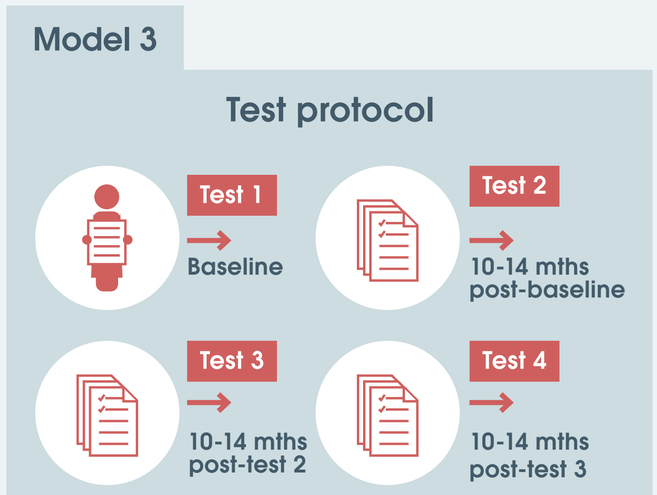
A partnership between the patient organisation Decibel, three highly specialized audiological hospital units, and the Danish Ministry of Health was established to investigate the implementation of the three-year AVT program in a Danish hospital setting. A national centre for Documentation and Quality Assurance was initiated at Decibel to monitor and assess the implementation. A quality assessment framework (model 2) guided the implementation and multiple data collection methods were applied to evaluate the program and parent satisfaction 12-18 mths post-baseline (2). A national database was set up to collect data on the children's characteristics and outcomes. Data were collected and managed using REDCap electronic data capture tools (3,4).

Model 2



The program was offered to all children 0-5 years of age with a bilateral HL at a PTA > 40dB. AVT sessions were scheduled at least every second week and was provided by AV practitioners who were either LSLS certified AVT by AG Bell, had completed the study program or were studying for the LSLS certification (5). Children were tested annually with either the Peabody Picture Vocabulary Test-4 or the parent reported LittlEARS questionnaire (model 3) (6,7).

Model 3



Results

By September 2019, a total of 195 children aged 0-8 years were registered in the database. Hereof, 54% had hearing aids (HA), 29% had cochlear implants (CI), 14% had bimodal solutions, and 3% of the children had Bahs or other hearing technology. Twenty percent of the children had other disabilities, and most children (91%) used spoken language at home. Six percent used sign language or spoken language with sign support and 18% of the children were bilingual.

Figure 1. Characteristics of the children

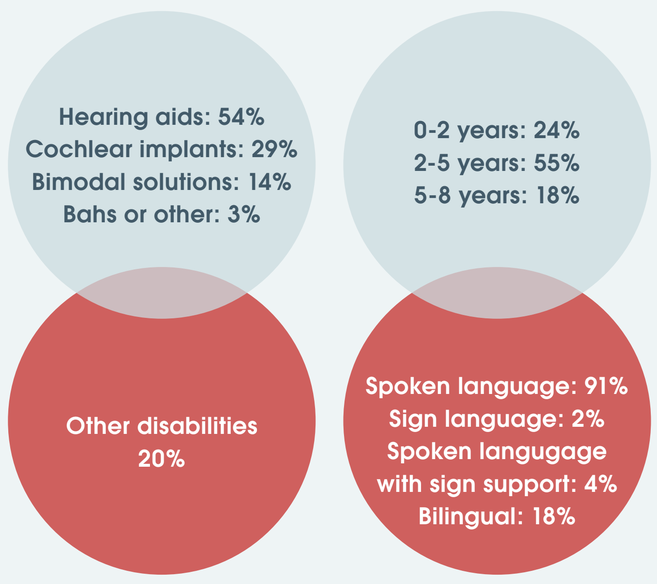
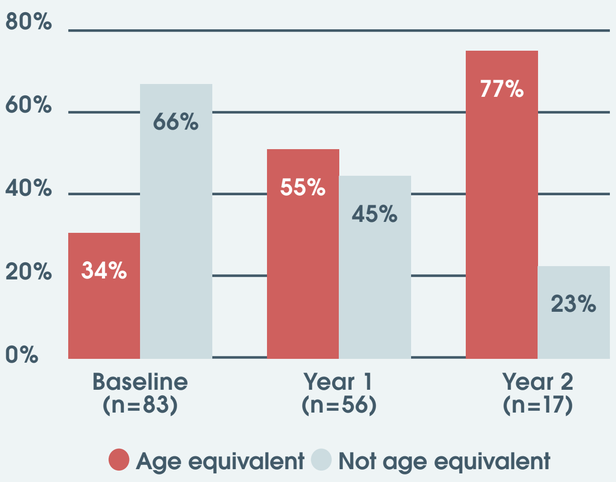
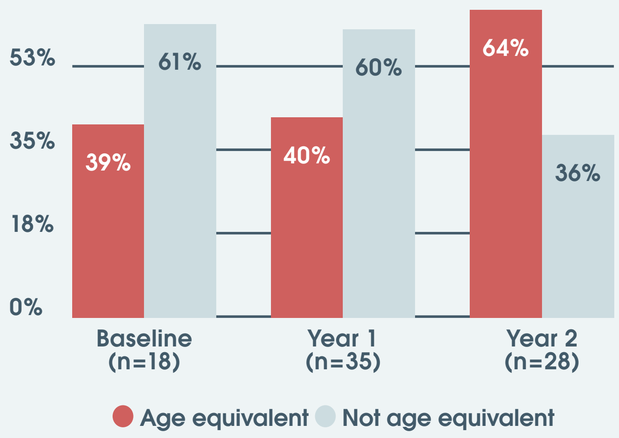


Figure 2. LittlEARS questionnaire



Preliminary results indicated that 34-39% of the children were age equivalent in auditory development and receptive vocabulary at baseline. After one year, 40-55% of the children were age equivalent and after two years 64-77% of the children were age equivalent. The preliminary parental survey results indicated that 91% of the parents (n=20) were satisfied or more than satisfied with the program, and 9% (n=2) were neither satisfied nor dissatisfied.

Figure 3. Peabody Picture Vocabulary-4



Conclusion

More children with HL in Denmark – no matter hearing technology - now benefit from Auditory Verbal Therapy.

Children aged 0-5 years, with a bilateral hearing loss PTA>40 dB, are now systematically registered and monitored. This provides a unique opportunity to assess the characteristics and longitudinal outcomes for children with HL in Denmark.

After two years of AVT, preliminary results indicate progress in auditory development and receptive vocabulary for the children with HL, and high parent satisfaction with the program.

References
(1) Percy-Smith L, Tønning LT, Josvassen JL, Mikkelsen JH, Nissen L, Dieleman E, Hallstrøm M, Cayé-Thomasen P. Auditory verbal habilitation is associated with improved outcome for children with cochlear implant. Cochlear Implants International (2017) 19(1):38-45. **(2)** Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap) – A metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform (2009) 42(2):377-81. **(3)** Harris PA, Taylor R, Minor BL, Elliott V, Fernandez M, O'Neal L, McLeod L, Delacqua G, Delacqua F, Kirby J, Duda SN. The REDCap consortium: Building an international community of software partners. J Biomed Inform (2019). **(4)** Institute of Medicine, Washington DC. Crossing the quality chasm: a new health system for the 21st century. National Academy Press (1990) p244. **(5)** AG Bell. About the LSLS certification (2019). [online] https://agbellacademy.org/certification/. **(6)** Dunn, L. & Dunn, D. The Peabody Picture Vocabulary Test, Fourth Edition. 4 red. Bloomington, MN: NCS Pearson, Inc. (2007). **(7)** MED-EL. LittlEARS Auditory Questionnaire Manual. Innsbruck, Austria (2011)

Acknowledgements
The project is funded by the Danish Ministry of Health. The authors would like to thank the audiological departments at Odense University Hospital, Aarhus University Hospital and Rigshospitalet Gentofte.

Corresponding author
Maria Kinimond Hallstrøm, mariaha@decibel.dk

Decibel
CHILDREN AND ADOLESCENTS WITH HEARING LOSS

AVT