Recommended Guidelines for ABR Testing

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

This guideline is for use by the following staff groups :

Paediatric Audiologists undertaking ABR testing

Lead Clinician(s)

Kim Doughty	Local Manager Newborn Hearing screen/ Principal Paediatric Audiologist
Approved by Audiology Governance	16th December 2025
Review Date: This is the most current document and should be used until a revised version is in place	16th December 2028

Key amendments to this guideline

Date	Amendment	Approved by:
Dec 2025	New document approved	Audiology Governance

INTRODUCTION

This guidance document is designed to support paediatric Audiologists whilst undertaking Auditory Brainstem Response diagnostic testing.

Objective

To provide staff with guidance to perform their role efficiently and effectively. To help enable consistency in patient care. The template will set out procedures outlined in the current version of the BSA "Recommended Procedure- Auditory Brainstem Response (ABR) Testing in Babies"

Procedure

Referred by Newborn Hearing Screen service - The ABR appointment is to be arranged within 4 weeks of referral from screening as stated by NHSP, or if the child is premature, by 4 weeks corrected age. The baby should ideally be aged between 0-4 weeks.

Referred by Paediatrician – If baby is hospitalised, book when suitably well enough and medication has finished.

GP and HV referrals – Generally between 3 – 7 months of age. May be necessary to contact parents/guardian to discuss concerns before deciding whether ABR is appropriate or to wait for VRA testing.

ABR admin should book the appointment, when possible, at the nearest main hospital site to the patient address (Worcester Royal Hospital, Alexandra Hospital, Redditch or Kidderminster Treatment Centre). If this is outside of the 4-week period, flag this to the Newborn Screening Manager so templates can be adjusted.
An appointment letter should be sent along with the ABR information leaflet.
Admin should confirm the appointment by a phone call, on the last working day before the ABR.

Procedure for ABR Assessment

All audiologists undertaking ABR's must be a band 6 or higher and will have attended the appropriate ABR training courses and attend refreshers.

Appointment length: 2 hours

1. Stage A calibration checks
2. Patient is booked in at reception, and an "A" is placed by their name on Auditbase to indicate arrival.
3. Once the patient has been called through, place a "B" by their name on Auditbase indicating that they are being seen.
4. Audiologist should introduce themselves to the parents/guardians.
5. Demographic details will be checked by the audiologist. An ABR history sheet will be completed – this is found under Letters on Auditbase. This includes asking about any risk factors including whether they have a PVP Shunt. If they do have a shunt this will be documented in AB. Standard precautions for testing these patients must be used as there is a risk that the use of headphones/BC and hearing aids may affect the shunt – See PVP information for further guidance.

6. Outline what will happen during the appointment.
7. Ensure you have verbal consent from the parents before commencing the test.
8. Before touching the patient use hand gel. Audiologist should use scrub or dot tape to prepare the child's skin for the electrode placement. Apply the Vertex electrode as high on the forehead as possible whilst avoiding the fontanelle and the hair line. The ground on the forehead at least 4cm from the vertex. Place electrodes behind each ear keeping in mind where the BC will be placed if it is needed during testing.
9. Connect electrodes and check the impedances are low and equal <3. If impedances are higher than 3-5 remove replace electrodes after repreparing the skin. If still unable to reduce the impedances, it may be possible to obtain some recordings but if the traces are too noisy and not repeatable it may be necessary to abandon testing and reschedule. It is important to ensure all impedances are as equal as possible.
10. Allow parents to settle baby, whether being held or in a pram/car seat.
11. As per BSA protocol commence testing at 4kHz chirp using inserts/headphones as appropriate.
    If unilateral referral from NHSP start with better ear.
    If unilateral microtia/atresia start testing on normal ear.
12. If responses are within normal limits proceed to 4kHz on opposite ear. Baby can be discharged if both 4kHz responses are within normal limits, however, if conditions and time allow 1kHz can be completed if possible. Discharge levels for well babies with no risk factors is ≤ 30dBeHL.
13. If 4kHz AC response is raised move on to testing 4 kHz bone conduction (BC) in same ear.
14. Complete 4 kHz AC and BC on the second ear.
15. Complete 1 kHz AC if possible. If there is evidence of PCHI, 1kHz AC and BC should be tested in all cases. This can be completed on a second appointment if required. Consider requirement for 2kHz testing or ASSR for more information if needed for hearing aid fitting.
16. If there are any risk factors for hearing loss, e.g. bacterial meningitis/septicaemia, congenital CMV, hyperbilirubinemia or high dose gentamycin, discharge criteria would be 1kHz and 4kHz bilaterally at ≤ 20dBeHL.
17. In the case of unilateral permanent conductive/sensorineural hearing loss it is expected that the opposite ear would be tested at 1kHz and 4kHz to ≤ 20dBeHL. Masking should be carried out according to practice Guidance using the masking calculator where required.
18. If responses are absent at maximum recommended levels for the transducer being used it may be possible to change transducers to achieve higher stimulus intensity (NB be aware of PVP shunts if using headphones).
    It is recommended that higher stimulus levels should only be used after completion of cochlear microphonics.

