

## Clinical Neurophysiology Training Curriculum Implementation August 2021



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## 1. Introduction

Clinical Neurophysiology is a laboratory specialty involved in diagnosis, monitoring and therapeutic interventions for diseases and disorders affecting the nervous system in children and adults applying electroencephalography (EEG), electromyography (EMG), nerve conduction studies (NCS), and evoked potentials (EP) to assess function in the nervous system. The purpose of the curriculum in Clinical Neurophysiology is to equip trainees with the necessary knowledge, skills and behaviours to become consultants providing the highest standards of service to neonates, children and adults who require neurophysiological investigations. Implicit in the educational process is the need to develop positive attitudes towards lifelong learning such that the practising consultant can adapt to technological advances and clinical developments.

If the trainee has completed training satisfactorily, they will be eligible for a CCT and can be recommended to the GMC for inclusion on the specialist register. At this stage, they will be regarded as capable of independent unsupervised practice and will be eligible for appointment as an NHS consultant.

The curriculum for Clinical Neurophysiology has been developed with input of trainees, consultants actively involved in delivering teaching and training across the UK, service representatives and lay persons. This has been through the work of the JRCPTB, the Clinical Neurophysiology Specialist Advisory Committee and the British Society for Clinical Neurophysiology Training Committee.

Clinical Neurophysiologists investigate patients from birth to the grave and this incorporates neonatal, paediatric and adult medicine. Advances in antenatal and postnatal care of premature infants, as well as the demographic bulge of the "Baby Boomer" generation have increased demand for the use of skills looking at brain function and neuromuscular disease. In addition, the development of operative monitoring of neurological function to spinal and neurosurgery patients has become mandatory in surgical units<sup>1</sup>, with an increased demand to help preserve post-operative neurological function and reduce litigation in the NHS. Developments in critical care have also increased demand for the assessment of patients in coma or neurological injury.

Many specialties rely on the provision of neurophysiology investigations, especially Neurology, Neurosurgery, Orthopaedics, Hand surgery, Spinal surgery, Paediatrics, Critical care and Neonatology, Rheumatology, Plastic surgery and Ophthalmology. A functioning service improves inpatient flow, improves diagnostic accuracy, reduces operative complications and prevents unnecessary surgery.

## **2. Purpose**

### **2.1 Purpose of the curriculum**

This curriculum will ensure that the trainee develops the full range of generic professional capabilities and underlying knowledge, skills and behaviours required for a Consultant Physician working within the modern NHS and will also ensure that the trainee develops the full range of speciality-specific core capabilities, together with areas of advanced practice covering neuromuscular techniques, EEG and EPs.

The objectives of the curriculum are:

- to set out a range of specific professional capabilities that encompass all knowledge, skills and activities needed to practice clinical neurophysiology at consultant level
- to set expected standards of knowledge and performance of various professional skills and activities at each stage
- to suggest indicative training times and experiences needed to achieve the required standards
- to indicate how the professional capabilities will be assessed.

### **Scope of Practice**

The scope of Clinical Neurophysiology requires diagnostic reasoning and the ability to combine neurophysiological data with the clinical picture, and to be able to communicate diagnostic information to colleagues in other specialties. Clinical Neurophysiologists need the ability to work within, or as leaders of, teams and systems involving other healthcare professionals to effectively provide optimal patient care. They need to be able to provide service for neonates, children and adults.

Clinical Neurophysiologists have a wide variety of opportunities for research and the training is designed to facilitate opportunities for academic careers.

Clinical Neurophysiology trainees will have developed a number of core capabilities incorporating EEG, NCS and EMG techniques, and Evoked Potentials. They will also develop capabilities in advanced EEG (including ambulatory EEG, video telemetry, electrocorticography and sleep studies), advanced EMG (including single fibre EMG, autonomic testing, quantitative sensory testing, transcranial magnetic stimulation, uroneurophysiological testing and quantitative EMG) and advanced EP (including electroretinography, somatosensory evoked potentials and intraoperative monitoring). Some consultants practice in just one specialist area, but for the majority, clinical practice combines a mixture of the capabilities taught with both adults and children and it is necessary to gain experience in the whole curriculum.

**There are no notable exclusions to the curriculum.**

## Output

At the end of training, the trainee should be able to:

- Manage and lead a Clinical Neurophysiology service
- Perform neurophysiological investigations, interpret findings and create a clinical report for patients of all ages with disorders of the central and peripheral nervous system.
- Perform neurophysiological investigations, interpret findings and create a clinical report for patients of all ages with disorders of muscle.
- Perform neurophysiological investigations, interpret findings and create a clinical report for patients of all ages with disorders of the retina and optic nerve.
- Provide a clinical neurophysiology service to support the investigation of patients with neurological dysfunction in the critical care and neonatal unit setting.
- Provide a clinical neurophysiology service to support surgical teams in the localisation of anatomical structures, identification of pathological features and prevention of harm intraoperatively.
- Provide neurophysiological support for the correct anatomical location of botulinum toxin injections.
- Participate actively in the multidisciplinary team, not only clinically, but also contributing to team education and quality improvement.
- Demonstrate all the GMC mandated GPCs including communication skills.
- Demonstrate the attributes of professionalism, particularly recognition of the primacy of patient welfare that is required for safe and effective care of those with both acute and long-term conditions, ensuring patients' views are central to all decision making.
- Continue personal professional development and to help train and educate not only doctors and medical students, but students and qualified staff from other professions.

Clinical Neurophysiology is a group 2 medical specialty. Trainees will be selected into the specialty after IM year 2. Higher specialty training will normally be a four year programme that will begin following completion of the Internal Medicine (IM) stage 1 curriculum or equivalent.

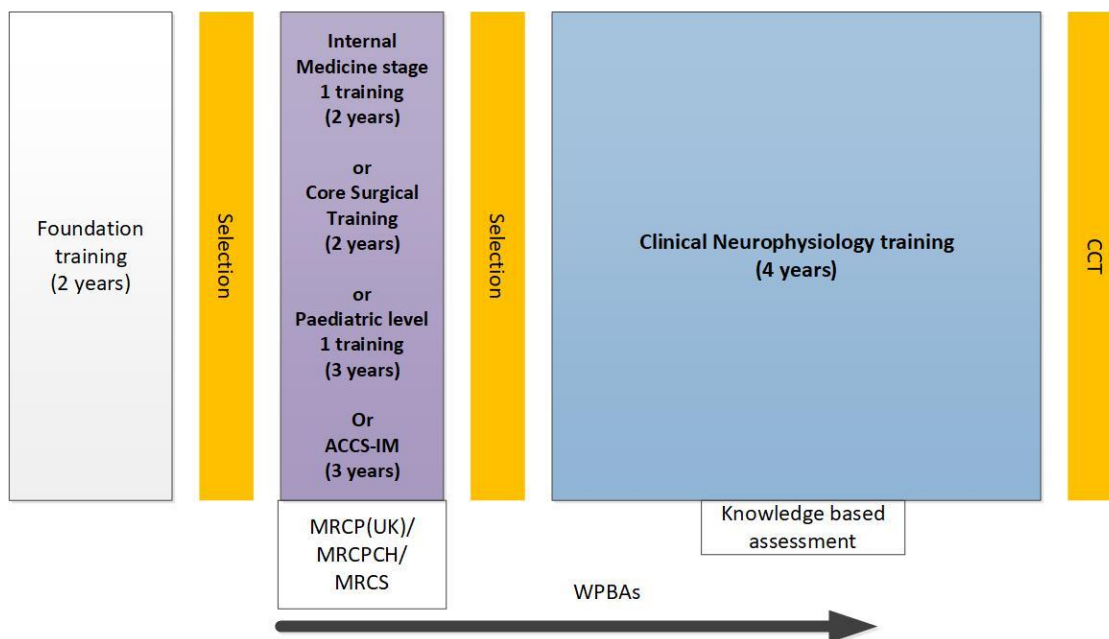
This purpose statement has been endorsed by the GMC's Curriculum Oversight Group and confirmed as meeting the needs of the health services of the countries of the UK.

## 2.2 High-level learning outcomes – capabilities in practice (CiPs)

Learning outcomes – capabilities in practice (CiPs)
<b>Generic CiPs</b>
<ol style="list-style-type: none"><li>1. Able to successfully function within NHS organisational and management systems</li><li>2. Able to deal with ethical and legal issues related to clinical practice</li><li>3. Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement</li><li>4. Is focused on patient safety and delivers effective quality improvement in patient care</li><li>5. Carrying out research and managing data appropriately</li><li>6. Acting as a clinical teacher and clinical supervisor</li></ol>
<b>Specialty CiPs</b>
<ol style="list-style-type: none"><li>1. Managing and delivering a basic adult and paediatric NCS / EMG service</li><li>2. Managing and delivering a basic adult and paediatric EEG service</li><li>3. Managing and delivering a basic adult and paediatric Evoked Potential (EP) service</li><li>4. Managing and delivering an advanced adult and paediatric NCS / EMG service</li><li>5. Managing and delivering an advanced adult and paediatric adult and paediatric EEG service</li><li>6. Managing and delivering an advanced adult and paediatric Evoked Potential service</li></ol>

## 2.3 Training pathway

The training pathway for Clinical Neurophysiology is that following completion of two years of Internal Medicine stage 1 training , three years of ACCS-IM, two years of Core Surgical Training or three years of Level 1 paediatrics and completion of the relevant membership of Royal College examinations, the trainees are selected at national recruitment into an indicative four year higher specialty training programme. Trainees will apply to the Royal College of Physicians who will advertise and administer the short-listing process and interviewing will be administered by one of the Deaneries.



Each Health Education institution and Deanery has its own arrangements for placements with some rotating between different trusts and healthboards and some keeping training on one site, as local provision of services and learning dictates.

During ST4, ST5 and ST6 a formative short-answer examination will be taken which will guide the trainee and educational supervisor in the development of a personal development plan.

## 2.4 Duration of training

The trainees will follow an indicative four year programme of learning the skills and knowledge required in a progressive manner.

There will be options for those trainees who demonstrate exceptionally rapid development and acquisition of capabilities to complete training more rapidly than the current indicative time although it is recognised that clinical experience is a fundamental aspect of development as a good physician (guidance on completing training early will be available on the [JRCPTB website](#)). There may also be a small number of trainees who develop more slowly and will require an extension of training in line the Reference Guide for Postgraduate Specialty Training in the UK (The Gold Guide).

