



Module Specification: Cochlear Implants Version 5 CONSULTATION DRAFT

Purpose of this specification

This document makes explicit the knowledge and skills that are expected from an HTS candidate relevant to the scope of this module, and outlines additional elements needed to be completed prior to examination, such as secondments and case studies. All the prescribed elements of the module must be completed prior to application for the final examination.

It is important that this document is read together with the HTS regulations which clarifies requirements and gives further guidance.

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1.0 Scope of this Module

This module relates to M-level training to develop theoretical knowledge and practical skills to enable competency in managing patients with cochlear implants. This includes assessment of suitability for cochlear implantation, programming of cochlear implants and longer term management of cochlear implant recipients.

This module is applicable for training within either adult or paediatric cochlear implant services and focuses on the skills and training that are required to manage patients with cochlear implants. It is a pre-requisite that you have relevant competence in the audiology skills needed to assess hearing loss in either adults or children - as applicable to the cochlear implant service in which you are working. These skills can be demonstrated through the completion of recognised audiology qualifications and can include relevant HTS modules in adult or paediatric assessment and rehabilitation or equivalent.

Although patients present primarily with needs related to cochlear implantation, it will be necessary for the candidate to demonstrate the ability to consider their wider diagnostic and audiological rehabilitative needs as appropriate.

This module is classed as a large HTS module.

2.0 Minimum requirements for this module

This module requires candidates to have existing skills and knowledge equivalent to that of a BSc in Audiology.

The detailed minimum requirements for completion, prior to examination are summarised in the following table. However, it should be noted this is a minimum requirement only, many candidates require more experience or training than this to enable them to meet the examination standard, and / or would benefit from a wider variety of learning opportunities such as placements with other professionals. The guidance notes should be followed; any experience which does not comply with this guidance cannot be counted towards the minimum requirements.

Element	Minimum
M-level credits	10 credits
Total supervised clinical sessions *	40
Tutorials	5
Secondment sessions*	10
Placement sessions	Participate in a minimum of 5 MDT meetings
Part A – direct observations of clinical skills	N/A
Part B – Competencies - periodic appraisals of whole patient management <u>and</u> reflective diary.	5 appraisals in each category
Case Studies**	4
Calibration practical sessions	0

*A session is a minimum of 3.5 hours to include clinic preparation, seeing patients and any subsequent record and report writing.

**One case study is required on each of the case types appraised in part B

3.0 Theoretical knowledge

The candidate is expected to gain the following theoretical knowledge through academic study, tutorials, self-study and discussion:

1. Knowledge of the epidemiology of severe / profound deafness, to include prevalence, aetiologies, genetics and other risk factors.
2. Knowledge of the possible patho-physiologies of severe/profound deafness, including how to explain these in an appropriate way to patients, parents or carers, as appropriate.
3. Knowledge of the psychosocial aspects of severe/profound deafness including a good awareness of the Deaf community and the use of sign language.
4. Knowledge of the range of investigations that may be appropriate for patients presenting for cochlear implant assessment, including objective and subjective measurements, vestibular assessment and medical and radiological investigations.
5. Knowledge of the impact of severe to profound hearing loss and the different types of auditory implants that could be considered, taking into account aspects such as candidacy and factors that can influence outcomes.
6. Knowledge and awareness of surgical techniques for cochlear implantation aiming to preserve natural hearing.
7. Knowledge of the role of the multidisciplinary team in cochlear implant assessment and rehabilitation.
8. Knowledge of calibration of equipment and test facilities used in cochlear implantation e.g. sound field, speech testing.
9. Knowledge of the content of a full and relevant case history

