Clinical Neurophysiology

Induction Booklet

Third Edition 2026

British Society of Clinical Neurophysiology

Association of Trainees in Clinical Neurophysiology

Contents

1. Welcome! 3
2. Statement on equality, diversity and inclusion 3
3. The local Clinical Neurophysiology team 4
4. Clinical Neurophysiology in the UK 6
5. The structure of training in Clinical Neurophysiology in the UK in brief 8
6. Training tips 12
7. Training resources 13
8. Opportunities within training 18
9. Return to training 20
10. What sort of consultant job would I ideally like? 21
11. Sources of help 22

Disclaimer

This Induction Document has been provided as a source of help, or signposting, requested by trainees. There are numerous links to external sources, such that this document can never be fully up to date as those sources change. You are therefore advised to always check the original sources, and not to rely on this document for important decisions.

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Do you have comments?

Despite best efforts these documents are never perfect. If you have comments, or suggestions, please be in touch:
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1. Welcome!

Congratulations on your appointment as a trainee in clinical neurophysiology and welcome to Clinical Neurophysiology in the UK. We hope that your time as a registrar is rewarding, educational and fun.

This National Induction Booklet is designed to give you an overview of how Clinical Neurophysiology is organised in the UK, and your role within this team, both locally and nationally. The goal is to provide you with a simple introduction to your training and the environment you will be working in. We have included some tips on completing your e-portfolio, plus useful educational resources.

Of course, you will also have a local induction, where you will learn more about your local clinical team, local hospital policies, mandatory training and the Deanery in which you are working.

Occasionally, trainees need to raise issues or get help and we have included some suggested resources at the end.

We hope this is a practical and useful introduction, and we wish you a happy and successful training. We are a small, friendly specialty and we encourage you to get involved – there are many opportunities!

2. Statement on equality, diversity and inclusion

The BSCN, along with General Medical Council and Royal College of Physicians, are committed to promoting equal rights and opportunities, proactively tackling discrimination or disadvantage in all forms and creating an open and inclusive culture for all our members and trainees. This extends to the other healthcare professionals and patients with whom we interact. Inclusive working and training environments are crucial to doctors' wellbeing and safe patient care.

This has been adapted from statements by the General Medical Council (www.gmc-uk.org/about/how-we-work/equality-diversity-and-inclusion), British Medical Association (www.bma.org.uk/about-us/equality-diversity-and-inclusion) and Royal College of Physicians (www.rcplondon.ac.uk/news/rcp-reports-progress-improving-diversity-and-inclusion).

3. The local Clinical Neurophysiology team

The staff around you will vary widely depending on where you work and the size of the department. This is the briefest of introductions so you are aware of some background.

Figure 1. A schematic to demonstrate the overlapping interaction between Healthcare Scientists (orange), Administrative Support (green) and Doctors (blue).

Healthcare Scientists (Clinical Physiologists): The role of the healthcare scientists (formerly called clinical physiologists) has expanded dramatically over the years and continues to grow. They complete their own specialist training and they have their own professional society (ANS, The Association of Neurophysiological Scientists www.ansuk.org) and regulation body (The Health and Care Professions Council www.hcpc-uk.org). There is close interaction between the BSCN and the ANS, including, sometimes, holding joint events and national audits.

Healthcare Scientist training (see www.ansuk.org/careers): After the Department of Health introduced the Modernising Scientific Careers programme (onset 2010-14), healthcare scientists have been in a combined training scheme for 'Healthcare Science', and more specifically, with Audiology, Ophthalmic and Visual Science under 'Neurosensory Sciences'. There are 4 levels intercalating academic and workplace learning:

1. Assistant/Associate
2. Practitioner Training Programme (PTP) – BSc Honours Degree
3. Scientific Training Programme (STP) – Postgraduate, leading to an MSc Master's Degree
4. Higher Specialist Training (HSST)

Common Healthcare Scientist roles: Like doctors, the roles that healthcare scientists adopt are varied, according to their training, wishes and local opportunity, as illustrated in the following examples.

- Healthcare scientists perform inpatient and outpatient EEG and sleep recordings. They often provide critical details from the history and testing, and have experience in interpreting clinical and electrographic findings in video EEG.
- Healthcare scientists perform nerve conduction studies: commonly for carpal tunnel syndrome, ulnar neuropathies (sometimes peripheral neuropathies) and some have other specialist roles, too. These are commonly in parallel with a consultant Clinical Neurophysiologist's clinic but not always.
- Healthcare scientists run video-telemetry units, ensuring quality recordings, good patient testing, reviewing recordings and helping present results. Also, they often manage the unit and ensure good communication between telemetry staff.
- Intraoperative monitoring is commonly performed independently by healthcare scientists, including monitoring spine and complex brain operations, and communicating with the surgical team. Often, services are also overseen by a consultant in Clinical Neurophysiology but not always.
- Healthcare scientists record evoked potentials in inpatient/ITU and outpatient settings.

- Some healthcare scientists gain scientific qualifications and run or collaborate on research projects.
- Most departments have a lead healthcare scientist, who often takes on a substantial management role, often in collaboration with the lead consultant.