## 2.5 Flexibility and accreditation of transferable capabilities

The curriculum incorporates and emphasises the importance of the generic professional capabilities (GPCs). GPCs will promote flexibility in postgraduate training as these common capabilities can be transferred from specialty to specialty. In addition, supporting flexibility for trainees to move between these specialties without needing to repeat aspects of training. The curriculum supports the accreditation of transferrable competencies (using the Academy framework).

There is significant overlap in the competencies in the Neurology and Clinical Neurophysiology curriculum. A gap analysis would be completed to identify transferable capabilities and to assess the training requirements needed to achieve the Clinical Neurophysiology capabilities and training time is likely to be reduced by 12-24 months. Trainees will still need to demonstrate the CiPs, with assessment evidence, as described in the Clinical Neurophysiology curriculum. Individual assessments may provide evidence towards CiPs covered in both curricula.

## **2.6 Less than full time training**

Trainees are entitled to opt for less than full time training programmes. Less than full time trainees should undertake a pro rata share of the out-of-hours duties (including on-call and other out-of-hours commitments) required of their full-time colleagues in the same programme and at the equivalent stage.

Less than full time trainees should assume that their clinical training will be of a duration pro rata with the time indicated/recommended, but this should be reviewed in accordance with the Gold Guide.

## **2.7 Generic Professional Capabilities and Good Medical Practice**

The GMC has developed the Generic professional capabilities (GPC) framework<sup>1</sup> with the Academy of Medical Royal Colleges (AoMRC) to describe the fundamental, career-long generic capabilities required of every doctor. The framework describes the requirement to develop and maintain key professional values and behaviours, knowledge, and skills, using a common language. GPCs also represent a system-wide, regulatory response to the most common contemporary concerns about patient safety and fitness to practise within the medical profession. The framework will be relevant at all stages of medical education, training and practice.

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<sup>1</sup> [Generic professional capabilities framework](#)



## The nine domains of the GMC's Generic Professional Capabilities



Good medical practice (GMP)<sup>2</sup> is embedded at the heart of the GPC framework. In describing the principles, duties and responsibilities of doctors, the GPC framework articulates GMP as a series of achievable educational outcomes to enable curriculum design and assessment.

The GPC framework describes nine domains with associated descriptor outlining the 'minimum common regulatory requirement' of performance and professional behaviour for those completing a CCT or its equivalent. These attributes are common, minimum and generic standards expected of all medical practitioners achieving a CCT or its equivalent.

The nine domains and subsections of the GPC framework are directly identifiable in the curriculum. They are mapped to each of the generic and specialty CiPs, which are in turn mapped to the assessment blueprints. This is to emphasise those core professional capabilities that are essential to safe clinical practice and that they must be demonstrated at every stage of training as part of the holistic development of responsible professionals.

This approach will allow early detection of issues most likely to be associated with fitness to practise and to minimise the possibility that any deficit is identified during the final phases of training.

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<sup>2</sup> [Good Medical Practice](#)

### 3 Content of Learning

The curriculum is spiral - topics and themes will be revisited to expand understanding and expertise. The level of entrustment for capabilities in practice (CiPs) will increase as an individual progresses from needing direct supervision to able to be entrusted to act unsupervised.

#### 3.1 Capabilities in practice (CiP)

CiPs describe the professional tasks or work within the scope of the specialty. CiPs are based on the concept of entrustable professional activities<sup>3</sup>, which use the professional judgement of appropriately trained, expert assessors as a defensible way of forming global judgements of professional performance.

Each CiP has a set of descriptors associated with that activity or task. Descriptors are intended to help trainees and trainers recognise the knowledge, skills and attitudes which should be demonstrated. Doctors in training may use these capabilities to provide evidence of how their performance meets or exceeds the minimum expected level of performance for their year of training. The descriptors are not a comprehensive list and there are many more examples that would provide equally valid evidence of performance.

Many of the CiP descriptors refer to patient-centred care and shared decision making. This is to emphasise the importance of patients being at the centre of decisions about their own treatment and care, by exploring care or treatment options and their risks and benefits and discussing choices available.

Additionally, the CiPs repeatedly refer to the need to demonstrate professional behaviour with regard to patients, carers, colleagues and others. Good doctors work in partnership with patients and respect their rights to privacy and dignity. They treat each patient as an individual. They do their best to make sure all patients receive good care and treatment that will support them to live as well as possible, whatever their illness or disability. Appropriate professional behaviour should reflect the principles of GMP and the GPC framework.

In order to complete training and be recommended to the GMC for the award of CCT and entry to the specialist register, the doctor must demonstrate that they are capable of unsupervised practice in all generic and specialty CiPs. Once a trainee has achieved level 4 sign off for a CiP it will not be necessary to repeat assessment of that CiP if capability is maintained (in line with standard professional conduct).

This section of the curriculum details the six generic CiPs and six specialty CiPs for Clinical Neurophysiology. The expected levels of performance, mapping to relevant GPCs and the evidence that may be used to make an entrustment decision are given for each CiP. The list of evidence for each CiP is not prescriptive and other types of evidence may be equally valid for that CiP.

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<sup>3</sup> [Nuts and bolts of entrustable professional activities](#)

### 3.2 Generic capabilities in practice

The six generic CiPs cover the universal requirements of all specialties as described in GMP and the GPC framework. Assessment of the generic CiPs will be underpinned by the descriptors for the nine GPC domains and evidenced against the performance and behaviour expected at that stage of training. Satisfactory sign off will indicate that there are no concerns. It will not be necessary to assign a level of supervision for these non-clinical CiPs.

In order to ensure consistency and transferability, the generic CiPs have been grouped under the GMP-aligned categories used in the Foundation Programme curriculum plus an additional category for wider professional practice:

- Professional behaviour and trust
- Communication, team-working and leadership
- Safety and quality
- Wider professional practice

For each generic CiP there is a set of descriptors of the observable skills and behaviours which would demonstrate that a trainee has met the minimum level expected. The descriptors are not a comprehensive list and there may be more examples that would provide equally valid evidence of performance.

#### KEY

CbD	Case-based discussion	DOPS	Direct observation of procedural skills
GCP	Good Clinical Practice	MCR	Multiple consultant report
Mini-CEX	Mini-clinical evaluation exercise	PS	Patient survey
MSF	Multi source feedback	TO	Teaching observation
QIPAT	Quality improvement project assessment tool		

<b>Generic capabilities in practice (CiPs)</b>	
<b>Category 1: Professional behaviour and trust</b>	
<b>1. Able to function successfully within NHS organisational and management systems</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Aware of and adheres to the GMC professional requirements</li> <li>• Aware of public health issues including population health, social detriments of health and global health perspectives</li> <li>• Demonstrates effective clinical leadership</li> <li>• Demonstrates promotion of an open and transparent culture</li> <li>• Keeps practice up to date through learning and teaching</li> <li>• Demonstrates engagement in career planning</li> <li>• Demonstrates capabilities in dealing with complexity and uncertainty</li> <li>• Aware of the role of and processes for commissioning</li> <li>• Aware of the need to use resources wisely</li> </ul>

<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> <li>• professional requirements</li> <li>• national legislative requirements</li> <li>• the health service and healthcare systems in the four countries</li> </ul> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>MCR</p> <p>MSF</p> <p>Active role in governance structures</p> <p>Management course</p> <p>End of placement reports</p>
<b>2. Able to deal with ethical and legal issues related to clinical practice</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Aware of national legislation and legal responsibilities, including safeguarding vulnerable groups</li> <li>• Behaves in accordance with ethical and legal requirements</li> <li>• Demonstrates ability to offer apology or explanation when appropriate</li> <li>• Demonstrates ability to lead the clinical team in ensuring that medical legal factors are considered openly and consistently</li> </ul>
<b>GPCs</b>	<p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> <li>• professional requirements</li> <li>• national legislative requirements</li> <li>• the health service and healthcare systems in the four countries</li> </ul> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>MCR</p> <p>MSF</p> <p>CbD</p> <p>DOPS</p> <p>Mini-CEX</p> <p>BLS certificate</p> <p>End of life care and capacity assessment</p> <p>End of placement reports</p>
<b>Category 2: Communication, teamworking and leadership</b>	
<b>3. Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Communicates clearly with patients and carers in a variety of settings</li> <li>• Communicates effectively with clinical and other professional colleagues</li> <li>• Identifies and manages barriers to communication (eg cognitive impairment, speech and hearing problems, capacity issues)</li> <li>• Demonstrates effective consultation skills including effective verbal and nonverbal interpersonal skills</li> <li>• Shares decision making by informing the patient, prioritising the patient's wishes, and respecting the patient's beliefs, concerns and expectations</li> <li>• Shares decision making with children and young people</li> <li>• Applies management and team working skills appropriately, including influencing, negotiating, re-assessing priorities and effectively managing complex, dynamic situations</li> </ul>

<b>GPCs</b>	<p>Domain 2: Professional skills</p> <ul style="list-style-type: none"> <li>• practical skills</li> <li>• communication and interpersonal skills</li> <li>• dealing with complexity and uncertainty</li> <li>• clinical skills (<i>history taking, diagnosis and medical management; consent; humane interventions; prescribing medicines safely; using medical devices safely; infection control and communicable disease</i>)</li> </ul> <p>Domain 5: Capabilities in leadership and teamworking</p>
<b>Evidence to inform decision</b>	<p>MCR MSF PS End of placement reports ES report</p>
<b>Category 3: Safety and quality</b>	
<b>4. Is focused on patient safety and delivers effective quality improvement in patient care</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Makes patient safety a priority in clinical practice</li> <li>• Raises and escalates concerns where there is an issue with patient safety or quality of care</li> <li>• Demonstrates commitment to learning from patient safety investigations and complaints</li> <li>• Shares good practice appropriately</li> <li>• Contributes to and delivers quality improvement</li> <li>• Understands basic Human Factors principles and practice at individual, team, organisational and system levels</li> <li>• Understands the importance of non-technical skills and crisis resource management</li> <li>• Recognises and works within limit of personal competence</li> <li>• Avoids organising unnecessary investigations or prescribing poorly evidenced treatments</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <ul style="list-style-type: none"> <li>• practical skills</li> <li>• communication and interpersonal skills</li> <li>• dealing with complexity and uncertainty</li> <li>• clinical skills (<i>history taking, diagnosis and medical management; consent; humane interventions; prescribing medicines safely; using medical devices safely; infection control and communicable disease</i>)</li> </ul> <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> <li>• professional requirements</li> <li>• national legislative requirements</li> <li>• the health service and healthcare systems in the four countries</li> </ul> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and teamworking</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <ul style="list-style-type: none"> <li>• patient safety</li> <li>• quality improvement</li> </ul>
<b>Evidence to inform decision</b>	<p>MCR MSF QIPAT End of placement reports</p>