Normal maximum stimulus levels for inserts in dBnHL (≤12 weeks) These values are designed to ensure the peak-peak SPL in the ear canal of newborns never exceeds 135dB

Frequency (Hz)	500	1000	2000	4000	Click
Recommended maximum for tone pips & clicks	100	100	95	85	85
Recommended maximum for narrow band CE-Chirps	95	100	95	85	

Normal maximum stimulus levels for phones in dBnHL (all ages)

Frequency (Hz)	500	1000	2000	4000	Click
Recommended maximum for tone pips & clicks	110	115	110	105	100
Recommended maximum for narrow band CE-Chirps	105	110	105	100	

19. Complete Cochlear Microphonic and click AC where ABR is absent or grossly abnormal. Both should be tested at 85dBnHL. See current version of BSA 'Recommended Procedure for Cochlear Microphonic Testing' for information on how to test and to interpret waveforms.
20. Complete tympanometry using 1kHz tone. See current version of 'Tympanometry in babies under 6 months' for information on how to interpret traces
21. Explain results to parents at end of testing. Encourage parents to discuss results and ask questions. Give appropriate 'parent information' leaflets. Direct parents to the 'parent checklist' in the red book and discuss development of hearing behaviour with parents.
22. If results indicate normal hearing and there are no risk factors requiring targeted follow up, child can be discharged. Normal letter should be sent to parents, GP and HV. If risk factors are present an appointment should be made for follow up at 8-9 months corrected age.
23. If results indicate Otitis media (glue ear) and indicating a moderate/severe hearing loss rebook for another ABR. If service capacity allows rebook mild conductive loses for a further ABR.
24. If results indicate permanent childhood hearing impairment (PCHI)

a) Results should be explained in detail to parents including discussion about hearing aid fitting and options for communication where appropriate.
b) Impressions can be taken immediately if parents accept intervention, however, if they need more time to process the diagnosis arrangements can be made for impressions later, preferably within 2 weeks.
c) If ANSD is indicated by the presence of TEOAE or CM's a repeat test should be conducted at about 8-10 weeks corrected age, to check for maturational effects.

d) If a sensorineural hearing loss is diagnosed or suspected, on an ABR, of any degree, a referral must be made to the Acute Paediatrician service so that cCMV testing can be arranged.

To do this, bleep the Consultant Paediatrician on call:

- Dial 60 – listen to automated message
- Enter the user number 676
- Enter the extension number you are calling from
- Listen to the end of the message and the end tone. Hang up.
- Wait for the consultant to call
- If a consultant does not respond to the bleep ring Riverbank ward on 30116 or 30112
- The consultant will need baby's Name, NHS number and Date of Birth.
- If any concerns arise ask for Ezgi Seager – Consultant Paediatrician

Community Paediatricians

When a moderate or worse, bilateral or unilateral sensorineural hearing loss is diagnosed in a child of any age, a referral is to be made to the community paediatricians. A mild loss can be referred only if it is accompanied by other risk factors – syndromic features, family history of progressive loss or a positive cCMV result.