Administrative Support: No department can function without good administration, and there are staff at the front desk who have a critical role in booking patients, greeting patients, ensuring they have information sheets, typing and entering clinical reports, sending them to referrers, fielding enquiries, generating statistics on waiting lists, and so on. Co-ordinating an inpatient transfer for EMG can be very complex, with communication between the ward, transport, infection status checks, etc. It becomes obvious why they need to know well in advance to cancel clinics for your holidays or to attend conferences (typically, minimum 6 weeks notice but check with your Deanery or Trust).

Doctors: You likely know this part already!

Clinical Lead: Within any department, there is usually one consultant who is the clinical lead whose role is to help plan and deliver all Clinical Neurophysiology services within their local context.

Audit Lead: Depending on the size of the department, there may also be an audit lead (if not, there will be a neurology or divisional audit lead), who may or may not be the same person, and with whom you will plan your two audits/quality improvement projects.

Training Programme Director (TPD): Within your region (possibly in your department) the TPD, in addition to your direct Educational Supervisor, is responsible for the delivery of training and overseeing problems that any trainees may encounter. See Table 1 for a list of current TPDs by Region.

4. Clinical Neurophysiology in the UK

In the UK, Clinical Neurophysiology is a separate speciality, whereas in the USA and in 21/32 European countries, Clinical Neurophysiology lies as a subspecialty within neurology. Other countries where Clinical Neurophysiology is considered a separate speciality include: Norway, Sweden, Finland, Spain and Portugal. Italy switched in 2017 to integrating clinical neurophysiology within a 4-year neurology residency program (www.ncbi.nlm.nih.gov/pmc/articles/PMC8654600).

Clinical Neurophysiology departments tend to be based in larger hospitals and can sit across divisions, commonly managed within the neurology framework, but sometimes managed under neurosurgery, rheumatology, orthopaedics, radiology or paediatric management structures. It is a predominantly diagnostic speciality and generally follows the 6-week diagnostic wait in the Referral To Treatment (RTT) targets.

Further information about the structure and demands on Clinical Neurophysiology in the UK is contained in the Getting It Right First Time (GIRFT) Neurology report accessible at gettingitrightfirsttime.co.uk/medical_specialties/neurology.

BSCN

The British Society for Clinical Neurophysiology (see www.bscn.org.uk) is our national society and it is a medical charity whose aims are: "to promote and encourage for the public benefit the science and practice of clinical neurophysiology and related sciences". The BSCN celebrated its 80th anniversary in 2022 having been set up initially as 'The EEG Society' in January 1942 – the first neurophysiology society in the world.

All registrars training in Clinical Neurophysiology are encouraged to become BSCN members (by joining via the BSCN website) to benefit from the discounts and sponsorship schemes, and to be informed about national and international developments of interest and meetings. The society has many roles, including the planning and delivery neurophysiological services across the UK as well as relevant education programs, for example.

- **Scientific meetings:** There are two scientific meetings per year: in spring and autumn. Typically one of these is held in London and the other in the regions. Meetings are held on a Friday (and the ATCN organises national training days on the preceding Thursday). Presentation at a BSCN meeting is encouraged at some point in training and could, for example, be a research study or a particularly interesting and relevant audit.
- **Education:** You are encouraged to visit the BSCN website, where, after logging in, you will see education resources that include example evoked potentials to report, difficult cases to discuss, suggestions of books and web links to other relevant societies.
- **Triannual residential neurophysiology course:** All trainees are strongly encouraged to attend this week-long course at least once during their training. Traditionally this course was held in Oxford although it will move to Cambridge for the 2027 course.
- **Council roles:** There are several roles on the BSCN council to aspire to including president, secretary, treasurer and many others. Whilst these are for practicing consultants, the Association of Trainees in Clinical Neurophysiology (ATCN) president, and sometimes other members of the ATCN council, are co-opted members on council to voice your concerns and discuss training issues.

ATCN

The Association of Trainees in Clinical Neurophysiology (ATCN) was formed by trainees for trainees. All registrars would benefit from joining the ATCN email list, ATCN WhatsApp group and ancillary support groups on joining the BSCN by emailing info.atcn@gmail.com. This will allow easier access to training resources, the network of other trainees and facilitate your inclusion in training events. Some of the activities it has helped organise over the years include: case discussion sessions, SpR-teaching sessions, subscriptions for learning resources e.g. American Association of Neuromuscular & Electrodiagnostic Medicine (AANEM), a buddy-scheme, and mentorship for junior doctors into the specialty. As of 2025, the ATCN Committee has distinct roles:

- **President:** Attends the SAC meetings, JCNC meetings and BSCN Council meetings; is a port-of-call for peer-to-peer related queries other than Treasury and Education; oversees trainee's input to documents to be published (e.g. support schemes, induction documents etc), and coordinates ATCN activities.
- **Vice-President:** Attends the SAC meetings, JCNC meetings and BSCN Council meetings if the President is not able to attend; is a port-of-call to trainees, provides input to documents to be published.
- **Treasurer:** Works with the ATCN committee and BSCN Treasurer to raise and spend money for the benefit of ATCN members. This includes, but is not limited to, educational resources for trainees and subsidised ATCN socials.
- **Educational Lead:** For peer to peer and consultant lead teaching programs is a port-of-call for education initiatives e.g. SpR-run teaching, training courses, Mentorship and Buddy schemes.
- **Audit Lead:** Coordinates the ATCN's contribution to clinical and educational audits.
- **Webmaster:** Compiles and maintains an up-to-date repository of learning resources; liaises with BSCN Webmaster.