<b>Category 4: Wider professional practice</b>	
<b>5. Carrying out research and managing data appropriately</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Manages clinical information/data appropriately</li> <li>• Understands principles of research and academic writing</li> <li>• Demonstrates ability to carry out critical appraisal of the literature</li> <li>• Understands the role of evidence in clinical practice and demonstrates shared decision making with patients</li> <li>• Demonstrates appropriate knowledge of research methods, including qualitative and quantitative approaches in scientific enquiry</li> <li>• Demonstrates appropriate knowledge of research principles and concepts and the translation of research into practice</li> <li>• Follows guidelines on ethical conduct in research and consent for research</li> <li>• Understands public health epidemiology and global health patterns</li> <li>• Recognises potential of applied informatics, genomics, stratified risk and personalised medicine and seeks advice for patient benefit when appropriate</li> </ul>
<b>GPCs</b>	Domain 3: Professional knowledge <ul style="list-style-type: none"> <li>• professional requirements</li> <li>• national legislative requirements</li> <li>• the health service and healthcare systems in the four countries</li> </ul> Domain 7: Capabilities in safeguarding vulnerable groups Domain 9: Capabilities in research and scholarship
<b>Evidence to inform decision</b>	MCR MSF MRCP(UK) GCP certificate (if involved in clinical research) Evidence of literature search and critical appraisal of research Use of clinical guidelines Quality improvement and audit Evidence of research activity End of placement reports
<b>6. Acting as a clinical teacher and clinical supervisor</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Delivers effective teaching and training to medical students, junior doctors and other health care professionals</li> <li>• Delivers effective feedback with action plan</li> <li>• Able to supervise less experienced trainees in their clinical assessment and management of patients</li> <li>• Able to supervise less experienced trainees in carrying out appropriate practical procedures</li> <li>• Able to act a clinical supervisor to doctors in earlier stages of training</li> </ul>
<b>GPCs</b>	Domain 1: Professional values and behaviours Domain 8: Capabilities in education and training
<b>Evidence to inform decision</b>	MCR MSF TO Relevant training course End of placement reports

### 3.3 Specialty capabilities in practice

The specialty CiPs describe the clinical tasks or activities that are essential to the practice of Clinical Neurophysiology. The CiPs have been mapped to the nine GPC domains to reflect the professional generic capabilities required to undertake the clinical tasks.

Satisfactory sign off will require educational supervisors to make entrustment decisions on the level of supervision required for each CiP and if this is satisfactory for the stage of training, the trainee can progress. More detail is provided in the programme of assessment section of the curriculum.

#### KEY

CbD	Case-based discussion	DOPS	Direct observation of procedural skills
GCP	Good Clinical Practice	KBA	Formative Knowledge based assessment
Mini-CEX	Mini-clinical evaluation exercise	MCR	Multiple consultant report
MSF	Multi source feedback	PS	Patient survey
QIPAT	Quality improvement project assessment tool	TO	Teaching observation
BLS	Basic Life Support	LOG	Logbook of procedures

Specialty CiPs	
1. Managing and delivering a basic adult and paediatric NCS / EMG service	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Leads the multidisciplinary team in the investigation of peripheral nerve and muscle disorders.</li> <li>• Utilises nerve conduction and electromyography equipment and understands how and why they work.</li> <li>• Makes decisions about purchasing and ordering equipment to perform investigations.</li> <li>• Complies with laws and regulations regarding health and safety, confidentiality, information governance and safeguarding of vulnerable patients.</li> <li>• Ensures quality assurance through audit and quality improvement projects.</li> <li>• Understands the anatomy and physiology of the central and peripheral nervous systems and muscles.</li> <li>• Understands the effects of different pathologies on central and peripheral nervous systems and muscle and how they are investigated.</li> <li>• Performs sensory and motor nerve conduction studies, F Waves, H reflexes, blink reflexes, repetitive nerve stimulation and electromyography.</li> <li>• Recognises electrical artefacts and knows how to overcome them.</li> <li>• Assesses referrals for likely diagnosis and recommends investigation protocols.</li> <li>• Assesses, examines and performs investigations to look for neuromuscular disease and disorders of the anterior horns.</li> <li>• Assesses clinical and physiological findings, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.</li> </ul>

	<ul style="list-style-type: none"> <li>Assesses clinical and physiological findings and communicates the findings with patients and colleagues effectively</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p>
<b>Evidence to inform decision</b>	<p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CbD</p> <p>Reflections</p> <p>QIPAT</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>2. Managing and delivering a basic adult and paediatric Electroencephalography (EEG) service</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>Leads the multidisciplinary team in the investigation of seizures, disorders of consciousness and organic brain disease.</li> <li>Utilises electroencephalography equipment and understands how and why they work.</li> <li>Makes decisions about purchasing and ordering equipment to perform investigations.</li> <li>Complies with laws and regulations regarding health and safety, confidentiality, information governance and safeguarding of vulnerable patients.</li> <li>Ensures quality assurance through audit and quality improvement projects.</li> <li>Understands the anatomy and physiology of the central nervous system.</li> <li>Understands the effects of different pathologies on the brain and how they are investigated.</li> <li>Performs EEG recordings in adults and children.</li> <li>Recognises electrical artefacts and knows how to overcome them.</li> <li>Assesses referrals for likely diagnosis and recommends investigation protocols including the use of hyperventilation and photic stimulation, length of recording, sleep, sleep deprivation and autosuggestion.</li> <li>Recognises benign variants in EEG traces</li> <li>Understands and recognises the effect of age on EEG traces.</li> <li>Understands and takes account of medication and its effects.</li> <li>Assesses, examines and interprets investigations and video recordings to look for patients with suspected seizure disorders, non-epileptic attacks and organic brain disease.</li> </ul>



	<ul style="list-style-type: none"> <li>Assesses clinical and physiological findings, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.</li> <li>Assesses clinical and physiological findings and communicates the findings with patients and colleagues effectively.</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p>
<b>Evidence to inform decision</b>	<p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CbD</p> <p>Reflections</p> <p>QIPAT</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>3. Managing and delivering a basic adult and paediatric Evoked Potentials (EP) service</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>Leads the multidisciplinary team in the investigation of peripheral and central nervous system disorders using visual evoked potentials (VEPs) and somatosensory sensory evoked potentials (SSEPs).</li> <li>Utilises recording and stimulating equipment and understands how and why they work.</li> <li>Makes decisions about purchasing and ordering equipment to perform investigations.</li> <li>Complies with laws and regulations regarding health and safety, confidentiality, information governance and safeguarding of vulnerable patients.</li> <li>Ensures quality assurance through audit and quality improvement projects.</li> <li>Understands the anatomy and physiology of the peripheral and central nervous system.</li> <li>Understands the effects of different pathologies on the nervous system and how they are investigated.</li> <li>Performs VEP, SSEP and motor evoked potential (MEP) recordings in adults and children.</li> <li>Performs and interprets SSEP recordings during spinal or cranial surgery to monitor neurological function or identify neurological structures and anatomy.</li> <li>Recognises electrical artefacts and knows how to overcome them.</li> <li>Assesses referrals for likely diagnosis or region of injury and recommends investigation protocols.</li> </ul>

	<ul style="list-style-type: none"> <li>• Understands and recognises the effect of age on evoked potential traces.</li> <li>• Understands and takes account of medication and cooling.</li> <li>• Assesses, examines and interprets VEPs in patients with neuroinflammatory disease, disorders of optic nerve routing and optic nerve compression.</li> <li>• Assesses, examines and interprets SSEPs in patients with demyelinating disease scoliosis, and hypoxic brain injury.</li> <li>• Assesses, examines and interprets motor evoked potential and/or SSEPs in patients during cranial or spinal surgery</li> <li>• Assesses nerve root functioning during spinal surgery</li> <li>• Assesses clinical and physiological findings, formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.</li> <li>• Assesses clinical and physiological findings and communicates the findings with patients and colleagues effectively.</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p>
<b>Evidence to inform decision</b>	<p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CbD</p> <p>Reflections</p> <p>QIPAT</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>4. Managing and delivering an advanced adult and paediatric adult and paediatric EMG service</b>	
<b>Descriptors</b>	<p>In addition to managing and delivering a basic adult and paediatric NCS / EMG service, trainees must demonstrate competency in leading all of the following advanced services</p> <p><b>Motor Unit Analysis and Turns/Amplitude Analysis</b></p> <ul style="list-style-type: none"> <li>• Performs electromyography and records and analyses motor units to measure amplitude, duration and turns / amplitude analysis</li> <li>• Interprets findings to differentiate between neurogenic and myopathic disorders</li> <li>• Assesses clinical and physiological findings, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.</li> </ul>

	<ul style="list-style-type: none"> <li>Assesses clinical and physiological findings and communicates the findings with patients and colleagues effectively</li> </ul> <p><b>Single fibre EMG</b></p> <ul style="list-style-type: none"> <li>Performs stimulated and voluntary single fibre electromyography and records jitter and block to assess the function of the neuromuscular junction</li> <li>Interprets findings to identify disorders of neuromuscular junction transmission</li> <li>Assesses clinical and physiological findings, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.</li> <li>Assesses clinical and physiological findings and communicates the findings with patients and colleagues effectively</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p>
<b>Evidence to inform decision</b>	<p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CbD</p> <p>Reflections</p> <p>QIPAT</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>5. Managing and delivering an advanced adult and paediatric adult and paediatric EEG service</b>	
<b>Descriptors</b>	<p>In addition to managing and delivering a basic adult and paediatric EEG service, trainees must demonstrate competency in leading all of the following advanced services</p> <p><b>Long term EEG monitoring</b></p> <ul style="list-style-type: none"> <li>Leads the multidisciplinary team in the investigation of seizures, disorders of consciousness, disorders of sleep and organic brain disorders.</li> <li>Utilises electroencephalography and polysomnography equipment and understands how and why they work.</li> <li>Ensures quality assurance through audit and quality improvement projects.</li> <li>Assesses referrals for likely diagnosis and recommends appropriate investigation protocols including EEG recordings, drug reduction, duration of recording, polysomnography</li> <li>Understands and takes account of medication and its effects.</li> <li>Recognises and interprets EEG correlates of different seizure types</li> </ul>

- Understands the role of EEG in presurgical assessment of epilepsy
- Understands the role of EEG in the management of status epilepticus
- Recognises and interprets common ECG changes in cardiac arrhythmias associated with loss of consciousness
- Assesses history, clinical and physiological findings of ambulatory EEGs and video EEG telemetry, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.
- Assesses clinical and physiological findings of ambulatory EEGs and video EEG telemetry and communicates the findings with patients and colleagues effectively.