10. Awareness of communication strategies and appropriate language when working with patients, parents, careers or children as applicable.
11. Knowledge of the role and content of information counselling for patients, parents, carers or children (as applicable) including current candidacy guidelines, risks and benefits of cochlear implantation, and factors affecting ear choice decisions.
12. Knowledge of the evolution of the development of the cochlear implant, including manufacturer specific information.
13. Knowledge in detail of how a cochlear implant works, including the electrode array, implant device and sound processor components.
14. Knowledge of the reliability and safety of cochlear implant devices; how this is assessed, monitored and recorded, and any registration and regulatory requirements.
15. Knowledge of the psychoacoustics of electrical stimulation of the ear, including modes of charge distribution, speech coding strategies, frequency and temporal resolution.
16. Knowledge of factors impacting outcome from cochlear implantation e.g. aetiology, auditory deprivation, rehabilitation, cognition, motivation.
17. Knowledge of electro-acoustic (hybrid) hearing and bimodal hearing options for cochlear implants users.
18. Knowledge of objective measurements in cochlear implants: neural responses, electrically evoked auditory brainstem responses.
19. Knowledge of principles of behavioural and objective programming techniques for cochlear implants.
20. Knowledge of virtual or remote programming and care for cochlear implant recipients
21. Knowledge of rehabilitation techniques to maximise cochlear implant performance.
22. Knowledge of evaluation tools including speech discrimination testing and validated questionnaires to measure outcomes with cochlear implants.
23. Awareness of other implantable device options and when to refer e.g. Auditory brainstem implants, Middle ear implants, bone conduction implants.
24. Awareness of current research in cochlear implants.
25. Up to date knowledge and understanding of relevant national quality standards guidelines.

4.0 Learning outcomes

On completion of the module the candidate should integrate theoretical knowledge and practical skills to enable them to:

1. Prepare clinical facilities & equipment used in CI assessment, to include daily calibration checks and room set up.
2. Formulate assessment and treatment plans, liaising with relevant professionals to co-ordinate cochlear implant assessments & care, as appropriate.
3. Plan clinical approaches, using clinical reasoning strategies and evidence-based practice.
4. Take a full and relevant history.
5. Carry out assessments in a safe and effective manner adapting as required to ensure information gained is maximised within the time available. This includes the use of validated questionnaires as appropriate.
6. Collate relevant information from other members of the team and make an informed decision concerning the suitability of individual cases for implantation from an audiological perspective.
7. Give clear information on results of hearing tests, advice and recommendation for follow-up actions/interventions using appropriate language and communication strategies.
8. Ensure that patients/ parents/carers (as applicable) have accurate expectations with regard to potential outcomes from cochlear implantation and that they are part of the decision making,

9. Develop and deliver individual management plans to include follow-up and adaptation of treatment as required liaising with therapy colleagues, as applicable.
10. Apply knowledge of advanced technological features of cochlear implants to programme sound processors as required.
11. Set up cochlear implant sound processors for electro-acoustic (hybrid) hearing and bimodal hearing where appropriate.
12. Set up and demonstrate the use of remote controls, mobile phone apps, assistive devices, wireless streaming or other optional technological features.
13. Evaluate outcomes of treatments using a range of subjective and objective outcome measures.
14. Keep appropriate clinical records.
15. Write reports on assessment sessions, recommended treatment plans and / or outcome of treatment as required, suitable for the intended audience, to include a range of professionals, patient/ parents/carers (as applicable).
16. Critically evaluate and reflect on clinical practice.
17. Understand their own role and those of other professionals in the team including surgeons, speech and language therapists, teachers of the deaf, hearing therapists, psychologists, social services and other agencies who contribute to the management and welfare of the patient and their family.

In this module the above overarching learning outcomes will apply to the indicative content outlined in part A. These learning outcomes are used to assess competency in the part B appraisals and examination.

5.0 The range of procedures in which competence needs to demonstrated (Part A)

1) Facilities & Equipment:

- a) Stage A / daily checks to include equipment related to cochlear implant assessments such as soundfield and speech discrimination systems.
- b) Room preparation and set-up, including collation of appropriate written resources.

2) Assessment Case History:

- a) Independently and succinctly, obtain a relevant case history in a logical but flexible progression. (Competence in adult and/or paediatric assessment (as applicable to your service), including history taking is a pre-requisite for this module). Within a full case history, the following areas that are more specific to cochlear implant patients should be included:
 - i) aetiology, syndromes, type and duration of hearing loss, progression, preferred ear
 - ii) General medical health and fitness for surgery
 - iii) History of hearing aid usage and rehabilitation, including reasons for non-use
 - iv) Communication ability and preferred mode of communication
 - v) Understanding and attitude to cochlear implants
 - vi) Goals and expectations from cochlear implantation
- b) Demonstrate strategies to communicate with patients with severe/ profound hearing loss, including need for text transcription, lip-reading, repetition/rephrasing, sign language or use of interpreters, checking for understanding and written support materials.