If you would like to get in touch, e.g. you are interested in supporting the ATCN in one of the above roles, or a new role that you think may be of benefit or you would like to recommend a useful learning resource for subscription, then please get in touch at info.atcn@gmail.com.

JRCPTB and the 'SAC'

The Joint Royal Colleges of Physicians Training Board (JRCPTB) develops training, including curriculum design and implementation, and development of the ePorfolio. The evidence gathered allows the General Medical Council to award a Certificate of Completion of Training (CCT).
The Clinical Neurophysiology curriculum can be found on the JRCPTB website:
www.jrcptb.org.uk/specialties/clinical-neurophysiology

For each of the 29 medical specialties and 3 subspecialties, there is a Specialist Advisory Committee (SAC) whose role is to contribute to development of specialist training policy, curricula, performance assessment and so on. The SAC is made up of the Training Programme Director (TPD) from each region where training is delivered, a lay member, trainee representative, chair and representative of the postgraduate deaneries.

IFCN

Started in 1947 as the International Congress for EEG, the International Federation of Clinical Neurophysiology (IFCN) promotes best practice in clinical neurophysiology through education and research throughout the world. From a registrar's perspective, particular points of interest are the conferences (International Congress of Clinical Neurophysiology, ICCN), special interest groups and educational resources online. There is a specific European Chapter and meeting, with updated information on their website www.ifcn.info.

5. The structure of training in Clinical Neurophysiology in the UK in brief

Clinical Neurophysiology is a 'Group 2 speciality' and does not dual accredit (there is no general medical component). Entrance can be through general medical, paediatric or surgical training. Higher specialty training will normally be completed in 4 years full-time training, or the equivalent at less-than-full time. However, if needed, there is an option to extend training according to the Reference Guide for Postgraduate Specialty Training in the UK (the Gold Guide available at www.copmed.org.uk/publications/gold-guide/gold-guide-10th-edition) and, exceptionally, the training time can also be shortened if all competencies are met (e.g. trainees who previously achieved a CCT neurology and already meet the general neurology requirements in the curriculum).

Curriculum

The curriculum has a small number of 'capabilities in practice' (CIPs) which are based on the concept of entrustable professional activities (EPAs). In addition, the GMC has mandated that all postgraduate curricula must incorporate the essential generic capabilities required by all doctors as defined in the Generic Professional Capabilities (GPC) framework (www.gmc-uk.org/education/standards-guidance-and-curricula/standards-and-outcomes/generic-professional-capabilities-framework).

Assessment

The assessment systems have been mapped onto the clinical neurophysiology curriculum. You will notice that assessment includes workplace-based assessment (WPBA) and knowledge-based assessment (KBA). Trainee progression is assessed using many strands of evidence and recorded at the Annual Review of Competence Progression (ARCP). The evidence is wide ranging and made clear in the Clinical Neurophysiology Decision Aid available at www.jrcptb.org.uk/specialties/clinical-neurophysiology. The knowledge-based assessment (KBA) is still being developed.
There are many different outcomes from ARCP, which can be reviewed on your local Deanery website (for example, for the East of England, at heeoe.hee.nhs.uk/revalidation/assessment/arcp-outcomes).

'Deaneries'

Health Education England (www.hee.nhs.uk) has teams that provide postgraduate medical and dental training. They used to be 'Deaneries' (and are still commonly called this) but may also be referred to as the Postgraduate Medical and Dental Education (PGMDE) or Healthcare Education Teams (HET). There are, for example, 12 within England, and similar arrangements for Wales, Scotland, and Northern Ireland (Figure 2). They arrange local delivery of your curriculum, assessments, administer leave arrangements and provide sources of support.

England

There are now 4 LETBs (Local Education Training Boards) in England.

North

There are three teams in the north of England:
North East, including north Cumbria - https://madeinheene.hee.nhs.uk/
North West - https://www.nwpgmd.nhs.uk/
Yorkshire and the Humber - https://www.yorksandhumberdeanery.nhs.uk/

Midlands and East

There are three teams covering the midlands and east of England:
East Midlands - https://www.eastmidlandsdeanery.nhs.uk/
West Midlands - https://www.westmidlandsdeanery.nhs.uk/
East of England - https://heeoe.hee.nhs.uk/

London

There is a single healthcare education team (HET) that covers London:
London - https://london.hee.nhs.uk/

South

There are five teams covering the south of England:
Kent, Surrey and Sussex - https://www.kssdeanery.ac.uk/
South West: Peninsula region - http://www.peninsuladeanery.nhs.uk/
South West: Severn region - http://www.severndeanery.nhs.uk/
Thames Valley - http://www.oxforddeanery.nhs.uk/
Wessex - http://www.wessexdeanery.nhs.uk/

Scotland, Ireland, Wales

NHS Education for Scotland - http://www.nes.scot.nhs.uk/
Northern Ireland Medical and Dental Training Agency - http://www.nimdta.gov.uk/
Wales Deanery - https://www.walesdeanery.org/

Figure 2. UK training regions. Accessed on 15.03.2023 at: specialtytraining.hee.nhs.uk/portals/1/Content/Resource%20Bank/Inter-Deanery%20Transfer/UK%20Training%20Region%20Websites.pdf

Training Programme Directors 2026	
North East	Dr Stephan Jaiser
North West	Dr Haga Kargwell
Yorkshire and Humber	Dr James Alix
West Midlands	Dr Andrew Lawley
East of England	Dr Andrew Michell
London (North)	Dr Korina Li
London (South)	Dr Nandini Mullatti
Severn	Dr Sabine Klepsch
Oxford	Dr Mkael Symmonds
Wessex	Dr Abena Osei-Lah
Scotland	Dr Arup Mallik
Wales	Dr Gareth Payne

Table 1. Current Training Programme Directors (2026).