#### **Clinical Neurophysiology support for Epilepsy Surgery**

- Leads the multidisciplinary team in the investigation of seizures in patients being considered for surgical treatment
- Utilises electroencephalography and polysomnography equipment and understands how and why they work.
- Ensures quality assurance through audit and quality improvement projects.
- Assesses referrals for likely diagnosis and recommends appropriate investigation protocols including intracranial and extracranial recordings, depth electrodes, drug reduction, duration of recording, polysomnography
- Understands and takes account of medication and its effects.
- Recognises and interprets seizure semiology
- Recognises and interprets scalp EEG correlates of different seizure types
- Elicits and assesses seizure histories and proposes a differential diagnosis
- Recognises and interprets common ECG changes in cardiac arrhythmias associated with loss of consciousness
- Assists the surgeon and supervises the physiologist in setting up and performing intra-operative electrocorticographic recordings and in identification and correction of common artefacts and faults
- Assesses clinical and physiological findings of scalp and intracranial EEGs and formulates a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.
- Assesses clinical and physiological findings of scalp EEG and intracranial EEG in patients in epilepsy surgery programmes and communicates the findings with patients and colleagues effectively.

#### **Polysomnography and Multiple Sleep Latency Testing (MSLT)**

- Leads the multidisciplinary team in the investigation of disorders of sleep
- Utilises electroencephalography and polysomnography equipment and understands how and why they work.
- Ensures quality assurance through audit and quality improvement projects.
- Assesses referrals for likely diagnosis and recommends appropriate investigation protocols including EEG recordings, duration of recording, polysomnography, MSLT
- Understands and recognises the effect of age on EEG traces.
- Understands and takes account of medication and its effects, examines and interprets investigations and video recordings to look for patients with suspected parasomnias and sleep disorders

	<ul style="list-style-type: none"> <li>• Elicits and assesses sleep disorder histories and proposes a differential diagnosis</li> <li>• Identifies American Academy of Sleep Medicine EEG sleep stages and recognises abnormal patterns</li> <li>• Interprets MSLT recordings</li> <li>• Assesses clinical and physiological findings of EEG and polysomnography and formulates a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.</li> <li>• Assesses clinical and physiological findings of EEG and polysomnography and communicates the findings with patients and colleagues effectively.</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p>
<b>Evidence to inform decision</b>	<p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CbD</p> <p>Reflections</p> <p>QIPAT</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>6. Managing and delivering an advanced adult and paediatric Evoked Potential service</b>	
<b>Descriptors</b>	<p>In addition to managing and delivering a basic adult and paediatric evoked potential service, trainees must demonstrate competency in leading <b>two</b> of the following advanced services</p> <p><b>Visual electrophysiology</b></p> <ul style="list-style-type: none"> <li>• Leads the multidisciplinary team in the investigation of patients with suspected retinopathy and optic nerve disease</li> <li>• Utilises recording electrodes, VEP equipment, Ganzfeld stimulator and multifocal ERG stimulators and understands how and why they work.</li> <li>• Ensures quality assurance through audit and quality improvement projects.</li> <li>• Assesses referrals for likely diagnosis and recommends appropriate investigation protocols including VEP, Electroretinograms, Electro-oculograms and Multifocal ERG</li> <li>• Understands and recognises the effect of age on ERG traces.</li> <li>• Understands and takes account of medication and its effects.</li> </ul>

- Assesses clinical and physiological findings, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.
- Assesses clinical and physiological findings and communicates the findings with patients or colleagues effectively.

#### **Brainstem auditory evoked potentials (BAEP)**

- Leads the multidisciplinary team in the investigation of patients with hearing or balance impairment or suspected brainstem disease
- Utilises recording electrodes and acoustic stimulators and knows how and why they work.
- Ensures quality assurance through audit and quality improvement projects.
- Recognises electrical artefacts and knows how to overcome them.
- Assesses referrals for likely diagnosis and recommends appropriate investigation protocols.
- Understands and recognises the effect of age on BAEP traces.
- Understands and takes account of medication and its effects.
- Assesses clinical and physiological findings, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.
- Assesses clinical and physiological findings and communicates the findings with patients or colleagues effectively.

#### **Event and movement-related cortical potentials**

- Leads the multidisciplinary team in the investigation of patients with event and movement-related cortical potentials
- Utilises recording electrodes and stimulators and knows how and why they work.
- Ensures quality assurance through audit and quality improvement projects.
- Recognises electrical artefacts and knows how to overcome them.
- Assesses referrals for likely diagnosis and recommends appropriate investigation protocols.
- Understands and recognises the effect of age on EP traces
- Understands and takes account of medication and its effects.
- Assesses clinical and physiological findings, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.
- Assesses clinical and physiological findings and communicates the findings with patients or colleagues effectively.

#### **Transcranial magnetic stimulation (TMS)**

- Leads the multidisciplinary team in the investigation of motor pathway function and central motor conduction time
- Utilises recording electrodes and TMS stimulators and understands how and why they work.
- Ensures quality assurance through audit and quality improvement projects.
- Recognises electrical artefacts and knows how to overcome them.
- Assesses referrals for likely diagnosis and recommends appropriate investigation protocols
- Understands and takes account of medication and its effects.

	<ul style="list-style-type: none"> <li>Assesses clinical and physiological findings, and formulates and produces a report detailing likely diagnosis, anatomical location of a lesion, pathology and prognosis, further investigations and treatment as appropriate.</li> <li>Assesses clinical and physiological findings and communicates the findings with patients or colleagues effectively.</li> </ul>
<b>GPCs</b>	Domain 1: Professional values and behaviours Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills Domain 3: Professional knowledge Professional requirements, National legislative requirements, The health service and healthcare system in the four countries Domain 4: Capabilities in health promotion and illness prevention Domain 5: Capabilities in leadership and team working Domain 6: Capabilities in patient safety and quality improvement Patient safety, Quality improvement Domain 7: Capabilities in safeguarding vulnerable groups
<b>Evidence to inform decision</b>	DOPS MCR MSF CbD Reflections QIPAT Attendance at learning events and/or relevant certification Logbook of procedures

### 3.4 Presentations and conditions

The table below details the key presentations and conditions of Clinical Neurophysiology. Each of these should be regarded as a clinical context in which trainees should be able to demonstrate CiPs and GPCs. In this spiral curriculum, trainees will expand and develop the knowledge, skills and attitudes around investigating patients with these conditions and presentations. The patient should always be at the centre of knowledge, learning and care.

Trainees must demonstrate core bedside skills, including information gathering through history and physical examination and information sharing with patients, families and colleagues.

Treatment care and strategy covers how a doctor selects investigations for a patient. It also covers broader aspects of care, including involvement of other professionals or services.

Particular presentations, conditions and issues are listed either because they are common or serious (having high morbidity, mortality and/or serious implications for treatment or public health).

For each condition/presentation, trainees will need to be familiar with such aspects as aetiology, epidemiology, clinical features, investigation, management and prognosis. Our approach is to provide general guidance and not exhaustive detail, which would inevitably become out of date.

Specialty and system	Presentations	Conditions/Issues
<b>Nerve conduction study and electromyography</b>	Spinal cord disease	Anterior horn cell disorders
	Nerve root disease	Radiculopathies
	Disorders of plexi	Brachial and Lumbosacral plexopathies
	Disorders of peripheral nerves	Axonal neuropathies, demyelinating neuropathies, entrapments, nerve injuries
	Disorders of the neuromuscular junction	Myaesthetic syndromes, botulism
	Disorders of muscle	Genetic, metabolic, inflammatory, channelopathies
	Disorders of the autonomic nervous system	
<b>Electroencephalography</b>	Seizures	Focal and generalised epilepsies Epileptic Encephalopathies Status epilepticus Non-organic seizures
	Disorders of consciousness	Coma Encephalopathy
	Organic brain disease	Creutzfeldt-Jakob Disease
	Sleep disorders	
	Preparation for epilepsy surgery	Intracranial and extracranial recordings
<b>Visual evoked potentials</b>	Visual impairment	Neuroinflammatory disorders, Optic nerve compression, Chiasmatal misrouting
<b>Electroretinography</b>	Visual impairment	Retinopathies, maculopathies, psychogenic disease
<b>Somatosensory evoked potentials</b>	Hypoxic brain injury	
	Dorsal column disorders	
	Intraoperative monitoring for spinal and cranial surgery	Scoliosis
<b>Brainstem auditory evoked potentials</b>	Disorders of brainstem and vestibulocochlear function	Neuro-inflammatory disorders, metabolic disorders,
<b>Transcranial magnetic stimulation</b>	Disorders of motor pathways	



### 3.5 Practical procedures

There are a number of procedural skills, of which a trainee must become proficient.

Trainees must be able to outline the indications for these procedures and recognise the importance of valid consent, aseptic technique, minimisation of patient discomfort, and requesting help when appropriate. For all practical procedures, the trainee must be able to recognise complications and respond appropriately if they arise, including calling for help from colleagues in other specialties when necessary.

Assessment of procedural skills will be made using the direct observation of procedural skills (DOPS) tool. The table below sets out the minimum competency level expected for each of the practical procedures using the level descriptors – see table below.

