

SPECIALTY TRAINING CURRICULUM

FOR

NEUROLOGY

MAY 2007

Joint Royal Colleges of Physicians Training Board

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INTRODUCTION

This curriculum has been revised to conform to the new PMETB guidelines for Curricula. It is also written in a format to attempt to make it as useful as possible to both trainees and those involved in their training. The format is different from previous neurology curricula and the following headings have been used:

- 1) Rationale
- 2) Model of learning and overview of learning experiences
- 3) Specific learning experiences
- 4) Supervision and feedback and assessment
- 5) Content of learning
- 6) Managing curriculum implementation
- 7) Curriculum review and updating
- 8) Equality and diversity

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1) SCOPE AND RATIONALE

The purpose of this curriculum is to train a specialist in neurology. The curriculum describes the knowledge and competencies required to complete a certificate in training (CCT) and to be registered in the Specialist Register in neurology. The CCT specialist will be able to work as a consultant specialist within the National Health Service and will have the knowledge, skills and attitudes required to do this and to develop further subspecialty expertise if appropriate.

This curriculum describes neurological specialty training.

Entry to specialist training will take place usually following a period of foundation training. Thus the trainee will be expected to have achieved foundation programme competencies, or the equivalent. The first two years of specialty training (ST1, ST2) will be in a core training programme (core medical training – CMT or acute care common stem training – ACCS). During core training physicians will be expected to have achieved level 1 acute medicine competencies for which the MRCP Part 1 or an equivalent exam is the knowledge based assessment. Thus before being allowed to proceed to specialty training year 3, trainees must have achieved these level 1 competencies. An average trainee should be able to achieve these within a 2 year core training programme. They will then be allocated to the next stage of specialty training, and at this stage will commence their dermatology training.

Duration of Training

Although this curriculum is competency based, the duration of training must meet the European minimum of four years for post registration in full time training adjusted accordingly for flexible training (EU directive 93/16/EEC requires that flexible training can be no less than 50% whole time equivalent). The SAC has advised that training from ST1 will usually be completed in six years in full time training.

A minimum of **four** years of Neurology Specialty Training (NST) should be in approved Neurology training posts which

- a) cover core and subspecialty neurology
- b) allow the trainee exposure to a broad range of common presentations of neurological disorder
- c) permit neurology training in a range of different clinical settings including District General Hospital practice and Neuroscience Centre practice.

NST may be further extended with the approval of the SAC and Postgraduate Dean for research or for training towards dual accreditation in related Speciality areas, for flexible training or relevant out of programme activity.

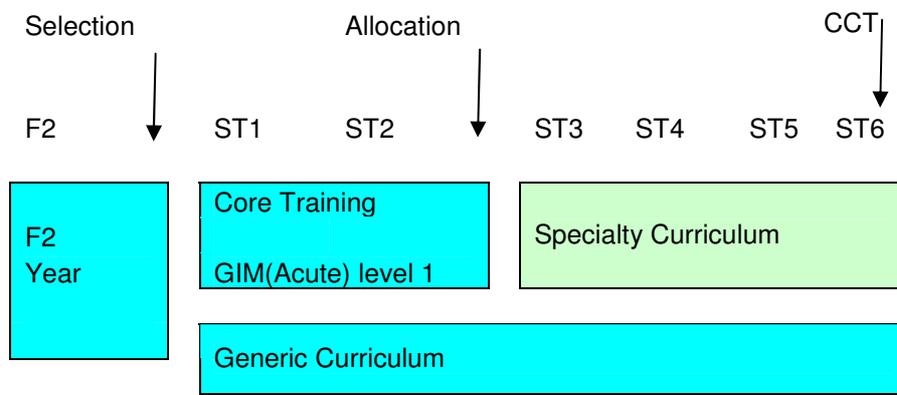
The content of the curriculum, and teaching and learning methods, were chosen by the curriculum subcommittee of the Specialist Advisory Committee in Neurology. The process of curriculum development is further described in (7) below.

The curriculum can be summarised as the knowledge, skills and attitudes needed to enable the doctor to appropriately assess and manage patients with neurological problems.