Neurology Training

Neurology training amounts to approximately one quarter of the Clinical Neurophysiology training programme. Different regions allocate this in different ways. For example, one trainee may be doing two six-month blocks of neurology over the four-year programme while another trainee does 1.25 days every week for four years. A post-CCT-in-Neurology trainee may end up doing only 3 years of Clinical Neurophysiology. Typically, Clinical Neurophysiology trainees will do one or more Neurology outpatient clinic in one of the following: General Neurology, Epilepsy, Neuromuscular, Vision, Paediatric Neurology, amongst others. Other Neurology experience has included Neurology ward referrals, inpatient Neurology, and Neurology on-call. The available options depend on the resources, hospitals, other trainees (e.g. in Neurology) and other factors within the region. Your Educational Supervisor and TPD will be able to provide you with specific information about your region.

Remote Working

There is increasing reliance on remote reporting in Clinical Neurophysiology and virtual clinics in neurology. In clinical neurophysiology this is increasingly common for video-EEG. Of course, there are many relevant issues to do with training, supervision and workplace-based assessment.

Annual Leave

Annual leave entitlements are agreed nationally and a useful summary can be found on the BMA website at www.bma.org.uk/pay-and-contracts/leave/annual-leave-entitlement/doctors-annual-leave-entitlements. Many Trusts and departments require 6 weeks notice for annual leave to allow suitable changes to clinics and other programmed activity. In many regions, it is the trainee's responsibility to arrange swaps and cover for their period of study and/or annual leave etc. (please check at your Local Induction).

Study Leave

Applications for study leave, as well as the funding of this study leave, are made to your local Deanery (usually via a form signed by your Educational Supervisor to approve it). In general, trainees can take up to 30 days study leave per year, and mandatory training days (e.g. ATCN days) count towards this total. Your local Deanery also allocates the funding for study leave, which is commonly approximately £600-1000/year (please check with your local Medical Education Unit and Deanery). In general, they fund activities that are designated as 'mandatory' to achieve training competencies (ATCN training days are commonly in this category), but 'aspirational' activities may also be funded if agreed locally. It is worth explaining any special circumstances and the benefits of any aspirational training in advance to your Deanery, with the support of your Educational Supervisor or Training Programme Director since there is often some degree of discretion. In addition, ask within your department whether there are any funds to help with training costs – some departments are able to top up training funds. Some potential sources of funding also include BSCN sponsorship, sponsorship to ILAE events, bursaries for attending the ECCN and IFCN, amongst other charities.

You are encouraged to discuss study leave requests with your educational supervisor and factor them into your Professional Development Plan at the beginning of the year whenever possible. If you have trouble obtaining study leave then you can also approach your Training Programme Director.

6. Training tips

a) Obviously it helps to keep a close eye on your training requirements and the 'hurdles' you have to clear to demonstrate competency so you can pace/plan your training. It is obvious to say, but divide up the curriculum across the total time you have (usually 4 years) to work out approximately the number of cases you should be seeing, DOPS to do and so on per year, with reference to the ARCP Decision Aid. The Curriculum lists the indicative procedures and numbers expected to be completed over the four years of training: p.28 of www.jrcptb.org.uk/sites/default/files/Curriculum%20for%20Clinical%20Neurophysiology%20Training%20%28V7%29%2013072020_0.pdf. The Decision Aid helps define and summarise requirements at each ARCP so you can ensure you meet them (www.jrcptb.org.uk/sites/default/files/ARCP%20Decision%20Aid%20Clinical%20Neurophysiology%20FINAL%20July%202021%20updated.pdf). Remember to go easy on yourself in the first year, everyone is slower at the start.

b) A few weeks before your ARCP, ensure you have completely updated your e-portfolio, including updating and uploading your logbook, form R (both parts), grade of training calculator, completion date calculator, ensuring there is evidence of reflective practice and attended courses/training, evidence of any research/teaching and that the necessary DOPS and other assessments are visible. It is best to do this before the meeting with your educational supervisor so you can go through the curriculum (on e-portfolio) and assess competencies together. Your supervisor can then get their educational report written and completed comfortably ahead of the ARCP.

c) Think early about whether you are likely to want to have time out of training for any reason – research, a fellowship, and so on. Plan early so you can agree funding and agree the time out of training with your department and your Deanery.

d) Make full use of the collaboration that exists within the ATCN and also with other consultants in the BSCN. Some registrars like to co-learn with colleagues, including group teaching. Use the online resources below too. If you know it will be difficult to meet all curriculum competencies in your region flag it early to get a solution – others will have done so in the past and there will be consultants in other regions happy to help.

e) **BIG TIP**: trainees are often slow to plan their consultant jobs. It is worth thinking about this 18 months before your CCT. By that stage, you will have a good feel for what mix of work you would like and where, ideally, you would like to live and work. Once you know this, go and talk to the consultants who already work there and ask about opportunities. Don't only look at advertised jobs. There are often unfilled PAs in a department, or development opportunities, which, with the right candidate (you!), can be developed, but they are not advertised. But approving a job in the NHS is slow. Remember you are eligible for consultant interview up to 6 months before your CCT, so the job can be advertised a few months before that. Therefore, given the time taken for prior discussion and business planning, about 18 months is often required. (See section 10 "What sort of consultant job would I ideally like?")

f) Unpredictable things happen and training is not always smooth. If you run into difficulties, flag them early since it makes it far easier to help and reach a resolution. There are many sources of help, but it makes sense to start locally (see section below). Ideally, begin with your Educational Supervisor and Training Programme Director, so that a plan can be made and confirmed at your next ARCP.

