



Practice Guidance

Principles of external peer review of auditory brainstem response (ABR) testing in babies

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General foreword

This Position Statement represents a brief synthesis of the current evidence-base and consensus on external peer review of electrophysiological measurements, as prepared and reviewed by national and international experts, and approved by the British Society of Audiology (BSA).

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Declarations of interests

- Declaration of interests by the authors: Dr Guy Lightfoot, is the founder and company director of ERA Training and Consultancy Ltd (a commercial provider of peer review activities including training and accreditation of peer reviewers, reviewer moderation and case arbitration). Dr Siobhan Brennan is a current faculty member and Dr Graham Sutton is a former faculty member of ERA Training and Consultancy Ltd.

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2. Background

The Newborn Hearing Screening Programme (NHSP) in England has long recommended a system of peer review of ABR testing¹ as a means of reducing the risk of incorrect assessment following new-born hearing screening. In this context peer review is the process by which a clinician with clinical skills in ABR, who is not involved in the original assessment, reviews the traces and outcomes of an ABR assessment. Incorrect assessments have been identified by the NHSP Quality Assurance Programme resulting in the suspension of services, large look-back exercises and recall of patients whose assessments have been unsafe². The Newborn Hearing Screening Programme in Wales (NBHSW) has a long established system of systematic external review for all screen referrals³. The Newborn Hearing Screening Programme Centre (England) was instrumental in piloting a systematic review process in two regions in England. This pilot demonstrated an improvement in performance of ABR assessments in both areas and was received favourably by participating clinicians⁴. In the East of England, external funding was provided to develop a bespoke software application (System for Online Newborn ABR Review-SONAR) and embed the process of systematic external peer review in clinical practice⁵. In South London an external ABR peer review group was established in 2011 using a systematic process and audit results showed there was a significant improvement in performance ($p < 0.001$)⁶. Currently review groups that operate on a systematic basis cover approximately 32% of births⁷.

In response to requests from the paediatric audiology community in 2013, members of the NHSP Clinical Advisory Group produced this document about the principles of external peer review.

3. Aims of ABR peer review

1. To ensure the accuracy of electrophysiological measurements undertaken on babies referred from the newborn hearing screening programmes specifically to ensure:
 - a. Safe discharge for patients with satisfactory hearing





- b. Comprehensive, reliable and accurate assessment of patients with hearing impairment upon which further management can be safely based
2. To develop and improve the quality and interpretation of electrophysiological assessment nationally
3. To facilitate the exchange of knowledge and best practice and encourage productive networking in order to foster developments in quality. To provide feedback to shape the development of improved guidelines and protocols e.g. where ambiguities are identified in the interpretation of guidance

4. Scope of peer review

Peer review should include the following: -

- Technical performance and interpretation of tests
- Test strategy, e.g. stimulus level step size, use of bone conduction, masking when appropriate, use of cochlear microphonic test
- Case management
- This document is limited to an external peer review system for ABR testing of babies referred from the newborn hearing screening programme, but the principles contained within this document could be applied to other electrophysiological areas of work.

5. Key Principles

This document is concerned with key principles of an external peer review system. This assumes that, within any department that carries out electrophysiological measurements, there are good documented clinical governance arrangements including

- training and supervision of staff that carry out this work,
- internal peer review,
- sufficient cases per clinician to ensure maintenance of skills and competency,
- arrangements to seek external advice when required.

External peer review should be organised between a collaborative group of departments willing to peer review each other's work. The number of departments involved in each collaboration should be such that there are sufficient testers that are capable and willing to be trained as reviewers but not so many that the organisation of the review process becomes unwieldy. Alternatively departments could employ the services of a commercial external peer review





provider that meets the standards defined within this document and that follows electrophysiology recommended guidelines defined by the British Society of Audiology for this work.

Key principles of a review system are discussed below: -

5.1. Systematic selection of cases for review

It is not necessary to submit all cases for external peer review, but submitted cases must be based on explicit criteria to eliminate selection bias on the part of the tester. Cases should be selected for review in a systematic way until a sufficient number of cases is attained. Such selection criteria might include: -

- All bilateral referrals from NHSP regardless of ABR outcome
- Unilateral referrals from NHSP that are not discharged after the first ABR

The number of review cases will vary depending on the refer rate of the screening programmes involved, the size of the audiology department/population served and diagnostic process (some departments use TEOAEs as an initial diagnostic test for well babies thus reducing the number of ABRs). Selection should ensure that a minimum number of cases for each individual tester is included in the review process.

5.2. Reviewer selection

Reviewer selection criteria must be explicit. All experienced and practising testers are candidates to become reviewers. Selection criteria must be agreed by the group. As a minimum, any reviewer should be a registered professional who participates in CPD related to electrophysiological assessment. There needs to be a sufficient number of reviewers to ensure cover for sickness and annual leave but not so many that reviewers do not review a sufficient number of cases to maintain competence and experience. A suggested minimum number of cases reviewed by each reviewer is 2 per month.

5.3. Reviewer training

Reviewers must be trained and assessed to assure that all reach an acceptable standard of competence in the reviewing process. This may be achieved by a programme of training and a demonstration of competence in the review of discharge and non-discharge cases. A useful criterion is the ability to correctly review and identify all salient issues in five discharge and five





non-discharge cases where the cases have been selected to include challenging issues including masking and cochlear microphonic testing. Training and assessment providers should be experienced in training and ERA work. Heads of service should be satisfied that the content and quality of training covers the range of issues encountered in ABR peer review.