Trainees will have to access a database of archived cases on the BCSN website. Trainees can use these cases to contribute towards their indicative requirements. These cases will provide a set of data in a clinical context for trainees to interpret and formulate a clinical report. DOPs can be used to assess the trainee’s performance.

Indicative minimum numbers are being given as a guide to how many times we would expect a trainee to have to complete a procedure in order to acquire confidence, speed and the ability to multitask during consultations. This also ensures that trainees have exposure to a wide spectrum of cases.

When a trainee has been signed off as being able to perform a procedure unsupervised, they are not required to have any further assessment (DOPS) of that procedure, unless they or their educational supervisor think that this is required (in line with standard professional conduct).

The ARCP panel will review the logbook in association with the indicative numbers, taking into account the stage of training and make recommendations accordingly.

\* Some trainees will undertake their neurology training as one block during ST3 and will not have performed any neurophysiology investigations.

Procedure	ST3	ST4	ST5	ST6	Indicative number performed by end of training
Record Adult EEG		Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised	10
Record Neonatal/ Paediatric EEG		Able to perform the	Able to perform the	Competent to perform the	10

Procedure	ST3	ST4	ST5	ST6	Indicative number performed by end of training
		procedure under direct supervision	procedure with limited supervision	procedure unsupervised	
Report Adult EEG		Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised	1000
Report Neonatal/ Paediatric EEG		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	1000
NCS for common nerve entrapments		Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised	1000
NCS for less common nerve lesions		Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised	100
NCS for generalised neuropathy		Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised	100
EMG for neurogenic disorders		Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised	500
NCS and/or EMG in Paediatrics (5-16 years)		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	40

Procedure	ST3	ST4	ST5	ST6	Indicative number performed by end of training
NCS and/or EMG is Paediatrics (<5 years)		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	10
EMG for probable myopathy		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	50
Repetitive nerve stimulation		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	30
Record VEP		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	10
Interpret VEP		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	100
Record SSEP		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	10
Interpret SSEP		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	50
Surgical monitoring of spinal, cortical or cranial nerve function		Able to perform the procedure under	Able to perform the procedure	Competent to perform the procedure unsupervised	20

Procedure	ST3	ST4	ST5	ST6	Indicative number performed by end of training
		direct supervision	under direct supervision		
Interpret ambulatory EEG, Surgical telemetry, diagnostic telemetry		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	100
Interpret polysomnography		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	30
Perform & interpret MUP and Turns/amp analysis		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	50
Perform & interpret single fibre EMG (voluntary and/ or stimulated)		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	50
Interpret electroretinograms		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	100
Interpret ER audiograms/BSAEPs		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	50
Perform & interpret magnetic brain stimulation		Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Competent to perform the procedure unsupervised	50

## 4 Learning and Teaching

### 4.1 The training programme

The organisation and delivery of postgraduate training is the responsibility of the Health Education England (HEE), NHS Education for Scotland (NES), Health Education and Improvement Wales (HEIW) and the Northern Ireland Medical and Dental Training Agency (NIMDTA) – referred to from this point as ‘deaneries’. A training programme director (TPD) will be responsible for coordinating the specialty training programme. In England, the local organisation and delivery of training is overseen by a school of medicine.

Progression through the programme will be determined by the Annual Review of Competency Progression (ARCP) process. The training requirements for each indicative year of training are summarised in the ARCP decision aid (available on the [JRCPTB website](#)).

The sequence of training should ensure appropriate progression in experience and responsibility. The training to be provided at each training site is defined to ensure that during the programme, the curriculum requirements are met and unnecessary duplication and educationally unrewarding experiences are avoided.

The following provides a guide on how training programmes should be focused in each training year in order for trainees to gain the experience and develop the capabilities to the level required.

#### Outpatients

Trainees should attend and be actively involved in regular peripheral neurophysiology clinics throughout the training programme. It is accepted that there may be some attachments (eg neurology) where the focus may be on other aspects of adult or paediatric neurology. Trainees are also encouraged to attend clinics in related specialities such as hand surgery and ophthalmology to complement their learning experience. It is expected that trainees will do clinics in all years of training. It will be up to TPDs and Educational Supervisors to construct imaginative and creative clinic programmes in order for the trainee to have a satisfactory educational experience. The number of patients that a trainee should see in each clinic is not defined, neither is the time that should be spent in clinic, but the trainee will need to have recorded sufficient numbers and seen sufficient breadth of pathology to have completed the indicative numbers of their log book to the satisfaction of their ARCP panel. Clinic experience should be used as an opportunity to undertake supervised learning events and reflection.

#### Critical care experience

It is expected that trainees will be involved in the neurophysiological investigation of patients who are critically ill. Trainees should have significant experience of critical care, preferably in a level 3 intensive care unit (ICU) or in a level 2 high dependency unit (HDU). It is not expected that this be a formal placement, but multiple visits to critical care to perform neurophysiological investigation as required. The educational objectives of this are:

- To be able to work in the multidisciplinary teams that run critical care units

- To develop enhanced procedural skills such as somatosensory evoked potentials and electromyography in an environment prone to electrical interference.
- To develop confidence in being involved with critical care units.

### **Inpatient experience**

It is expected that trainees will be involved in the neurophysiological investigation of inpatients who need investigation on the ward or other settings. Every patient seen on the ward or in outpatients, provides a learning opportunity which will be enhanced by following the patient through the course of their illness. The experience of the evolution of patients' problems over time is a critical part of both the diagnostic process, as well as patient management. Patients seen should provide the basis for critical reading and reflection on clinical problems.

### **Multidisciplinary team meetings**

There are many situations where clinical problems are discussed with clinicians in other disciplines. These provide excellent opportunities for observation of clinical reasoning and active participation in discussions. Appropriate examples include, but are not limited to, neuromuscular pathology meetings, epilepsy surgery meetings, epilepsy or paediatric neurology meetings, retinopathy meetings and surgical planning meetings.

### **Operating theatre attendance**

There are opportunities for trainees to be involved in intraoperative monitoring of neurological function during surgery and in mapping of epilepsy surgery. Trainees are encouraged to perform supervised activity to support the work of the surgeons.

### **Neurology placement**

It is expected that those trainees who do not have a previous CCT in Neurology or Paediatric Neurology will spend an indicative 12 months in Neurology training. This can be in one or more blocks or spread throughout the 4 year training scheme, depending on local arrangements. Trainees may wish to be part of the Neurology on-call rota to gain experience and take part in ward rounds, but this is not mandatory. It will be up to TPDs and Educational Supervisors to construct imaginative and creative clinic attendances in order for the trainee to have a satisfactory educational experience. Particular emphasis should be placed on those adult and paediatric sub-specialties most relevant to neurophysiology such as epilepsy, neuromuscular disease, movement disorders, botulinum toxin clinics and neuro-ophthalmology clinics. Whilst it is reasonable for trainees to participate in stroke thrombolysis and headache clinics, it would be unacceptable for this to be the dominant neurology experience during training. Examples of suitable activity are:

- Ward rounds
- Ward Liaison
- ITU ward rounds
- Outpatient clinics
- Day Unit activity
- Multidisciplinary team meetings
- Clerking
- Acute neurology admissions

- Botulinum toxin clinics
- Neurology on-call

At the end of the neurology training it is expected that the following objectives are met.

Objectives	Clinical Neurophysiology CiP
Demonstrates competence in taking a neurology history and interpreting the findings	All
Demonstrates competence in performing a neurological examination and interpreting the findings	All
Demonstrates competence in managing a patient during a seizure or non-epileptic attack	Managing and delivering a basic adult and paediatric EEG service  Managing and delivering an advanced adult and paediatric EEG service
Demonstrates competence in managing patients with acute and chronic neuromuscular disease	Managing and delivering a basic adult and paediatric EMG service  Managing and delivering an advanced adult and paediatric EMG service
Demonstrates competence in recognising and interpreting seizure semiology	Managing and delivering a basic adult and paediatric EEG service  Managing and delivering an advanced adult and paediatric EEG service
Demonstrates leadership and team skills with junior and multidisciplinary staff	All
Demonstrates time management skills	All
Demonstrates good communication skills	All
Demonstrates good practical skills such as botulinum toxin injection and lumbar puncture.	Managing and delivering an advanced adult and paediatric EMG service
Demonstrates a broad knowledge and understanding of the pathology, presentation, treatment and prognosis of neuromuscular diseases.	Managing and delivering a basic adult and paediatric EMG service  Managing and delivering an advanced adult and paediatric EMG service
Demonstrates a broad knowledge and understanding of the pathology, presentation, treatment and prognosis of seizure disorders	Managing and delivering a basic adult and paediatric EEG service  Managing and delivering an advanced adult and paediatric EEG service
Demonstrates a broad knowledge and understanding of the pathology, presentation, treatment and prognosis of neuroinflammatory disease.	Managing and delivering an advanced adult and paediatric evoked potential service

## **4.2 Teaching and learning methods**

The curriculum will be delivered through a variety of learning experiences and will achieve the capabilities described in the syllabus through a variety of learning methods. There will be a balance of different modes of learning from formal teaching programmes to experiential learning 'on the job'. The proportion of time allocated to different learning methods may vary depending on the nature of the attachment within a rotation.

This section identifies the types of situations in which a trainee will learn.

### **Reviewing patients with consultants**

It is important that trainees have an opportunity to present at least a proportion of the patients whom they have seen or admitted to their consultant for senior review in order to obtain immediate feedback into their performance (that may be supplemented by an appropriate WPBA such as a mini-CEX or CbD).

### **Formal postgraduate teaching**

The content of these sessions is determined by the local Postgraduate Medical Deanery and the Education Committee of the British Society for Clinical Neurophysiology and will be based on the curriculum. There are many opportunities throughout the year for formal teaching in the local postgraduate teaching sessions and at regional, national and international meetings. Suggested activities include:

- case presentations
- research, audit and quality improvement projects
- lectures and small group teaching
- Grand Rounds
- clinical skills demonstrations and teaching
- critical appraisal and evidence based medicine and journal clubs
- joint specialty meetings
- attendance at training programmes organised on a deanery, regional or national basis, which are designed to cover aspects of the training programme outlined in this curriculum.

### **Independent self-directed learning**

Trainees will use this time in a variety of ways depending upon their stage of learning.