7. Training resources

This section provides a summary of relevant training resources complied by existing trainees which they have found helpful. Please send us useful additions or removals and also check the BSCN website:
www.bscn.org.uk/members_content_wide.aspx?Group=members&Page=educationhome

Books (and some Papers)

General Neurophysiology

- Oxford Textbook of Clinical Neurophysiology
- Electrodiagnosis in Clinical Neurology
- The Clinical Neurophysiology Primer
- Clinical Neurophysiology (Contemporary Neurology Series)
- Clinical Neurophysiology Board Review Q&A
- Essentials of Clinical Neurophysiology
- Clinical Neurophysiology: EMG, Nerve Conduction and Evoked Potentials, Volume 1 (Handbook of Clinical Neurophysiology)
- Clinical Neurophysiology: EEG, Paediatric Neurophysiology, Special Techniques and Applications, Volume 2 (Handbook of Clinical Neurophysiology)
- Clinical Neurophysiology (Oxford Specialist Handbooks in Neurology)

- *Paediatrics:* Neonatal and Paediatric Clinical Neurophysiology
- *Paediatrics:* Clinical Neurophysiology of Infancy, Childhood, and Adolescence

Neurology

- Adams and Victor's Principles of Neurology
- Bradley and Daroff's Neurology in Clinical Practice
- Brain's Diseases of the Nervous System
- Neurology: A Queen Square Textbook

- Aids to the Examination of the Peripheral Nervous System

- *Paediatrics:* Diseases of the Nervous System in Childhood
- *Paediatrics:* Neuromuscular Disorders of Infancy, Childhood, and Adolescence: A Clinician's Approach

NCS/EMG

- Electromyography and Neuromuscular Disorders: Clinical-Electrophysiologic-Ultrasound Correlations
- Electromyography in Clinical Practice
- Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice
- Aminoff's Electrodiagnosis in Clinical Neurology
- Easy EMG
- Johnson's Practical Electromyography
- Electromyography in Clinical Practice: A Case Study Approach
- Clinical Electromyography: Nerve Conduction Studies
- Electrodiagnostic Medicine

- Manual of Nerve Conduction Studies
- Manual of Nerve Conduction Study and Surface Anatomy or Needle Electromyography

- Anatomical Guide for the Electromyographer: The Limbs and Trunk
- Atlas of Nerve Conduction Studies and Electromyography
- EMG Secrets
- EMG Pearls

- Entrapment Neuropathies

- *Paediatrics:* Paediatric Electromyography

Epilepsy

- A Clinical Guide to Epileptic Syndromes and Their Treatment
- Epileptic Syndromes in Infancy, Childhood and Adolescence
- Epilepsy: A Comprehensive Textbook
- Epilepsy (Oxford Specialist Handbooks in Neurology)
- The Epilepsies: Bk. 3 (Blue Books of Neurology Series)

- Gates and Rowan's Nonepileptic Seizures
- Nonconvulsive Status Epilepticus

- Presurgical Assessment of the Epilepsies with Clinical Neurophysiology and Functional Imaging
- Intractable Focal Epilepsy
- Textbook of Epilepsy Surgery

- *Paediatric:* Aicardi's Epilepsy in Children
- *Paediatric:* Benign Focal Epilepsies: In Infancy, Childhood and Adolescence

EEG

- Niedermeyer's Electroencephalography: Basic Principles, Clinical Applications, and Related Fields
- Handbook of EEG Interpretation
- Practical Approach to Electroencephalography
- Current Practice of Clinical Electroencephalography
- Rowan's Primer of EEG
- Fisch & Spehlmann's EEG Primer: Basic Principles of Digital and Analog EEG

- Goldensohn's EEG Interpretation: Problems of Overreading and Underreading
- Pearls of EEG eBook
- Blume's Atlas of Pediatric and Adult Electroencephalography
- Atlas of EEG, Seizure Semiology, and Management
- Atlas of EEG Patterns
- Atlas of Encephalography - Volume 1: Awake and sleep EEG
- Atlas of Electroencephalography - Volume 2: The Epilepsies, EEG and Epileptic Syndromes
- Atlas of Ambulatory EEG

- *ITU:* Handbook of ICU EEG Monitoring
- *ITU:* Hirsch and Brenner's Atlas of EEG in Critical Care

- *Neonatal:* Atlas of Neonatal Electroencephalography
- *Paediatric:* Atlas of Paediatric EEG

- *Paediatric:* EEG in Childhood Epilepsy: Initial Presentation and Long-Term Follow-Up

- EEG Signal Processing
- Electric Fields of the Brain: The Neurophysics of EEG

- Artifacts in Clinical Neurophysiology

- Clinical Neurophysiology of Epileptogenic Networks

- A revised glossary of terms most commonly used by clinical electroencephalographers and updated proposal for the rport format of the EEG findings. Revision 2017 (paper)