3) Expectations Counselling Regarding Outcomes:

- a) Detailed and individualised expectations counselling regarding the range of possible and likely outcomes to patients/parents and significant others (as applicable), including acclimatisation period.
- b) Specific and individualised information regarding cochlear implant devices available and suitability for the individual patient.
- c) Information about risks of cochlear implantation including loss of residual hearing and device failure
- d) Discussion about the choice of ear for CI
- e) Check understanding and repeating/rephrasing as necessary, provision of supporting written information, appropriate use of interpreters.
- f) Shared decision-making and patient/parent/carer involvement in choice and informed consent.
- g) Respond to questions from patients and significant others in an appropriate way, showing sensitivity to concerns.
- h) Discuss proposed individual management plan and agree appropriate goals with the patient/ Parent/Carer (as applicable).
- i) Discuss and agree management options for patients currently outside of CI criteria or unwilling/unable to proceed with CI.

4) Clinical Procedures – Assessment - in addition to the pre-requisite competence in adult and/or paediatric audiology assessment, specific clinical procedures that should be demonstrated in cochlear implant assessments are

- a) Objective hearing assessment to include:
 - i) OAEs
 - ii) Acoustic reflexes
- b) Behavioural hearing assessment to include ear specific testing of:
 - i) Aided speech discrimination in quiet and noise (where applicable)
- c) Comparison of hearing assessment outcomes and informal observations to identify signs of non-organic presentations and/or neural / central processing issues.
- d) Explain results to the patient/ parents/carers to include:
 - i) Hearing level and implications for speech communication
 - ii) Audiological suitability for a cochlear implant
- e) Informal assessment of candidate's speech intelligibility and the need for onward referral to speech and language therapy as required
- f) Adaption of the cochlear implant assessment for more complex patients e.g. deaf blindness, dementia, learning difficulty or non-English speaking.

5) Multidisciplinary Team Meeting

- a) Attend a MDT meeting and understand the role of the multidisciplinary team in patient management and decision-making.

6) Clinical Procedures – CI Programming

- a) Review session files or surgical reports for relevant information.
- b) Measure and assess electrode impedances, include identification of faults.
- c) View and interpret datalogging where relevant.

- d) Measure and/or verify Threshold and Comfort (MCL) levels as appropriate for device, including global adjustments, sweep and balancing, and interpolation of settings
- e) Select and adjust programme parameters as required, to include as appropriate:
 - i) Pulse width
 - ii) Rate
 - iii) Maxima
 - iv) Frequency allocation
 - v) Gains
 - vi) Map strategy
 - vii) Mode of stimulation
 - viii) Disabling or enabling electrodes
 - ix) Adjustments for electro-acoustic (hybrid) hearing and bimodal hearing.
- f) Management of non-auditory sensations.
- g) Measurement and application of neural responses.
- h) Choice of user settings in context of individual user circumstances, for a particular device such as noise reduction or directional programmes.
- i) Choice and set-up of remote control, apps, FM systems and wireless accessory options, in context of individual user circumstances.

7) Clinical procedures – rehabilitation

- a) Use of validated questionnaires and patient / Parent/carer/ (as applicable) reported outcome measures (PROMs) to assess the outcome of cochlear implantation
- b) Identify further assessments required and appropriate priority of these, e.g. further diagnostic investigations, referring on to another discipline as required.
- c) Engage in shared decision-making, and agree goals and priorities for interventions.
- d) Advise on techniques for maximising hearing outcome in relation to music, telephone use and hearing in noise.
- e) Liaise with specialist rehabilitationists/ speech and language therapists (as applicable)

8) Troubleshooting:

- a) Identify and manage common processor and coil faults, including testing of microphones.
- b) Identify and manage programming issues – such as compliance levels required for remapping.
- c) Identify and manage impedance/electrode issues, including requirement for integrity testing and manufacturer input.
- d) Identify and manage issues requiring rehabilitation strategies e.g. by use of data-logging.
- e) Manage problems with power and battery life issues.
- f) Refer for further support e.g. from ENT, speech and language therapy, teachers of the deaf and education (as applicable).

6.0 Types of cases for periodic appraisals of whole patient management (part B)

Part B assessments will be assessed against the same criteria as the examination marking guidance.

The specified appointment types / patient categories for this module are:

- Assessment for suitability for a cochlear implant
- Initial programming of device (switch-on)
- Ongoing review and programming of device/s
- Trouble-shooting case

It is expected that the new patient assessment will include identification of intervention options, agreeing a management plan and information counselling. Ongoing review should include goal planning and information and advice giving. The trainee is expected to review progress and modify treatment as necessary using outcome measures as appropriate. Trainees are not expected to be competent in leading the assessment of cases where there are other significant disabilities that would provide major challenges to assessment or management

7.0 Examination details

Examination will take place over a maximum of a one-day period at the candidates training centre, assessing the candidate against the learning outcomes for this module. This examination has two components:

1. Practical assessment of clinical skills. This will involve the direct observation of the candidate in two appointments, as outlined below, followed by a case viva after each case, plus a written report on one of these cases. The report on any new case should include the following discrete sections: history, summary of findings, interventions delivered and individual management plan.
2. General viva voce, to assess the level and scope of theoretical knowledge underpinning the learning outcomes. This may explore broader issues prompted by the practical exams, and the content of this module.

For the practical cases, candidates will be assessed on their ability to manage adults or children (as applicable) on a 1:1 basis as outlined in the 'scope' for two appointment types:

1. New case not previously seen for cochlear implant assessment.
2. Comprehensive review of a cochlear implant recipient to include cochlear implant programming.

8.0 Exam marking guidance

Learning outcome	0 Does not meet examination standard	1 Meets examination standard	2 Exceeds examination standard
Prepare test facilities & equipment, to include daily calibration checks of any equipment used, and room set up	Omits or incorrectly performs calibration checks and equipment setup, OR is unable to identify the consequences of proceeding with incorrectly calibrated or faulty equipment, or room set up inappropriate for the session.	Performs calibration checks and equipment setup correctly, and is able to identify the main consequences of proceeding with incorrectly calibrated or faulty equipment, and the room is set up appropriately for the session.	Performs calibration checks and equipment setup skilfully, and is able to identify detailed consequences of proceeding with incorrectly calibrated or faulty equipment, and room is set up with a high attention to detail and patient needs.
Formulate assessment plans, liaising with the relevant professionals to co-ordinate assessments & care, as appropriate Plan clinical approaches, using clinical reasoning strategies, evidence based practice	Does not select appropriate or person-specific assessment or management plans, OR is unable to explain the reasoning behind the approach taken, OR does not show sufficient knowledge of the current research evidence and clinical guidance, OR does not liaise with relevant professionals as appropriate	Identifies appropriate assessment and management plans, and modified to meet individual needs. Is able to broadly explain the reasoning underpinning the approach taken using current research evidence and clinical guidance. Liaises with relevant professionals as appropriate.	Creates an assessment or management plan which is highly tailored to the patient's specific needs and consistent with current clinical guidance and evidence-based practice and liaises with the relevant professionals as appropriate.
Take a full and relevant history	Obtains insufficient information about the patient's symptoms, difficulties and needs, health, lifestyle, preferences and expectations	Uses effective questioning and listening to elicit sufficient information about the patient's symptoms, difficulties and needs, health, lifestyle, preferences and expectations.	Uses skilful questioning, and active listening to elicit a comprehensive picture of the patient's symptoms, difficulties and needs, health, lifestyle, preferences and expectations.
Ensure any concerns regarding safeguarding are recorded appropriately and are acted on, adhering to local protocol	Does not pick up on safeguarding concerns OR does not record them appropriately, OR does not act according to local protocol	Picks up on safeguarding concerns and records them appropriately according to local protocol	Picks up on safeguarding concerns and shows a high level of knowledge about how to act on these, using appropriate documentation and referring to local protocol
Carry out assessment in a safe and effective manner adapting as required to ensure testing is appropriate for the developmental age of the child and information gained is maximised within the time available	Assessment is unsafe, OR does not follow local or national guidance (or without evidence based justifications as to why not), OR is not completed within an appropriate time, OR does not adapt the assessment to maximise data collection	Performs assessment safely, according to local and national guidance and within the appropriate appointment time allocation. Adapts the testing process where appropriate to ensure the most valuable data is prioritised	Performs assessment skilfully, according to local and national guidance and within the appropriate appointment time allocation. Adapts the testing process where appropriate to ensure the most valuable data is prioritised
Show creativity, initiative and originality of thinking in tackling and solving practical problems	Does not show creativity, initiative and originality of thinking in tackling and solving practical problems if they arise during the session	Shows creativity, initiative and originality of thinking in tackling and solving practical problems if they arise during the session	Shows a high level of creativity, initiative and originality of thinking in tackling and solving practical problems if they arise during the session

Collate relevant information, interpret and make an informed decision concerning the diagnosis and management of individual cases Ensure that patients, parents/carers are part of the decision making with use of patient centred care Formulate appropriate goals and individual management plans, liaising with the relevant professionals to co-ordinate assessment & care planning, as appropriate.	Does not identify an appropriate range of diagnostic and management options for the patient or does not ensure patients are part of the decision making process, OR does not formulate goals and individuals management plans, OR does not liaise with relevant professionals as appropriate.	Integrates the details from the history, assessment, research evidence, current clinical guidance and patient preferences to identify a range of appropriate management options for the patient, including onward referral, AND formulates goals and individual management plans, AND liaises with relevant professionals as appropriate.	Integrates the details from the history, assessment, research evidence, current clinical guidance to identify the full range of appropriate management options for the patient, (including onward referral) and their likely benefits and limitations, and fully involves the patient in decision making, AND formulates highly personalised goals and individual management plans, AND skilfully liaises with relevant professionals as appropriate.
Deliver treatment plans tailoring it to the individual, using counselling skills and appropriate techniques as required, and adapt as required depending on progress.	Delivery or treatment is unsafe, OR does not follow local or national guidance (or without evidence based justifications as to why not), OR is not completed within an appropriate time OR is not tailored to the individual OR does not use appropriate counselling skills or techniques as required, or is not adapted depending on progress	Treatment is delivered safely AND does follow local or national guidance (or with evidence based justifications as to why not), AND is completed within an appropriate time, tailored to the individual with the appropriate use of counselling skills or techniques as required, and is adapted depending on progress.	Treatment is delivered skilfully, following local or national guidance (or with evidence based justifications as to why not), is completed within an appropriate time, highly tailored to the individual with the appropriate and skilful use of counselling skills or techniques as required and is skilfully adapted depending on progress.
Collate, and prepare resource materials (including patient information) including signposting to online resources, to complement their own interventions and those of colleagues	Resource materials are not prepared OR are inadequate OR incomplete OR inaccurate	Adequate, complete and accurate resource materials are prepared in advance, to include signposting to online resources	High quality and wide ranging resource materials are prepared in advance, to include signposting to online resources, and are tailored for the individual patient and family.
Recognise the need for and arrange onward referral to appropriate colleagues to relevant professionals considering the holistic needs of the patient, such as ENT, paediatricians, speech and language therapists, psychology etc	Does not recognised the need for onward referral or does not refer to an appropriate individual, if required	Recognises the need and refers the patient onto an appropriate individual, if required.	Recognises the need and refers the patient onto an appropriate individual, if required, in a skilful way.
Keep parent/carers and patients fully informed during all aspects of the appointment, obtaining consent for procedures as appropriate. Give clear information on results of hearing tests, advice and recommendation for follow-up actions/interventions to parents/carers and/or patients using appropriate language and communication strategies.	Communicates information to patients/ parents and/or carers in a way that is generally unclear or contains irrelevant information.	Communicates relevant information about testing and management options, and when delivering treatment, to patients, parents and/or carers clearly and in a way that broadly meets their needs.	Effectively and clearly communicates relevant information about testing and management options, and when delivering treatment to patients, parents and/or carers in a way that is highly tailored to their needs.

Keep appropriate clinical records	Clinical record omits key information or is omitted from the clinical record system.	Provides a clear summary of the clinical episode, which is stored in an appropriate clinical record system.	Provides clear and detailed information about the clinical episode, which is stored in an appropriate clinical record system.
Write reports on test results and recommendations suitable for the intended audience, to include a range of professionals	Report omits key information, is disorganised or written using unprofessional terminology.	Report provides a clear summary of the clinical episode which is logically structured and written using professional terminology.	Report provides clear and detailed information about the clinical episode which is highly organised, concise, and well written using professional but accessible terminology.
<p>Demonstrate the ability to, and articulate clearly through presentation and constructive discussion with colleagues:</p> <ul style="list-style-type: none"> • Relate their own practice to a supporting knowledge base – including reference to evidence based and/or recognised good practice • Clearly justify <u>any</u> of their own clinical decisions made in the assessment or management of patients • Critically appraise the context of individual assessments within national and local structures/processes for assessment and management of cochlear implants • Critically evaluate and reflect on their own actions • Show independent thought through evaluation and presentation of alternative (and justified) approaches to existing local practice 	<p>Limited ability to reflect on and critically evaluate own clinical practice, or explain clinical reasoning. Demonstrates limited knowledge of subjects discussed.</p> <p>OR</p> <p>Does not demonstrate a good working knowledge or relevant national guidelines or policies, or evidence base, or calibration aspects of any equipment used</p> <p>OR</p> <p>Unable to interpret or make informed decisions concerning the diagnosis, needs or management of individuals cases</p> <p>OR</p> <p>Does not demonstrate a good working knowledge of local structures, or offer critical comment</p> <p>OR</p> <p>Does not demonstrate critical evaluation or reflection skills of own practice and others, or not aware of the limits of own skills or knowledge, or when to seek advice.</p> <p>OR</p> <p>Does not show independent thought during constructive discussion</p>	<p>Able to reflect on and critically evaluate own clinical practice, and explain clinical reasoning. Demonstrates comprehensive knowledge of subjects discussed.</p> <p>AND</p> <p>Demonstrates a good working knowledge of relevant national guidelines and policies, relevant evidence base, Has a good working knowledge of the relevant calibration aspects of any equipment used</p> <p>AND</p> <p>Demonstrates the ability to interpret and make informed decisions concerning the diagnosis, needs and management of individual cases</p> <p>AND</p> <p>Demonstrates a good working knowledge of the local structures (i.e. care pathways) for processing patients and offer critical comment</p> <p>AND</p> <p>Demonstrates critical evaluation and reflection skills of own practice and others, and awareness of the limits of own skills and knowledge and when to seek advice</p> <p>Shows independent thought during constructive discussion</p>	<p>Able to provide insightful reflection and critical evaluation of own clinical practice, and explain clinical reasoning with reference to research evidence and clinical practice.</p> <p>AND</p> <p>Demonstrates wider knowledge of subjects discussed.</p> <p>AND</p> <p>Demonstrates a high level of working knowledge of relevant national guidelines and policies, relevant evidence base, Has a high level of working knowledge of the relevant calibration aspects of any equipment used</p> <p>AND</p> <p>Demonstrates the ability to skilfully interpret and make informed decisions concerning the diagnosis, needs and management of individual cases</p> <p>AND</p> <p>Demonstrates a high level of working knowledge of the local structures (i.e. care pathways) for processing patients and offer critical comment</p> <p>AND</p> <p>Demonstrates a high level of critical evaluation and reflection skills of own practice and others, and high awareness of the limits of own skills and knowledge and when to seek advice</p> <p>AND</p> <p>Shows a high level of independent thought during constructive discussion</p>

Candidates must achieve a final rating of 1 or 2 in every section of the examination to achieve a pass.