5.4. Reviewer moderation

Reviewer performance must be moderated at 2-3 year intervals by an independent reviewer. This enables assurance of reviewers' on-going performance. Reviewers who do not meet or maintain a high standard of reviewing will need to be retrained or discontinued. An 'independent reviewer' could be an individual appointed to oversee the peer review process for a large area, an external ABR peer review provider or reviewer of one area exchanging reviewed cases with another area for moderation.

5.5. Evaluation of outcomes

The group should produce an annual report that includes an assessment of the activity and outcomes and includes the following: -

- Departments and testers involved and their engagement
- Number of cases submitted and reviewed – by department and tester
- Improvement indicators by department and tester
- Number of cases with satisfactory reviews – by department and tester
- Number of recalls
- Outcome of reviewer moderation exercise
- Timeliness of the review process
- User evaluation
- Any recommendations for improvement

An example is available at

<http://www.wales.nhs.uk/sitesplus/documents/980/Report%20on%20Peer%20Reviewer%20Audit%202012-13.pdf>

The report should be distributed to all testers, reviewers and heads of service and discussed with members of the group to agree on improvement actions.





5.6. Time scale for the review process

A quick turnaround for reviews is needed, particularly if the aim of the review is to inform the on-going test strategy for individual cases. An acceptable standard is for 95% of reviews to be carried out and returned to the tester within 7 days of the test. Consideration of local reporting timescales may require a shorter turnaround time.

6. Process issues

There are a number of process issues that need to be considered and agreed by the collaborating group. These elements of the peer review process should be set out in a peer review process document that is subject to regular review by participants. An example is available at:

<http://www.wales.nhs.uk/sitesplus/documents/980/Peer%20Review%20Summary%20Document.pdf>

The issues are discussed briefly below.

1. The group will need one member to act as a coordinator to oversee activity and take responsibility for an annual report available for all stakeholders in the process. The time involved is not trivial. This role can be rotated.
2. The group will need a process to deal with moderation, arbitration and advice in difficult or borderline decisions where the tester and reviewer do not agree.
3. Results from each test session should be reviewed ideally within the agreed timescale and no more than 14 days of the test, rather than at the conclusion of all tests. This allows the reviewer's comments to inform test strategy of subsequent sessions for a given patient. In multi-session tests on the same patient the tester should send the results of all sessions to the same reviewer to ensure continuity of advice¹.

¹ This model is generally favoured by clinicians. An alternative model is that all test sessions for a given baby are reviewed on completion of testing. This reduces the scope for the peer review to inform the clinician's management of the individual case.





4. There should be an agreed process to resolve disagreement between tester and reviewer. This should involve the local coordinator who may involve the external reviewer if required.
5. It is preferable, but not essential, that the tester ID is anonymised during the review. The advantage of such anonymisation is that the reviewer does not feel inhibited particularly if the tester is more senior or is regarded locally as an “expert in electrophysiological measurement”. The disadvantages are (i) in a paper based system this adds enormously to the complexity of the administration as all reviews have to be submitted via a third party to maintain the anonymisation and (ii) it does not facilitate constructive discussion and feedback between reviewer and tester. Online systems that can initially present the results with the tester ID anonymised and then reveal it after the review is completed offer the best option.
6. Reviewer rotation can be complex but is necessary to maintain the independence and robustness of the procedure. Most groups opt to pair a tester or test centre with a reviewer for a period of time (say 3-6 months) and then rotate.
7. There needs to be sufficient reviewers to cover sickness and annual leave.
8. Regular (typically 6 monthly) meetings of all included groups are helpful in building trust, sharing expertise, refining the process, maintaining ownership and generally maintaining enthusiasm and commitment to the process. In some groups this collaboration has led to an extension into other areas of paediatric audiology, e.g. hearing aid fitting, behavioural assessment. Such meetings are not designed to review cases, except as examples which might lead to a change in procedure for the group.
9. Clinical accountability needs to be clarified. It is generally accepted that advice and guidance is provided in good faith but that clinical accountability rests with the clinician and organisation managing the patient. Reviewers may wish to add a disclaimer to their review. To support clinical accountability there should be an agreed process for feedback of reviews, which may include copying all reviews to the service lead or Head of Service or only those reviews where concerns regarding quality or case management are raised.
10. Parents of babies/children who are having an electrophysiological test should be informed that the department is part of a routine review process. This is not generally a problem and parents usually find this reassuring.
11. Service commissioners should note that a peer review scheme complying with the provisions of this document should feature in any commissioned service. Departments may need to flag the peer review system up with service commissioners as an area of





- good practice and one which should be written into service specifications as a requirement.
12. Information governance re exchange of patient information.
 13. The peer review process should be incorporated into clinical governance structures to enable outcomes to be acknowledged both to recognise good practice and to address concerns when raised.

7. Reference documents and tools

A standard ABR review form (excel spread sheet) is available at <http://abrpeerreview.co.uk/resources.html>

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Shared Decision-Making

It is implied throughout this document that the service user should be involved in shared decision-making when undertaking audiological intervention, receiving subsequent information and understanding how it will impact on the personalisation of care. Individual preferences should be taken into account and the role of the clinician is to enable a person to make a meaningful and informed choice. Audiological interventions bring a variety of information for both the clinician and the patient which can be used for counselling and decision-making regarding technology and anticipated outcomes.