EPs

- Illustrated Manual of Clinical Evoked Potentials
- Spehlmann's Evoked Potential Primer
- Evoked Potentials in Clinical Medicine

- The clinical role of evoked potentials (paper)

- *TMS:* Magnetic Stimulation of the Human Nervous System
- *TMS:* The Oxford Handbook of Transcranial Stimulation
- *TMS:* Magnetic Stimulation in Clinical Neurophysiology
- *TMS:* Handbook of Transcranial Magnetic Stimulation
- *TMS:* Transcranial Magnetic Stimulation: Proceedings of the 2nd International Transcranial *TMS:* Magnetic Stimulation (TMS) and Transcranial Direct Current ... 56 (Supplements to Clinical Neurophysiology)

IOM

- A Practical Approach to Neurophysiologic Intraoperative Monitoring
- Principles of Neurophysiological Assessment, Mapping, and Monitoring
- Intraoperative Neurophysiology: A Comprehensive Guide to Monitoring and Mapping
- Intraoperative Neurophysiological Monitoring
- Neurophysiology in Neurosurgery: A Modern Approach
- Intraoperative Monitoring of Neural Function: Handbook of Clinical Neurophysiology: v. 8
- Neurophysiological Monitoring During Intensive Care and Surgery

Sleep

- Oxford Textbook of Sleep Disorders
- Sleep Medicine: A Guide to Sleep and its Disorders
- Kryger's Principles and Practice of Sleep Medicine
- Principles and Practice of Pediatric Sleep Medicine
- Clinical Neurophysiology of Sleep Disorders: Volume 6 (Handbook of Clinical Neurophysiology)
- Sleep: A Comprehensive Handbook
- Oxford Handbook of Sleep Medicine: The Essential Guide to Sleep Medicine Across Specialties (Oxford Medical Handbooks)
- Sleep Medicine (Cambridge Clinical Guides)

- Atlas of Clinical Sleep Medicine
- Atlas of Sleep Medicine

- Case Studies in Sleep Neurology: Common and Uncommon Presentations

- Sleep Disorders Medicine: Basic Science, Technical Considerations, and Clinical Aspects
- Fundamentals of Sleep Technology

Neuroanatomy
- Neuroanatomy through Clinical Cases

Neuroscience
- Principles of Neural Science

Websites

General
- eBrain www.ebrain.net (note all BSNC members have free access to Ebrain, which can be granted via Louise, the BSCN administrator – louiseannjones@btinternet.com)
- International Federation of Clinical Neurophysiology masterclass: www.ifcn.info/masterclass.asp

- *Paediatric:* British Paediatric Neurology Association: bpna.org.uk

EMG/peripheral nerve
- AANEM: www.aanem.org
    - AANEM Glossary of Terms in Neuromuscular & Electrodiagnostic Medicine www.aanem.org/Practice/Glossary-of-Terms
- Nandedkar EMG learning resource: www.nandedkarproductions.com/ (note ATCN members currently have an account to access this, details are available from the president of the ATCN)
- Erik Stalberg (EMG and SFEMG teaching): www.erikstalberg.com and especially sfemg.info
- YouTube videos by Simon Freilich and James Burge
- YouTube videos on basic EMG here and here

- British Peripheral Nerve Society: www.bpns.org.uk
- Washington University in St. Louis Neuromuscular Home page: neuromuscular.wustl.edu
- European Reference Network- NMD: ern-euro-nmd.eu

EEG
- Learning EEG: www.learningeeg.com
- International League Against Epilepsy: www.ilae.org, and their diagnostic manual EpilepsyDiagnosis.org
- EPICARE: epi-care.eu
- Natus Neuro Training Academy: natus.com/education
- Newborn Brain Society: newbornbrainsociety.org

EP
- BSCN VEP/ERG case archive
- BSCN SSEP case archive
- BSCN BAEP case archive

Courses

- ATCN training days (see BSCN website)
- During COVID some of the ATCN/BSCN presentations were recorded and made available online here and here
- Triennial BSCN residential course once during your training
- One of the Motor Evoked Potential (magnetic stimulation) courses run in Southampton, Newcastle or Queen Square, especially if your region does not perform magnetic stimulation
- International Paediatric EMG course
- ILAE School on EEG in the First Year of Life
- Moorfields Electrophysiology of Vision course
- Intraoperative monitoring or brain mapping course(s) from the International Society for Intraoperative Neurophysiology

- Teaching the Teachers course (ask your Trust's Education Learning Centre as many can offer it for free)
- Leadership and Management Courses (often provided locally for free, so check what is available; you can also gain management experience by attending local management meetings and arranging real-life experience – a course is not compulsory)
- Interview skills courses are not essential but some trainees find them helpful

Journals

1. General Clinical Neurophysiology
    - Journal of Clinical Neurophysiology: journals.lww.com/clinicalneurophys
    - Clinical Neurophysiology Practice: www.sciencedirect.com/journal/clinical-neurophysiology-practice

2. Neurology
    - Neurology: www.neurology.org
    - Practical Neurology: pn.bmj.com
    - Lancet Neurology: www.thelancet.com/journals/laneur/home
    - Continuum Neurology: continuum.aan.com
    - Brain: academic.oup.com/brain
    - Current Opinion in Neurology: journals.lww.com/co-neurology