The referral form is found in Letters on Auditbase, headed Community Paediatric Referral Form.

Complete the form, highlighting if a baby has been referred for cCMV testing. If the baby/child has a mild sensorineural hearing loss, please add in detail why you are referring them and what other risk factors are present.

Save the completed form to the childs Documents on Auditbbase.

Email the form to the generic community paediatrics email address:
whcnhs.access.commpaeds@nhs.net

Following a referral to Community paediatrics, please forward all future hearing tests and information, until they are discharged from community paediatrics. Please highlight if the hearing loss appears to be progressing, as consideration for further aetiological tests may be needed.

A letter should be sent to parents explaining the results with copies to the GP, and any other relevant health professional involved in the child's care.

If ABR indicates a significant permanent sensorineural hearing loss, consider a referral to the Midlands Cochlear Implant team, a form can be found on AB under CI ref paed. Discuss with parents before sending a referral.

25.Ensure all results are recorded and saved appropriately

a) Save results on the Eclipse and make sure results are backed up to the Otoaccess database. Instructions for this is with the Eclipse on each site.
b) Complete patients journal on AB and outcome accordingly.
c) Update the national S4H database.
d) If appropriate, send anonymised traces for external peer review according to the current peer review process. This includes:
Bilateral referrals from the Newborn Hearing Screen.
All referrals where ABR has taken place due to the newborn screen being contra-indicated i.e. Bacterial meningitis, presence of a PVP shunt, congenital CMV and microtia.
All ABRs performed on children diagnosed with congenital CMV or bacterial meningitis regardless of referral route e.g. passed newborn screen but then develops meningitis in the newborn period.
All ABRs which result in a diagnosis of permanent childhood hearing loss as part of the Newborn Hearing Screening Programme.

26. If further testing is required due to inadequate or incomplete testing a repeat appointment should be made as soon as possible and preferably within 4 weeks, except in ANSD as described earlier.

27. If a child is not brought to their first appointment, a second abr should be booked as soon as possible. If possible, contact the parents to discuss a further appointment. If contact details are incorrect ask admin to check details on the Spine Portal. Check if there are any child safeguarding concerns listed, if there are, consider contacting the GP/HV to discuss the best way of engaging the parents.
If a child is not brought to a second appointment a WNB letter should be sent. The health visitor, GP and any other relevant professionals involved should be informed of the WNB and if the child is being discharged from an Immediate Follow Up.
S4H should be updated and the record deactivated.

References

Recommended Procedure Auditory Brainstem Response (ABR) Testing in Newborns Date: February 2025
www.thebsa.org.uk/wp-content/uploads/2025/02/100_ABR-Testing-in-Babies-26-Feb-2025.pdf

Recommended Procedure Assessment and Management of Auditory Neuropathy Spectrum Disorder (ANSD) in Young Infants Date: January 2019
https://www.thebsa.org.uk/wp-content/uploads/2023/10/OD104-85-Recommended-Procedure-Assessment-and-Management-of-ANSD-in-Young-Infants.pdf

Recommended stimulus reference levels for ABR systems Date: September 2019
https://www.thebsa.org.uk/wp-content/uploads/2020/09/Recommended-stimulus-reference-levels-for-ABR-systems.pdf

Recommended Procedure for Cochlear Microphonic Testing
BSA January 2019
https://www.thebsa.org.uk/wp-content/uploads/2023/10/OD104-87-Recommended-Procedure-for-Cochlear-Microphonic-Testing.pdf

Recommended Procedure: Tympanometry and Acoustic Reflex Thresholds (BSA) Feb 2024 – Minor amendment Feb 25, due for review before Feb 2034
BSA-Recommended-Procedure-Tympanometry-and-ART-Feb-2025-minor-revision.pdf

Practice Guidance: Guidelines for the Early Audiological Assessment and Management of Babies Referred from the Newborn Hearing Screening Programme, Date: December 2021, Due for review: December 2026
OD104-98-BSA-Practice-Guidance-Early-Assessment-Management.pdf