Suggested activities include:

- reading, including web-based material such as e-Learning for Healthcare (e-LfH), ebrain and wustl neuromuscular
- maintenance of personal portfolio (self-assessment, reflective learning, personal development plan)
- audit, quality improvement and research projects
- reading journals and textbooks
- achieving personal learning goals beyond the essential, core curriculum



- interpreting historic physiology recordings held on databases eg Brainstem Auditory Evoked Potential Database at Great Ormond St Hospital).

### **Logbook**

Trainees are expected to keep a logbook of procedures performed. This is a record of the trainee's experience and can be used to identify gaps or identify areas for development with the Educational Supervisor.

### **Formal study courses**

Time made available for formal courses is encouraged, subject to local conditions of service. Examples include management courses, teaching and communication courses as well as the Triennial Clinical Neurophysiology training course, usually held in Oxford.

## **4.3 Academic training**

The four nations have different arrangements for academic training and doctors in training should consult the local deanery for further guidance.

Trainees may train in academic medicine as an academic clinical fellow (ACF), academic clinical lecturer (ACL) or equivalent.

Some trainees may opt to do research leading to a higher degree without appointment to a formal academic programme. This new curriculum should not impact in any way on the facility to take time out of programme for research (OOPR) but as now, such time requires discussion between the trainee, the TPD and the Deanery as to what is appropriate together with guidance from the appropriate SAC that the proposed period and scope of study is sensible.

## **4.4 Taking time out of programme**

There are a number of circumstances when a trainee may seek to spend some time out of specialty training, such as undertaking a period of research or taking up a fellowship post. The postgraduate dean must agree all such requests in advance, and trainees are advised to discuss their proposals as early as possible. Full guidance on taking time out of programme can be found in the Gold Guide.

## **4.5 Acting up as a consultant**

A trainee coming towards the end of their training may spend up to three months "acting-up" as a consultant, provided that a consultant supervisor is identified for the post and satisfactory progress is made. As long as the trainee remains within an approved training programme, the GMC does not need to approve this period of "acting up" and their original CCT date will not be affected. More information on acting up as a consultant can be found in the Gold Guide.

## **5 Programme of Assessment**

### **5.1 Purpose of assessment**

The purpose of the programme of assessment is to:

- assess trainees' actual performance in the workplace
- enhance learning by providing formative assessment, enabling trainees to receive immediate feedback, understand their own performance and identify areas for development
- drive learning and enhance the training process by making it clear what is required of trainees and motivating them to ensure they receive suitable training and experience
- demonstrate trainees have acquired the GPCs and meet the requirements of GMP
- ensure that trainees possess the essential underlying knowledge required for their specialty
- provide robust, summative evidence that trainees are meeting the curriculum standards during the training programme
- inform the ARCP, identifying any requirements for targeted or additional training where necessary and facilitating decisions regarding progression through the training programme
- identify trainees who should be advised to consider changes of career direction

### **5.2 Programme of Assessment**

The programme of assessment refers to the integrated framework of exams, assessments in the workplace and judgements made about a learner during their approved programme of training. The purpose of the programme of assessment is to robustly evidence, ensure and clearly communicate the expected levels of performance at critical progression points in, and to demonstrate satisfactory completion of training as required by the curriculum.

The programme of assessment is comprised of several different individual types of assessment. A range of assessments is needed to generate the necessary evidence required for global judgements to be made about satisfactory performance, progression in, and completion of, training. All assessments, including those conducted in the workplace, are linked to the relevant curricular learning outcomes (eg through the blueprinting of assessment system to the stated curricular outcomes).

The programme of assessment emphasises the importance and centrality of professional judgement in making sure learners have met the learning outcomes and expected levels of performance set out in the approved curricula. Assessors will make accountable, professional judgements. The programme of assessment includes how professional judgements are used and collated to support decisions on progression and satisfactory completion of training.

The assessments will be supported by structured feedback for trainees. Assessment tools will be both formative and summative and have been selected on the basis of their fitness for purpose.

Assessment will take place throughout the training programme to allow trainees continually to gather evidence of learning and to provide formative feedback. Those assessment tools which are not identified individually as summative will contribute to summative judgements about a trainee's progress as part of the programme of assessment. The number and range of these will ensure a reliable assessment of the training relevant to their stage of training and achieve coverage of the curriculum.

Reflection and feedback should be an integral component to all Supervised Learning Events (SLEs) and Workplace Based Assessments (WPBAs). In order for trainees to maximise benefit, reflection and feedback should take place as soon as possible after an event. Every clinical encounter can provide a unique opportunity for reflection and feedback and this process should occur frequently. Feedback should be of high quality and should include an action plan for future development for the trainee. Both trainees and trainers should recognise and respect cultural differences when giving and receiving feedback.

### 5.3 Assessment of CiPs

Assessment of CiPs involves looking across a range of different skills and behaviours to make global decisions about a learner's suitability to take on particular responsibilities or tasks.

Clinical supervisors and others contributing to assessment will provide formative feedback to the trainee on their performance throughout the training year. This feedback will include a global rating in order to indicate to the trainee and their educational supervisor how they are progressing at that stage of training. To support this, workplace based assessments and multiple consultant reports will include global assessment anchor statements.

#### Global assessment anchor statements

- Below expectations for this year of training; may not meet the requirements for critical progression point
- Meeting expectations for this year of training; expected to progress to next stage of training
- Above expectations for this year of training; expected to progress to next stage of training

Towards the end of the training year, trainees will make a self-assessment of their progression for each CiP and record this in the ePortfolio with signposting to the evidence to support their rating.

The educational supervisor (ES) will review the evidence in the ePortfolio including workplace based assessments, feedback received from clinical supervisors (via the Multiple Consultant Report) and the trainee's self-assessment and record their judgement on the trainee's performance in the ES report, with commentary.

For **generic CiPs**, the ES will indicate whether the trainee is meeting expectations or not using the global anchor statements above. Trainees will need to be meeting expectations for

the stage of training as a minimum to be judged satisfactory to progress to the next training year.

For **specialty CiPs**, the ES will make an entrustment decision for each CiP and record the indicative level of supervision required with detailed comments to justify their entrustment decision. The ES will also indicate the most appropriate global anchor statement (see above) for overall performance.

### Level descriptors for specialty CiPs

Level	Descriptor
Level 1	<b>Entrusted to observe only</b> – no provision of clinical care
Level 2	<b>Entrusted to act with direct supervision:</b> The trainee may provide clinical care, but the supervising physician is physically within the hospital or other site of patient care and is immediately available if required to provide direct bedside supervision
Level 3	<b>Entrusted to act with indirect supervision:</b> The trainee may provide clinical care when the supervising physician is not physically present within the hospital or other site of patient care, but is available by means of telephone and/or electronic media to provide advice, and can attend at the bedside if required to provide direct supervision
Level 4	<b>Entrusted to act unsupervised</b>

The ARCP will be informed by the ES report and the evidence presented in the ePortfolio. The ARCP panel will make the final summative judgement on whether the trainee has achieved the generic outcomes and the appropriate level of supervision for each CiP. The ARCP panel will determine whether the trainee can progress to the next year/level of training in accordance with the Gold Guide. ARCPs will be held for each training year. The final ARCP will ensure trainees have achieved level 4 in all CiPs for the critical progression point at completion of training.

### 5.4 Critical progression points

There will be a key progression point on completion of specialty training. Trainees will be required to be entrusted at level 4 in all CiPs by the end of training in order to achieve an ARCP outcome 6 and be recommended for a CCT.

The educational supervisor report will make a recommendation to the ARCP panel as to whether the trainee has met the defined levels for the CiPs and acquired the procedural competence required for each year of training. The ARCP panel will make the final decision on whether the trainee can be “signed off” and progress to the next year/level of training [see section 5.6].

The outline grid below sets out the expected level of supervision and entrustment for the specialty CiPs and includes the critical progression points across the whole training programme.

**Table 1: Outline grid of levels expected for Clinical Neurophysiology specialty CiPs**

**Levels to be achieved by the end of each training year for specialty CiPs**

**Level descriptors**

Level 1: Entrusted to observe only – no clinical care

Level 2: Entrusted to act with direct supervision

Level 3: Entrusted to act with indirect supervision

Level 4: Entrusted to act unsupervised

Specialty CiP	ST3	ST4	ST5	ST6	CRITICAL PROGRESSION POINT
1. Managing and delivering a basic adult and paediatric NCS / EMG service	2	3	3	4	
2. Managing and delivering a basic adult and paediatric Electroencephalography service	2	3	3	4	
3. Managing and delivering a basic adult and paediatric evoked potential service	2	3	3	4	
4. Managing and delivering an advanced adult and paediatric NCS / EMG service	2	2	2	4	
5. Managing and delivering an advanced adult and paediatric Electroencephalography service	2	2	2	4	
6. Managing and delivering an advanced adult and paediatric evoked potential service	2	2	2	4	

## 5.5 Evidence of progress

The following methods of assessment will provide evidence of progress in the integrated programme of assessment. The requirements for each training year/level are stipulated in the ARCP decision aid ([www.jrcptb.org.uk](http://www.jrcptb.org.uk)).

### *Summative assessment*

#### **Examinations and certificates**

- Basic Life Support Certificate (BLS) or equivalent

#### **Workplace based assessment (WPBA)**

- Direct Observation of Procedural Skills (DOPS)– An indicative minimum of nine summative DOPS per year with each procedure assessed with an indicative three successful DOPS by the end of training. A single DOPS assessment may include the assessment of multiple procedures as pertinent to the consultation being observed eg nerve conduction study, repetitive nerve stimulation and single fibre EMG for a patient with ptosis.

### *Formative assessment*

- Knowledge based assessment taken in ST4, ST5 and ST6

#### **Supervised Learning Events (SLEs)**

- Case-Based Discussions (CbD)
- mini-Clinical Evaluation Exercise (mini-CEX)

#### **WPBA**

- Direct Observation of Procedural Skills (DOPS) – formative
- Multi-Source Feedback (MSF)
- Patient Survey (PS)
- Quality Improvement Project Assessment Tool (QIPAT)
- Teaching Observation (TO)

### *Supervisor reports*

- Multiple Consultant Report (MCR)
- Educational Supervisor Report (ESR)

These methods are described briefly below. More information and guidance for trainees and assessors are available in the ePortfolio and on the JRCPTB website ([www.jrcptb.org.uk](http://www.jrcptb.org.uk)).