3. Neuromuscular
    - Muscle and Nerve: onlinelibrary.wiley.com/journal/10974598
    - Neuromuscular Disorders: www.sciencedirect.com/journal/neuromuscular-disorders

4. Epilepsy
    - Epileptic Disorders: onlinelibrary.wiley.com/journal/19506945
    - Epilepsia: onlinelibrary.wiley.com/journal

5. Paediatric Neurology
    - European Journal of Paediatric Neurology: www.elsevier.com/journals/european-journal-of-paediatric-neurology

6. Sleep medicine
    - Sleep medicine: www.sciencedirect.com/journal/sleep-medicine

8. Opportunities within training

The Clinical Neurophysiology training programme lasts 4 years when completed full time, without breaks. Many trainees, however, choose to work less than full time, and/or to extend their training time with research, fellowship(s) and other activities. The list below can never be exhaustive but may provide interesting thought and inspiration.

If you are interested there are some common-sense general principles you should follow to boost your chances of having your special request accepted:

1. Plan as far ahead as you can;
2. Check first on the process required on your local Deanery website;
3. Discuss your plans early with your Educational Supervisor and Training Programme Director.

Less Than Full Time (LTFT) training

Any trainee in a substantive HEE training post can apply to train LTFT, although there are eligibility criteria, and your local Deanery website will provide clear details of these and how to apply. In general, there is a 12-week notice period. It is common that applications are grouped according to categories:

- Category 1: caring for children, personal health reasons, direct carer for a dependent
- Category 2: unique opportunity for professional development, short term extraordinary responsibility, religious commitments
- Category 3: personal choice

If you are interested, and would like further advice, start by looking on your Deanery website, where there will be an application form, and discuss it with your Training Programme Director and Educational Supervisor, ideally at least 4 months in advance. If you would like to read the basic principles, they are in the Gold Guide www.copmed.org.uk/gold-guide.

Out of Programme (OOP) experience

Again, please consult your local Deanery for detailed information, this is just a brief overview. Generally, time spent OOP does not contribute to the 4-year training programme, but you retain your training number whilst OOP. The exception to this is an OOPT (Out of Programme Training) and OOPR (Out of Programme for Research). The latter is generally for up to 3 years, with the intention of gaining a higher degree, and it can contribute up to 1 year towards the 4-year training for CCT. There are other special types of Out of Programme activity (for experience, career breaks and so on).

It is generally recommended that trainees discuss OOP plans with their Training Programme Director at least 6 months in advance (ideally longer). Trainees may have to wait to start an OOP placement, and it is commonly at rotation dates.
For further information, please see: www.gmc-uk.org/education/standards-guidance-and-curricula/guidance/out-of-programme

Acting up as a Consultant

Trainees in their final year of training can apply to act up as a consultant for a minimum of 3 months, which can count towards their training. It is commonly structured as an Out Of Programme for Training.

Inspiration, what have others done?

Remember, many additional skills can be gained alongside the 4-year clinical neurophysiology training programme, without taking time out.

- Fellowships, for example epilepsy or neuromuscular fellowships, anywhere in the world, for up to a year. If they give valuable experience they may, for example, be classified as an Out of Programme for Experience (OOPE). You will need to consider funding.
- Entrepreneurship, for example via the NHS Clinical Entrepreneur Programme nhscep.com/
- Leadership and management development for doctors in postgraduate training www.leadershipacademy.nhs.uk/resources/leadership-development-for-doctors-in-postgraduate-training/
- NHS regional clinical Leadership Fellow Scheme www.fmlm.ac.uk/clinical-fellow-schemes/nhs-regional-clinical-leadership-fellow-scheme
- Darzi Fellowships in Clinical Leadership www.lsbu.ac.uk/business/research-enterprise-and-innovation/health-systems-innovation-lab/what-we-do/darzi-fellowship-challenge
- Postgraduate Certificate in Medical Education is popular, generally taught over 1 year, and aimed at doctors who would like to take on a teaching role. There are many providers across the UK and online. www.bmj.com/content/337/bmj.a880

Why not try and win the BSCN's own Adrian Prize for the best presentation at the BSCN, worth £1000, for details see www.bscn.org.uk/index.aspx?Group=home&Page=home

9. Return to training

If you decide to take an out-of-programme (OOP) period, including parental leave, it is worth ensuring you plan not only the leave, but also your return to training.

You should have a meeting with your educational supervisor to plan the approach and look at what your local Deanery provide as support. It is common for this to include Keeping in Touch (KIT) days (usually up to 10 KIT days per parental leave without it affecting parental-leave pay), and there are commonly supportive courses on returning to work (see below). When you return, you should have a meeting with your Educational Supervisor to ensure you are supported, and to help set some short-term goals to get back into the swing of working. This may well include a brief follow-up meeting to ensure you are making appropriate progress, and to provide any other support, or to highlight where that can be found.

For maternity leave and related issues (e.g. equal pay opportunities and less-than-full time training), it may be useful to join the Physician Mums Group PMGUK (www.facebook.com/groups/722674887906491), which can provide useful peer advice.

For instance, for London trainees:

Please visit london.hee.nhs.uk/professional-development/supported-return-to-training

10. What sort of consultant job would I ideally like?

This may seem like a daft question, but there are two good reasons for considering this early:

1. Most trainees have a preference about where, geographically, they would like to work and what their favourite bit of neurophysiology is (or will be).
2. It is not uncommon for neurophysiology centres to have some 'spare' PA's, a vacant job, or the ability to create jobs. But remember it takes time for jobs to be created, approved, advertised and for you (hopefully!) to be appointed.