Generic Curriculum

This specialty curriculum is complementary to the generic curriculum which applies to all 28 physicianly specialities. The generic curriculum follows the headings of good medical practice and runs through from core training to CCT (see fig 1). Trainees should read and understand both their specialty curriculum and the generic curriculum. Both curricula should be seen as integrated so that generic competencies are acquired at all stages of specialty training. Some generic components are also further expanded and deepened for some specialties (eg palliative medicine). When planning specialty programmes, deaneries and trainers should ensure that both specialty and generic competencies can be acquired and assessed.

Diagrammatic representation of specialty and generic curricula with GIM (acute) level 1 curriculum



2) MODEL OF LEARNING AND OVERVIEW OF LEARNING EXPERIENCES

Adults learn by

- reflecting and building upon their own experiences
- identifying what they need to learn
- being involved in planning their education and training
- evaluating the effectiveness of their learning experiences.
-

For trainees to maximise their experiential learning opportunities it is important that they work in a 'good learning environment'. This includes encouragement for self-directed learning as well as recognising the learning potential in aspects of day to day work (eg what three things have I learnt from this ward round?) and generally adopting a positive attitude to training.

Learning from peers should also be encouraged and training should be 'fun'. Active involvement in group discussion is an important way for doctors to share their understanding and experiences. Lectures and formal educational sessions make up only a small part to the postgraduate training in neurology. The bulk of learning occurs as a result of clinical experience (Experiential learning) and self-directed study. The degree of self-direct learning will increase as trainees become more experienced.

A supportive open atmosphere should be cultivated and questions welcomed.

The list of learning opportunities below offers guidance only, there are other opportunities for learning that are not listed here. Trainees will learn in different ways according to their level of experience. Those likely to be used by more experienced trainees are marked with an asterisk.

A. Experiential learning opportunities

1. Every patient seen, on the ward or in out-patients, 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 both of the diagnostic process as well as management. Patients seen should provide the basis for critical reading around clinical problems.
2. Every time a trainee observes another doctor, consultant or fellow trainee, seeing a patient or their relatives there is an opportunity for learning.
3. Ward-based learning including ward rounds. Ward rounds, including those post-take, should be led by a consultant and include feed-back on clinical and decision making skills.
4. Supervised consultations in outpatient clinics. Trainees should have the opportunity to assess both new and follow-up patients and discuss each case with the supervisor so as to allow feedback on diagnostic skills and gain the ability to plan investigations.
- 5*. Trainees need to learn to make increasingly independent decisions on diagnosis, investigations and treatment consistent with their level of experience and competence and with maintaining patient safety. These decisions should be reviewed with their supervising consultant.
6. There are many situations where clinical problems are discussed with clinicians in other disciplines, such as radiology, pathology and multidisciplinary meetings. These provide excellent opportunities for observation of clinical reasoning.

B. Small group learning opportunities

1. Case presentations and small group discussion, particularly of difficult cases, including presentations at clinical and academic meetings. This should include critical incident analysis.
2. Small group bedside teaching, particularly covering problem areas identified by Trainees.
3. Small group sessions of data interpretation, particularly covering problem areas identified by trainees.
4. Local resuscitation skills review by a resuscitation training officer including simulation with manikins.
5. Participation in audit meetings, journal clubs and research presentations etc.
6. Video consultation with subsequent small group discussion.

C. One-to-one teaching

1. Review of out-patients, ward referrals or in-patients with supervising consultant.
2. Review/case presentations with educational supervisor including selected notes, letters and summaries.
3. Critical incident analysis.
4. Discussion between trainee and trainer of knowledge of local protocols.
5. Video consultation with subsequent individual discussion with trainer.
6. Feedback following a mini-CEX assessment provides an excellent teaching opportunity.

D. Regular teaching and external courses etc

1. Lectures and small group teaching as part of Calman teaching sessions for NST trainees. Educational courses such as the Association of British Neurologist (ABN)

meeting, the Edinburgh course etc. Trainees would normally be expected to attend one ABN meeting each year.

