



EXECUTIVE SUMMARY

Minimal Outcome Measurements in Children



Treatment process in patients referred to a cochlear implant centre

Preoperative Assessment	Surgery and In-patient Care	Postoperative care
Medical	Multidisciplinary Team	Fitting + Tuning
Audiological	Clinical Facilities	Rehabilitation + Assessment
Hearing Aid Evaluation		Follow-up + Long Term Maintenance
Communication		
Psychological Status		
Information + Counselling		



Key points

- A consensus on a set of minimal outcome measurements (MOMs) is essential to ensure successful clinical and scientific collaboration on cochlear implants and other implantable solutions at an international level.
- The HEARRING group defined a set of paediatric MOMs that include objective hearing measurements, aided and unaided audiometry, speech perception tests in quiet and in noise, subjective hearing measurements, assessment of language development, and mental and motor development.

Background

- It is important to standardize the future clinical practice in paediatric cochlear implantation.
- Therefore, more longitudinal multi-centre studies in paediatric cochlear implant recipients are needed.
- To improve the quality of international multi-centre studies, a set of quality standards is needed.
- Therefore, the HEARRING group aimed to define a set of MOMs for different paediatric age groups.

Collection of MOMs¹

- A paediatric MOM test battery was developed and agreed-upon by members of the HEARRING group across 30 expert clinics in the field of hearing implantation.
- The final MOM test battery was divided into four chronological age groups: (1) six weeks–six months; (2) six months–two years; (3) two years–six years; and (4) six years–18 years.

MOMs- consensus for children agreed upon by the HEARRING group¹

- Objective hearing measurements: tympanometry, Transient Evoked Otoacoustic Emissions (TEOAEs), Auditory Brainstem Response (ABR) audiometry, evoked Compound Action Potentials (eCAPs) of the auditory nerve, Electrical Impedance and Field Telemetry (IFT)
- Audiometry: unaided audiometry, aided audiometry
- Speech perception: speech perception in quiet, speech perception in noise
- Subjective hearing measurements: LittEARS, Categories of Auditory Perception (CAP) scale, Speech Intelligibility Ratings (SIR)
- Language development: MacArthur-Bates Communicative Development Inventories (MB-CDIs), Reynell Developmental Language Scales (RDLS), Clinical Evaluation of Language Fundamentals (CELF)
- Mental and motor development: Bayley Scales of Infant and Toddler Development, Snijders-Oomen nonverbal intelligence (SON) test
- Test intervals: preoperatively; 3/6/12 months after first fitting; yearly thereafter
- Regular calibration of test equipment
- Centres should add other outcome measurements, if need be, such as: auditory steady-state responses (ASSRs) to scan for residual hearing, vestibular functioning testing, and quality of life questionnaires in the higher paediatric age groups





Conclusions¹

- The MOMs help standardize clinical practice and support monitoring of cochlear implant candidates and users.
- The MOMs allow for more international multi-centre research studies.
- The MOMs can also be used as a guideline for data collection and the establishment of a registry.

References

¹ Mertens G, Hofkens A. Minimal outcome measurements in paediatric cochlear implant users: a consensus paper. B-ENT. 2021. 17(2):110-120.

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