Assessment should be recorded in the trainee's ePortfolio. These methods include feedback opportunities as an integral part of the programme of assessment.

### **Case-based Discussion (CbD)**

The CbD assesses the performance of a trainee in their management of a patient with the aim of providing an indication of competence in areas such as clinical reasoning, decision-making and application of medical knowledge in relation to patient care. It also serves as a method to document conversations about, and presentations of, cases by trainees. The CbD should focus on a written record (such as clinical report, written case notes, outpatient letter, and discharge summary). A typical encounter might be when presenting newly referred patients in the outpatient department.

### **mini-Clinical Evaluation Exercise (mini-CEX)**

This tool evaluates a clinical encounter with a patient to provide an indication of competence in skills essential for good clinical care such as history taking, examination and clinical reasoning. The trainee receives immediate feedback to aid learning. The mini-CEX can be used at any time and in any setting when there is a trainee and patient interaction and an assessor is available.

### **Direct Observation of Procedural Skills (DOPS)**

A DOPS is an assessment tool designed to evaluate the performance of a trainee in undertaking a practical procedure against a structured checklist. The trainee receives immediate feedback to identify strengths and areas for development. DOPS can be undertaken as many times as the trainee and their supervisor feel is necessary (formative). A trainee can be regarded as competent to perform a procedure independently after they are signed off as such by an appropriate assessor (summative).

### **Multi-source feedback (MSF)**

This tool is a method of assessing generic skills such as communication, leadership, team working, reliability etc, across the domains of Good Medical Practice. This provides systematic collection and feedback of performance data on a trainee, derived from a number of colleagues. 'Raters' are individuals with whom the trainee works, and includes doctors, administrative staff, and other allied professionals. Raters should be agreed with the educational supervisor at the start of the training year. The trainee will not see the individual responses by raters. Feedback is given to the trainee by the Educational Supervisor.

### **Patient Survey (PS)**

A trainee's interaction with patients should be continually observed and assessed. The Patient Survey provides a tool to assess a trainee during a consultation period. The Patient Survey assesses the trainee's performance in areas such as interpersonal skills, communication skills and professionalism.

### **Quality Improvement Project Assessment Tool (QIPAT)**

The QIPAT is designed to assess a trainee's competence in completing a quality improvement project. The QIPAT can be based on review of quality improvement project documentation or on a presentation of the quality improvement project at a meeting. If possible, the trainee should be assessed on the same quality improvement project by more than one assessor.

### **Teaching Observation (TO)**

The TO form is designed to provide structured, formative feedback to trainees on their competence in teaching. The TO can be based on any instance of formalised teaching by the trainee which has been observed by the assessor. The process should be trainee-led (identifying appropriate teaching sessions and assessors).

### **Multiple Consultant Report (MCR)**

The MCR captures the views of consultant supervisors based on observation on a trainee's performance in practice. The MCR feedback and comments received give valuable insight into how well the trainee is performing, highlighting areas of excellence and areas of support required. MCR feedback will be available to the trainee and contribute to the educational supervisor's report.

### **Educational supervisors report (ESR)**

The ES will periodically (at least annually) record a longitudinal, global report of a trainee's progress based on a range of assessment, potentially including observations in practice or reflection on behaviour by those who have appropriate expertise and experience. The ESR will include the ES's summative judgement of the trainee's performance and the entrustment decisions given for the learning outcomes (CiPs). The ESR can incorporate commentary or reports from longitudinal observations, such as from supervisors (MCRs) and formative assessments demonstrating progress over time.

## **5.6 Decisions on progress (ARCP)**

The decisions made at critical progression points and upon completion of training should be clear and defensible. They must be fair and robust and make use of evidence from a range of assessments, potentially including exams and observations in practice or reflection on behaviour by those who have appropriate expertise or experience. They can also incorporate commentary or reports from longitudinal observations, such as from supervisors or formative assessments demonstrating progress over time.

Periodic (at least annual) review should be used to collate and systematically review evidence about a doctor's performance and progress in a holistic way and make decisions about their progression in training. The annual review of progression (ARCP) process supports the collation and integration of evidence to make decisions about the achievement of expected outcomes.

Assessment of CiPs involves looking across a range of different skills and behaviours to make global decisions about a learner's suitability to take on particular responsibilities or tasks, as do decisions about the satisfactory completion of presentations/conditions and procedural skills set out in this curriculum. The outline grid in section 5.4 sets out the level of supervision expected for each of the clinical and specialty CiPs. The table of practical procedures sets out the minimum level of performance expected at the end of each year or training. The requirements for each year of training are set out in the ARCP decision aid ([www.jrcptb.org.uk](http://www.jrcptb.org.uk)).



It is the view of the Clinical Neurophysiology SAC that Advanced Life Support (ALS) is not necessary for a Clinical Neurophysiology trainee, and any valid ALS certificate achieved before transition to ST3 will be deemed acceptable for the purposes of progression through training levels ST3-ST6. A minimum of valid Basic Life Support is needed to progress through specialty training.

The ARCP process is described in the Gold Guide. Deaneries are responsible for organising and conducting ARCPs. The evidence to be reviewed by ARCP panels should be collected in the trainee's ePortfolio.

As a precursor to ARCPs, JRCPTB strongly recommend that trainees have an informal ePortfolio review either with their educational supervisor or arranged by the local school of medicine. These provide opportunities for early detection of trainees who are failing to gather the required evidence for ARCP.

The penultimate ARCP prior to the anticipated CCT date will include an external assessor from outside the training programme. This is known as a Penultimate Year Assessment (PYA) and will identify any outstanding targets that the trainee will need to complete to meet all the learning outcomes.

In order to guide trainees, supervisors and the ARCP panel, JRCPTB has produced an ARCP decision aid that sets out the requirements for a satisfactory ARCP outcome at the end of each training year and critical progression point. The ARCP decision aid is available on the JRCPTB website [www.jrcptb.org.uk](http://www.jrcptb.org.uk).

Poor performance should be managed in line with the Gold Guide.

## 5.7 Assessment blueprint

The table below show the possible methods of assessment for each CiP. It is not expected that every method will be used for each competency and additional evidence may be used to help make a judgement on capability.

### KEY

DOPS	Direct observation of procedural skills	CbD	Case-based discussion
MCR	Multiple consultant report	Mini-CEX	Mini-clinical evaluation exercise
PS	Patient survey	MSF	Multi source feedback
TO	Teaching observation	QIPAT	Quality improvement project assessment tool
KBA	Knowledge based assessment		

## Blueprint for assessments mapped to CiPs

Learning outcomes	CbD	DOPS	MCR	Mini-CEX	MSF	PS	QIPAT	TO	KBA
<b>Generic CiPs</b>									
Able to function successfully within NHS organisational and management systems			√		√				
Able to deal with ethical and legal issues related to clinical practice	√	√	√	√	√				
Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement			√		√	√			
Is focused on patient safety and delivers effective quality improvement in patient care			√		√		√		
Carrying out research and managing data appropriately			√		√				
Acting as a clinical teacher and clinical supervisor			√		√			√	
<b>Specialty CiPs</b>									
Managing and delivering a basic adult and paediatric NCS / EMG service		√	√	√	√	√	√	√	√
Managing and delivering a basic adult and paediatric Electroencephalography service		√	√	√	√	√	√	√	√
Managing and delivering a basic adult and paediatric evoked potential service		√	√	√	√	√	√	√	√
Managing and delivering an advanced adult and paediatric NCS / EMG service		√	√	√	√	√	√	√	√
Managing and delivering an advanced adult and paediatric Electroencephalography service		√	√	√	√	√	√	√	√
Managing and delivering an advanced adult and paediatric evoked potential service		√	√	√	√	√	√	√	√

## 6 Supervision and feedback

This section of the curriculum describes how trainees will be supervised, and how they will receive feedback on performance. For further information please refer to the AoMRC guidance on Improving feedback and reflection to improve learning<sup>4</sup>.

Access to high quality, supportive and constructive feedback is essential for the professional development of the trainee. Trainee reflection is an important part of the feedback process and exploration of that reflection with the trainer should ideally be a two-way dialogue.

<sup>4</sup> [Improving feedback and reflection to improve learning. A practical guide for trainees and trainers](#)

Effective feedback is known to enhance learning and combining self-reflection to feedback promotes deeper learning.

Trainers should be supported to deliver valuable and high quality feedback. This can be by providing face to face training to trainers. Trainees would also benefit from such training as they frequently act as assessors to junior doctors, and all involved could also be shown how best to carry out and record reflection.

## **6.1 Supervision**

All elements of work in training posts must be supervised. The level of supervision varies depending on the experience of the trainee and the clinical exposure and case mix undertaken. Outpatient and referral supervision must routinely include the opportunity to discuss all cases with a supervisor if appropriate. As training progresses, the trainee should have the opportunity for increasing autonomy, consistent with safe and effective care for the patient.

Organisations must make sure that each doctor in training has access to a named clinical supervisor and a named educational supervisor. Depending on local arrangements, these roles may be combined into a single role of educational supervisor. However, it is preferred that a trainee has a single named educational supervisor for (at least) a full training year, in which case the clinical supervisor is likely to be a different consultant during some placements.

The role and responsibilities of supervisors have been defined by the GMC in their standards for medical education and training<sup>5</sup>.

### **Educational supervisor**

The educational supervisor is responsible for the overall supervision and management of a doctor's educational progress during a placement or a series of placements. The educational supervisor regularly meets with the doctor in training to help plan their training, review progress and achieve agreed learning outcomes. The educational supervisor is responsible for the educational agreement, and for bringing together all relevant evidence to form a summative judgement about progression at the end of the placement or a series of placements.

### **Clinical supervisor**

Consultants responsible for patients that a trainee looks after providing clinical supervision for that trainee and thereby contribute to their training; they may also contribute to assessment of their performance by completing a 'Multiple Consultant Report (MCR)' and other WPBAs. A trainee may also be allocated (for instance, if they are not working with their educational supervisor in a particular placement) a named clinical supervisor, who is responsible for reviewing the trainee's training and progress during a particular placement. It is expected that a named clinical supervisor will provide a MCR for the trainee to inform the Educational Supervisor's report.