Therefore, do start to make enquiries early, perhaps 18 months before your CCT date. Go and talk to the team, or teams, in the region you would ideally work in. Do they have jobs coming up? Can they consider creating something new? What are the opportunities? It'll help to have a basic CV, and to be able to discuss what interests you, and some flexibility on your behalf.

What things do you need to think about?

1. Location – where do I want to work?
2. Do I prefer a teaching hospital or DGH environment, or a mix? Working alone or with others?
3. Do I prefer a single site or split site?
4. Mixed job, or highly specialist job (e.g. purely telemetry/EEG, purely paediatric, and so on)
5. Any neurology component, such as epilepsy or neuromuscular clinics?
6. Any special interests: research PA's, education role, others?

If you are unsure, have a chat with your mentor and colleagues.

11. Sources of help

During the training many doctors will encounter personal or professional challenges of different sorts, and some will wish to seek help. We cannot hope to cover all eventualities here but here are some suggestions and links to resources, which may provide a useful starting point. If we have missed anything that may be particularly helpful then please let us know.

In all branches of medicine there are, unfortunately, reports of bullying, harassment or discrimination. Such behaviour is, of course, entirely unacceptable within Clinical Neurophysiology, and the NHS, nevertheless, we may still come across it in some form. This booklet was made together with consultants and trainees in Clinical Neurophysiology as part of fostering close and open working relationships. There are several possible sources of help, both formal and informal, local and national. Your approach to this will, of course, depend on your personal experience and preferences. Some, but not all, issues may be improved by discussion and resolving the issue informally in the first instance. Consider keeping a record of the events, and any relevant written communication. The resources below provide some suggestions but are not exhaustive.

Local resources

Your employing organization carries legal responsibility for bullying and harassment issues. If you are not sure who your employer is, then check your payslip. Those who may be able to help locally include:

- A senior colleague in your department whom you trust. This may be an Educational Supervisor or Training Programme Director, but it need not be. It could also be a manager if you feel appropriate.
- A trusted senior colleague in a different speciality within your hospital. They can help guide you to local help and support.
- Human resources (HR, medical staffing)
- Occupational Health
- Freedom to Speak up Guardian
- The Guardian of Safe Working
- The Postgraduate Centre's Medical Education Managers
- College Tutors and Clinical Tutors

Local Deanery

In general, your local Deanery website is an excellent place to start. They will have a Professional Support and Wellbeing Service, able to provide local support covering lots of common problems including personal and professional. It commonly requires a referral to access some services, but a referral does not impact on your training progress. To some extent they act as a hub, with access to multiple other resources. Reasons for trainees to get help include:

- Health and social
- Repeated exam failure
- Clinical performance, knowledge and skills
- Communication, team working and time management
- Professional behaviours and attitude
- Significant life events
- Environmental issues
- Engagement with training

The sorts of support available include:

- Psychological support
- Exam support
- Communication skills
- High level careers support
- Neurodiverse screening
- Occupational health assessment
- Emotional intelligence screening

National resources within Clinical Neurophysiology

The ATCN organises a buddy system, and are a good port of call for informal peer-to-peer advice and support. It can be a good source of where to turn to next and may enable you to talk to someone who has had similar problems.

The national mentoring programme may be of interest, particularly for friendly career advice from a consultant not directly associated with your training. This is arranged via the BSCN/ATCN, and details are on the BSCN website.

Role of the BSCN and the Specialist Advisory Committee (SAC)

The BSCN has worked to understand the perception of bullying, harassment and discrimination by trainees, and consultants, within the speciality. It does not have a role in individual cases, which are managed locally, but does have a role in minimising this across the speciality.

This is a work in progress. If you have suggestions, please do let us know – via the Quality Lead on the SAC, currently Dr Andy Michell.

Resources

- ATCN Buddy scheme was set up in January 2023 (see www.bscn.org.uk/data/files/ATCN/Buddy%20Scheme%20in%20Clinical%20Neurophysiology.pdf). Junior and senior trainees within Clinical Neurophysiology are paired in order to provide peer-level support for informal discussions and sharing of experience. If you would like more information about the buddy scheme or if you are interested in joining it then please email info.atcn@gmail.com with “Buddy Scheme” in the subject line.
- Local and ATCN trainee representatives
- Whistle-blowing Advice and Helpline for NHS and Social Care
  www.pcaw.co.uk/
  www.nhsemployers.org/your-workforce/retain-and-improve/raising-concerns-whistleblowing/information-for-staff
  www.citizensadvice.org.uk/health/nhs-and-social-care-complaints/whistleblowing-how-a-staff-member-can-report-a-problem-in-the-nhs-or-an-adult-social-care-service/
- BMA - Guidance on stopping harassment and bullying
  www.bma.org.uk/advice/work-life-support/your-wellbeing/bullying-and-harassment
- NHS Employers - Guidance on bullying and harassment
  www.nhsemployers.org/your-workforce/retain-and-improve/staff-experience/tackling-bullying-in-the-nhs
- National Advisory Group on Safety of Patients in England
  assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/226703/Berwick_Report.pdf

The End!

Please do feedback and contribute to the next edition of this document by writing a quick note to:
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