

Integrating Auditory Steady State Response (ASSR) testing into the Paediatric Assessment Pathway: Sharing our Experience

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Introduction

- **Auditory Steady State Response (ASSR)** testing can be a useful part of the part of the audiological test battery in a variety of situations. Whilst ASSR is not able to diagnose Auditory Neuropathy Spectrum Disorder (ANSD), a major advantage of most ASSR systems is that multiple frequency stimuli can be presented to one ear (AC&BC) or both ears (AC) simultaneously¹.
- In 2022, we introduced ASSR 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.

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 ASSR appointment is arranged to coincide with nap time.
- Can consider the use of melatonin if appropriate.
- Discharge criteria - minimum of 3 frequencies at ≤ 20 dB HL on each ear, 4 frequencies preferred.
- ckABR @50dBnHL 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:

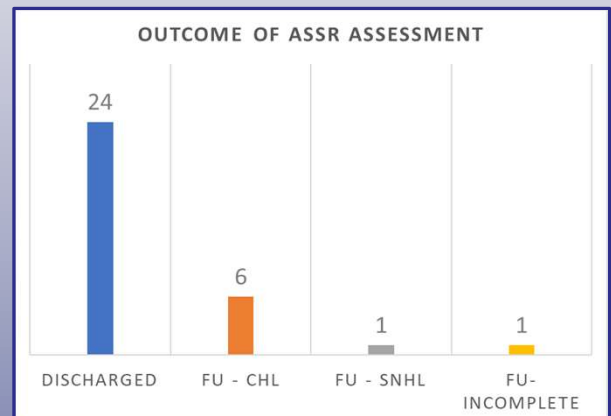
- We advise you to wake your child earlier than normal on the day of the test and to keep them very active.
- We advise to bring your child to the appointment awake but very tired if possible.
- Please bring any items that your child associates with sleep, such as a drink, blanket, dummy, or teddy.
-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

Methods

- We audited ASSR appointments completed as part of a paediatric assessment pathway between July 2022 and July 2023.
- All ASSR assessments were completed using the Interacoustics Eclipse® 90Hz ASSR protocol with inserts/headphones.
- Where BC was indicated, ABR testing was used.

Results

- A total of **32 patients** were seen for ASSR testing; age range **17–40 months**, average age **29 months**.
- **72%** of children were able to be discharged after one ASSR appointment.
- Total number of ASSR appointments: **37**
- Average number of ASSR appointments per patient: **1.2**
- Number of appointments where melatonin was used: **11**
- 4 frequencies for both ears obtained for **30 out of 32 patients**.
- Average test time for ASSR once child is asleep: **5min 49secs** (range **2min 23secs to 26mins 27secs**)
- Average number of appointments in normal assessment clinic prior to ASSR per patient: **2.6**



Conclusions and Next Steps

- ASSR is a useful tool in the paediatric assessment pathway; nearly three-quarters of children were able to be discharged after one ASSR appointment. This reduces demand on behavioural assessment clinics and reduces parental and child anxiety/frustration when multiple behavioural appointments are not successful.
- Important that ASSR limitations are understood/recognised i.e. need to rule out ANSD.
- Having a melatonin protocol in place is useful and clear advice to parents prior to the appointment is important.
- Whilst the test itself is quick, ASSR can be time intensive as longer appointments are needed to get children to sleep.
- Minimum discharge criteria in behavioural clinics where there are no risk factors/parental concerns – do we need to review these to reduce the number of patients needing ASSR? Could we discharge on other information e.g. OAEs/filtered theme tunes? No national guidance on this - what are other services doing?
- Develop confidence in using BC ASSR.
- External Peer Review of ASSR traces?

Other uses for ASSR in our paediatric clinic

- Measuring thresholds for children with known PCHI who are difficult to test, to provide information for HA fitting.
- Suspected non-organic hearing loss in older, awake children.
- Hearing assessments in theatre.

References:

1. *British Society of Audiology Practice Guidance Auditory Steady State Response (ASSR) Testing*
Date: April 2022