Assessment and Management of Auditory Neuropathy Spectrum Disorder (ANSD) in Young Infants
BSA January 2019
https://www.thebsa.org.uk/wp-content/uploads/2019/01/FINAL-JAN2019_Recommended-Procedure-Assessment-and-Management-of-ANSD-in-Young-Infants-GL22-01-19.pdf

Recommended Procedure (Supplement) Taking an aural impression: children under 5 years of age BSA December 2021
https://www.thebsa.org.uk/wp-content/uploads/2022/01/OD104-97-BSA-Recommended-Procedure-Aural-Impression-taking-children-under-5-years-Final.pdf

BRITISH SOCIETY OF AUDIOLOGY (2019), Position Statement and Practice Guidance Audiological Assessment and Hearing Aid Provision for patients with a programmable ventriculoperitoneal (PVP) shunt. [Online].
https://www.thebsa.org.uk/wp-content/uploads/2021/04/OD104-94-BSA-Position-Statement-on-Programmable-VP-Shunts-12.03.2021.pdf.
ABR Stage A calibration checks v 1.0 Feb 2008 [Accessed 09/05/2025]
https://eratraining.co.uk/onewebmedia/Stage A checks for ABR systems.pdf

Monitoring

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the Policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	Ensure that all babies/children that need a referral are referred to Acute/Community paediatricians	A routine Paediatric Referral Audit will be undertaken to ensure that the process is followed correctly	Annually	Local Manager Newborn Hearing Screen	AudiologyService Manager/Governance Team	Annually following audit

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation
Edward Southan – Interim Countywide Audiology Manager
Kim Doughty– Newborn Hearing Screen Lead
Jess Scully – Paediatric lead
ABR Team

This key document has been circulated to the chair(s) of the following committee's / groups for comments;

Committee
Audiology Governance

Supporting Document 1 - Equality Impact Assessment Tool

Equality and Health Inequalities Impact Assessment (EHIA) Tool

Herefordshire & Worcestershire STP - Equality and Health Inequalities Impact Assessment (HEIA) Form
Please read HEIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust	✓	Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust	✓	Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	**Kim Doughty**

Details of individuals completing this assessment	**Name**	**Job title**	**e-mail contact**
	Kim Doughty	**Newborn Hearing Screening manager/Interim Lead**	**Kim.doughty@nhs.net**
Date assessment completed	**16.6.2026**		

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	Recommended Guidelines for ABR Testing			
What is the aim, purpose and/or intended outcomes of this Activity?	• To improve health outcomes for children with potential hearing issues. • To ensure staff are performing ABRs correctly • To identify those children who have a Permanent Childhood Hearing Impairment (PCHI) and provide the correct management plan to ensure a good outcome.			
Who will be affected by the development & implementation of this activity?	✓ ❑ Service User ✓ ❑ Patient ✓ ❑ Carers ❑ Visitors		✓ Staff ❑ Communities ❑ Other _____	
Is this:	✓ Review of an existing activity			

	❑ New activity ❑ Planning to withdraw or reduce a service, activity or presence?
What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	BSA ABR Testing in Newborns BSA Guidelines for the Early Audiological Assessment and Management of Babies Referred from the Newborn Hearing Screening Programme
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	Guidance follows best practice from several sources including the British Society of Audiology Recommended Procedures.
Summary of relevant findings	

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age		✓		
Disability		✓		
Gender Reassignment		✓		
Marriage & Civil Partnerships		✓		
Pregnancy & Maternity		✓		
Race including Traveling Communities		✓		
Religion & Belief		✓		
Sex		✓		
Sexual Orientation		✓		

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)		✓		
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)		✓		

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe
	None	.		
How will you monitor these actions?				
When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)				

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.

1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat

them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	K Doughty
Date signed	17.6.2026
Comments:	
Signature of person the Leader Person for this activity	K Doughty
Date signed	17.6.2026
Comments:	

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval.