

Hearing assessment for children under natural sleep in the Paediatric Assessment Pathway – Sharing Our Experience



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Introduction

As a service, we introduced hearing testing under natural sleep into our paediatric assessment pathway following an increase in numbers of difficult-to-test pre-school age children, where traditional methods of hearing assessment (e.g. VRA, performance), combined with other tools such as filtered theme tunes and OAEs, were unsuccessful. Hearing test under natural sleep using ABR/ASSR testing can be carried out in the Audiology department and so provides a convenient and effective form of objective hearing assessment for difficult-to-test children as an alternative to hearing testing under sedation or GA. Hearing testing under natural sleep can also be facilitated by melatonin.

Current pathway

- Two behavioural assessments attempted.
- If unsuccessful after two appointments, option of objective testing under natural sleep discussed.
- If parents wish to proceed, a 2-hour sleep test appointment is arranged to coincide with nap time.
- Can consider the use of melatonin if appropriate – this is prescribed by ENT.
- Discharge criteria - minimum of 3 frequencies (inc 4kHz) at ≤ 20 dB HL on each ear, cABR @65 dB nHL performed in each ear first to exclude ANSD.

Advice to Parents

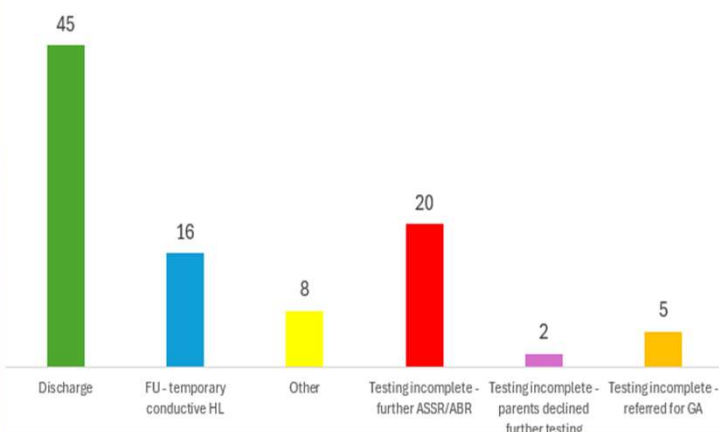
The following advice is provided to parents prior to the ASSR appointment to increase likelihood of natural sleep:

- We advise you to wake your child earlier than normal on the day of the test and to keep them very active.
- We advise to bring your child to the appointment awake but very tired if possible.
- Please bring any items that your child associates with sleep, such as a drink, blanket, dummy, or teddy.
- It can be useful to bring your own pushchair, so your child has a familiar place to sleep.

Methods

- We audited all paediatric assessment patients seen for sleep hearing tests between 1st August 2023 and 31st July 2025.
- NHSP referrals, patients with known PCHIs and patients too young for behavioural hearing assessment were excluded for the purpose of this audit.
- All ASSR assessments were completed using the Interacoustics Eclipse® 90Hz ASSR protocol with inserts/headphones.
- Where BC was indicated, ABR testing was used.

Outcome of first hearing test under natural sleep
(96 patients)



Results

- **96 patients** were seen for a sleep hearing test.
- The age range was **11 months** to **7 years 4 months**, average age **33 months**.
- **45 children (47%)** were discharged after one sleep appointment. The oldest child discharged after one appointment was **7 years 4 months**.
- A further **16 children** were discharged after two sleep appointments – **63%** discharged after two sleep tests.
- Out of the 61 children able to be discharged, only **8 children** required melatonin.
- The average number of behavioural appointments prior to being offered a sleep hearing test was **2.1**.
- In total, **5 children** were referred for testing under GA.
- The outcome for 'Other' included 1 SNHL, 1 DNA and 6 children who met discharge criteria but were kept under review due to risk factors.

Conclusions

- Hearing testing under natural sleep is not just for newborns! It can be successful for a range of ages and should be considered as an option for difficult-to-test children who are not able to be reliably assessed behaviourally.
- This reduces demand on behavioural assessment clinics and reduces parental and child anxiety/frustration when multiple behavioural appointments are not successful. It also reduces the reliance on testing under sedation and/or GA where these options are either difficult to arrange or not available.
- Keys to success are ensuring parents are given the right information beforehand and also having the flexibility to arrange appointments to coincide with normal nap times.
- A room with adjustable lighting and access to a couch is also really helpful for older children to sleep on.

References:

1. British Society of Audiology Practice Guidance Auditory Steady State Response (ASSR) Testing Date: April 2022
2. British Academy of Audiology and British Society of Audiology Joint Document Paediatric Audiology Minimum Discharge Criteria (Aged 6 Months +) August 2024