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<sup>5</sup> [Promoting excellence: standards for medical education and training](#)

The educational and (if relevant) clinical supervisors, when meeting with the trainee, should discuss issues of clinical governance, risk management and any report of any untoward clinical incidents involving the trainee. If the service lead (clinical director) has any concerns about the performance of the trainee, or there are issues of doctor or patient safety, these would be discussed with the clinical and educational supervisors (as well as the trainee). These processes, which are integral to trainee development, must not detract from the statutory duty of the trust to deliver effective clinical governance through its management systems.

Educational and clinical supervisors need to be formally recognised by the GMC to carry out their roles<sup>6</sup>. It is essential that training in assessment is provided for trainers and trainees in order to ensure that there is complete understanding of the assessment system, assessment methods, their purposes and use. Training will ensure a shared understanding and a consistency in the use of the WPBAs and the application of standards.

Opportunities for feedback to trainees about their performance will arise through the use of the workplace based assessments, regular appraisal meetings with supervisors, other meetings and discussions with supervisors and colleagues, and feedback from ARCP.

### **Trainees**

Trainees should make the safety of patients their first priority and they should not be practising in clinical scenarios that are beyond their experiences and competencies without supervision. Trainees should actively devise individual learning goals in discussion with their trainers and should subsequently identify the appropriate opportunities to achieve said learning goals. Trainees would need to plan their WPBAs accordingly to enable their WPBAs to provide collectively a picture of their development during a training period. Trainees should actively seek guidance from their trainers in order to identify the appropriate learning opportunities and plan the appropriate frequencies and types of WPBAs according to their individual learning needs. It is the responsibility of trainees to seek feedback following learning opportunities and WPBAs. Trainees should self-reflect and self-evaluate regularly with the aid of feedback. Furthermore, trainees should formulate action plans with further learning goals in discussion with their trainers.

## **6.2 Appraisal**

A formal process of appraisal and review underpins training. This process ensures adequate supervision during training, provides continuity between posts and different supervisors and is one of the main ways of providing feedback to trainees. All appraisals should be recorded in the ePortfolio.

### **Induction Appraisal**

The trainee and educational supervisor should have an appraisal meeting at the beginning of each post to review the trainee's progress so far, agree learning objectives for the post ahead and identify the learning opportunities presented by the post. Reviewing progress

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<sup>6</sup> [Recognition and approval of trainers](#)

through the curriculum will help trainees to compile an effective Personal Development Plan (PDP) of objectives for the upcoming post. This PDP should be agreed during the Induction Appraisal. The trainee and supervisor should also both sign the educational agreement in the e-portfolio at this time, recording their commitment to the training process.

### **Mid-point Review**

This meeting between trainee and educational supervisor is not mandatory (particularly when an attachment is shorter than 6 months). However, it is particularly encouraged if either the trainee or educational or clinical supervisor has training concerns or the trainee has been set specific targeted training objectives at their ARCP). At this meeting trainees should review their PDP with their supervisor using evidence from the e-portfolio. Workplace based assessments and progress through the curriculum can be reviewed to ensure trainees are progressing satisfactorily, and attendance at educational events should also be reviewed. The PDP can be amended at this review.

### **End of Attachment Appraisal**

Trainees should review the PDP and curriculum progress with their educational supervisor using evidence from the e-portfolio. Specific concerns may be highlighted from this appraisal. The end of attachment appraisal form should record the areas where further work is required to overcome any shortcomings. Further evidence of competence in certain areas may be needed, such as planned workplace based assessments, and this should be recorded. If there are significant concerns following the end of attachment appraisal, then the programme director should be informed. Supervisors should also identify areas where a trainee has performed above the level expected and highlight successes.

## **7 Quality Management**

The organisation of training programs is the responsibility of the deaneries. The deaneries will oversee programmes for postgraduate medical training in their regions. The Schools of Medicine in England, Wales and Northern Ireland and the Medical Specialty Training Board in Scotland will undertake the following roles:

- oversee recruitment and induction of trainees into the specialty
- allocate trainees into particular rotations appropriate to their training needs
- oversee the quality of training posts provided locally
- ensure adequate provision of appropriate educational events
- ensure curricula implementation across training programmes
- oversee the workplace based assessment process within programmes
- coordinate the ARCP process for trainees
- provide adequate and appropriate career advice
- provide systems to identify and assist doctors with training difficulties
- provide flexible training.

Educational programmes to train educational supervisors and assessors in workplace based assessment may be delivered by deaneries or by the colleges or both.

Development, implementation, monitoring and review of the curriculum are the responsibility of the JRCPTB and the SAC. The committee will be formally constituted with representatives from each health region in England, from the devolved nations and with trainee and lay representation. It will be the responsibility of the JRCPTB to ensure that curriculum developments are communicated to heads of school, regional specialty training committees and TPDs.

The JRCPTB has a role in quality management by monitoring and driving improvement in the standard of all medical specialties on behalf of the three Royal Colleges of Physicians in Edinburgh, Glasgow and London. The SACs are actively involved in assisting and supporting deaneries to manage and improve the quality of education within each of their approved training locations. They are tasked with activities central to assuring the quality of medical education such as writing the curriculum and assessment systems, reviewing applications for new posts and programmes, provision of external advisors to deaneries and recommending trainees eligible for CCT or Certificate of Eligibility for Specialist Registration (CESR).

JRCPTB uses data from six quality datasets across its specialties and subspecialties to provide meaningful quality management. The datasets include the GMC national Training Survey (NTS) data, ARCP outcomes, examination outcomes, new consultant survey, penultimate year assessments (PYA)/external advisor reports and the monitoring visit reports.

Quality criteria have been developed to drive up the quality of training environments and ultimately improve patient safety and experience. These are monitored and reviewed by JRCPTB to improve the provision of training and ensure enhanced educational experiences.

## **8 Intended use of curriculum by trainers and trainees**

This curriculum and ARCP decision aid are available from the Joint Royal Colleges of Physicians Training Board (JRCPTB) via the website [www.jrcptb.org.uk](http://www.jrcptb.org.uk).

Clinical and educational supervisors should use the curriculum and decision aid as the basis of their discussion with trainees, particularly during the appraisal process. Both trainers and trainees are expected to have a good knowledge of the curriculum and should use it as a guide for their training programme.

Each trainee will engage with the curriculum by maintaining an ePortfolio. The trainee will use the curriculum to develop learning objectives and reflect on learning experiences.

### **Recording progress in the ePortfolio**

On enrolling with JRCPTB, trainees will be given access to the ePortfolio. The ePortfolio allows evidence to be built up to inform decisions on a trainee's progress and provides tools to support trainees' education and development.

The trainee's main responsibilities are to ensure the ePortfolio is kept up to date, arrange assessments and ensure they are recorded, prepare drafts of appraisal forms, maintain their personal development plan, record their reflections on learning and record their progress through the curriculum.

The supervisor's main responsibilities are to use ePortfolio evidence such as outcomes of assessments, reflections and personal development plans to inform appraisal meetings. They are also expected to update the trainee's record of progress through the curriculum, write end-of-attachment appraisals and supervisor's reports.

Deaneries, training programme directors, college tutors and ARCP panels may use the ePortfolio to monitor the progress of trainees for whom they are responsible.

JRCPTB will use summarised, anonymous ePortfolio data to support its work in quality assurance.

All appraisal meetings, personal development plans and workplace based assessments (including MSF) should be recorded in the ePortfolio. Trainees are encouraged to reflect on their learning experiences and to record these in the ePortfolio. Reflections can be kept private or shared with supervisors.

Reflections, assessments and other ePortfolio content should be used to provide evidence towards acquisition of curriculum capabilities. Trainees should add their own self-assessment ratings to record their view of their progress. The aims of the self-assessment are:

- to provide the means for reflection and evaluation of current practice
- to inform discussions with supervisors to help both gain insight and assists in developing personal development plans.
- to identify shortcomings between experience, competency and areas defined in the curriculum so as to guide future clinical exposure and learning.

Supervisors can sign-off and comment on curriculum capabilities to build up a picture of progression and to inform ARCP panels.

## **9 Equality and diversity**

The Royal Colleges of Physicians will comply, and ensure compliance, with the requirements of equality and diversity legislation set out in the Equality Act 2010.

The Federation of the Royal Colleges of Physicians believes that equality of opportunity is fundamental to the many and varied ways in which individuals become involved with the Colleges, either as members of staff and Officers; as advisers from the medical profession; as members of the Colleges' professional bodies or as doctors in training and examination candidates.

Deaneries' quality assurance will ensure that each training programme complies with the equality and diversity standards in postgraduate medical training as set by GMC. They should provide access to a professional support unit or equivalent for trainees requiring additional support.

Compliance with anti-discriminatory practice will be assured through:

- monitoring of recruitment processes
- ensuring all College representatives and Programme Directors have attended appropriate training sessions prior to appointment or within 12 months of taking up post
- Deaneries ensuring that educational supervisors have had equality and diversity training (for example, an e-learning module) every three years
- Deaneries ensuring that any specialist participating in trainee interview/appointments committees or processes has had equality and diversity training (at least as an e-module) every three years
- ensuring trainees have an appropriate, confidential and supportive route to report examples of inappropriate behaviour of a discriminatory nature. Deaneries and Programme Directors must ensure that on appointment trainees are made aware of the route in which inappropriate or discriminatory behaviour can be reported and supplied with contact names and numbers. Deaneries must also ensure contingency mechanisms are in place if trainees feel unhappy with the response or uncomfortable with the contact individual
- providing resources to trainees needing support (for example, through the provision of a professional support unit or equivalent)
- monitoring of College Examinations
- ensuring all assessments discriminate on objective and appropriate criteria and do not unfairly advantage or disadvantage a trainee with any of the Equality Act 2010 protected characteristics. All efforts shall be made to ensure the participation of people with a disability in training through reasonable adjustments.



# JRCPTB

Joint Royal Colleges of Physicians Training Board

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ROYAL COLLEGE  
of PHYSICIANS  
of EDINBURGH



ROYAL COLLEGE OF  
PHYSICIANS AND  
SURGEONS OF GLASGOW



Royal College  
of Physicians