2. Formal training in communication skills.

E. Personal study

1. Personal study including computer-based learning.
2. Practise examination questions and subsequent reading.
3. Reading journals.
4. Writing reviews and other teaching material.

F. Teaching others

1*. Teaching undergraduate medical students and students in allied health professions and postgraduate doctors provides excellent learning opportunities for the teacher.

2. Presenting cases at grand rounds or similar clinical meetings provides the opportunity to review the literature relating to the clinical case. This provides the opportunity for in depth study of one clinical problem as well as learning important critical thinking skills.

3*. Journal club presentations allow development of critical thinking and in depth study of particular areas.

G. Research

1*. Research provides the opportunity to develop critical thinking and the ability to review medical literature. This is an essential skill for effective clinical practice as well as for the pursuit of more academic research.

2* Clinical research allows development of particular expertise in one area of neurology allowing more in depth knowledge and skills and helping to focus long term career aims and interests.

H. Audit and guidelines

1. Participation in audit: trainees should be directly involved and expect, after understanding the rationale and methodology, to undertake a minimum of one in-depth audit every in two-years of training.

2. Guideline generation*/review.

Adapted from 'A Core Curriculum for Senior House Officers', Federation of the Royal College of Physicians; 4th edition.

3) SPECIFIC LEARNING EXPERIENCES

The most important element in neurological training is direct involvement in the care for patients with neurological problems.

The structure of training aims to provide the opportunity for the trainee to be involved in the care of patients with an appropriate range of neurological conditions. The way the relevant exposure is obtained will necessarily reflect local organisation of services. This should be reflected in the local training programme, with individual issues being addressed through appraisals with the educational supervisor. Many neurological diseases are chronic and it is essential that trainees have the opportunity to follow patients for an appropriate length of time.

During NST the trainee must demonstrate increasing responsibility and capability moving towards the full range of practice expected of a generic independent neurologist.

Training under the supervision of several trainers and in two or more different centres with a broad range of learning opportunities is strongly encouraged. All elements of work in training posts must be supervised with the level of supervision varying 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 personally discuss all cases if required. The level of supervision should reflect the experience of the trainee, and as training progresses the trainee should have the opportunity for increasing autonomy, consistent with safe and effective care for the patient.

All trainees must demonstrate acquisition of generic skills and competencies of a doctor as laid out in "Good Medical Practice" and as defined further in the Generic Curriculum for Medical Specialties.

Out-patients

Unless seconded to one of the subspecialties or undertaking a period of acute/emergency neurology training the trainee should undertake (participate in) two to three supervised outpatient clinics weekly throughout the training period: this may be increased to four as part of a rotation if there is a reduction in other clinical duties. Clinic attendance in a purely observational role may be extra to the above.

The nature of the clinics, and the ratio of new to follow up patients, will depend on the experience of the trainee: it is expected that, in planning generic (non-specialty) neurology outpatients for trainees, 40 minutes should normally be allowed for a new case and 20 minutes for a follow up.

Sufficient experience to support the development of knowledge and competencies in the broad range of common neurological disorders seen in primary care and district general hospitals is essential and must include a minimum of one day per week over 2 years (outpatients and ward consultations) supervised experience in secondary referral hospital practice (i.e. outside the highly specialised tertiary referral Neurosciences / Neurosurgical environment).

General and specialist clinics potentially provide different learning experiences. It is expected that, on average, 1-2 clinics a week will be general clinics. Access to specialist clinics will vary from one programme to another and role within the

subspecialist clinic may vary from supervised participation to observer. The range of exposures to subspecialties and related specialties is outlined below.

Inpatients

Trainees will spend most of their training, a minimum of 3 years, actively involved in the care of neurology in-patients under appropriate consultant supervision – a minimum of 2 consultant ward rounds each week and seeing neurology ward referrals again with appropriate consultant supervision. They will be involved in the multidisciplinary care of their patients. They will supervise and teach junior trainees. They will be responsible for formulating discharge summaries on the in-patients.

During the period of training the trainee should be exposed to the range of in-patient neurological conditions, their acute and long term management and rehabilitation. Attachments should allow for trainees to follow the natural history and response (or otherwise) to treatment and therapy of patients under their care. Many neurological conditions will be seen during the course of general training depending on organisation of local services, however some may require sub-specialty attachments and suggested exposures are outlined below.

Emergency Neurology

Experience in emergency neurology can be obtained in a number of ways, eg being on call for acute neurology or neurological advice during the day or at night. The intensity of the call will vary according to the local organisation of the neurology service

Study days

Study days, usually arranged on a regional or supra-regional basis, will cover the neurology curriculum over a 4 year cycle. There will be the equivalent of 9 a year (depending on local arrangements this could be 18 half days etc). A variety of learning methods and opportunities can be used, particularly interactive case based teaching. Trainees should attend the majority of these throughout their training.

Teaching

Trainees will be involved in teaching less experienced trainees and medical students as well as nurses and allied health professionals where appropriate. Teaching others provides an excellent learning opportunity.

Trainees should have some formal training in teaching; those who envisage this as a large part of their future work should consider more formal qualification such as the post-graduate certificate in education.

Management

Trainees will be expected, before completing their training, to have attended a deanery management course.

Audit: a minimum of 2 audits should be completed during higher specialty training.

Research methodology: if no research prior to SpR training, is strongly recommended to undertake, complete and publish one research project, including submission by SpR of protocol to local research ethics committee.

Academic posts (see also Research)

Training within an academic post, eg. lecturer, is perfectly acceptable for Specialist Training. Prospective approval should be obtained from the SAC to ensure that the

duration and content of clinical training are sufficient to meet the requirements for a CCT.

Research and other out of programme experience (including training abroad)
All trainees will be encouraged to undertake research but in any case must develop an appreciation and understanding of research methodology related to clinical neurology sufficient to allow a critical approach to areas relevant to practice. At least one half day per week should be protected educational time available for study and research throughout NST (apart from normal study leave). This could be used to attend sub-specialty clinics as an observer or participating for education.

NST may be extended to allow a period of special training overseas of up to one year, (preferably not in the final year of the higher phase training) provided that the training programme receives prospective approval from the SAC and Postgraduate Dean, is subject to satisfactory reports from educational supervisor(s) and contains appropriate assessments.

Flexible training

Trainees who are unable to work full-time are entitled to request flexible training programmes.

EC Directive 93/16/EEC requires that:

- i) *Part-time training shall meet the same requirements as full-time training, from which it will differ only in the possibility of limiting participation in medical activities to a period of at least half of that provided for full-time trainees;*
- ii) *The competent authorities shall ensure that the total duration and quality of part-time training of specialists are not less than those of full-time trainees*

Flexible trainees should undertake sufficient on call experience to allow them to develop the necessary knowledge and competencies for dealing with emergency referrals. For details of appointment and funding arrangements for flexible trainees, please see the revised Dept of Health / Devolved Health Administration and Deanery guidelines.

Research

Trainees who wish to acquire extensive research competencies, in addition to those specified in the generic element of the curriculum, may undertake a research project as an ideal way of obtaining those competencies, all options can be considered including taking time out of programme to complete a specified project or research degree. Time out of programme needs prospective approval from the SAC and the support of the Postgraduate Dean. Funding will need to be identified for the duration of the research period. A maximum period of 3 years out of programme is allowed.

Career Planning

For those who have decided on a career in Neurology at an early stage careful planning of the F2/BST can result both in broad general medical training together with some valuable neuroscience training. The minimum total period of training for a Neurology CCT is thus 8 years from qualification (F1/2, BNT 1-2, NST1-4).

For others entering Neurology NST from different training backgrounds an ad hominem evaluation of their prior training and experience, knowledge and evaluated competencies by the SAC will determine the requirements and duration of training. Trainees must discuss their career plans with their educational supervisors at an early stage and on a regular basis to determine the appropriate posts and/or rotations to apply for. Prospective advice should be sought from the SAC if there is uncertainty about a training plan. Potential entrants to NST in Neurology from non-standard training pathways should similarly seek early advice about the likely accreditation which may be accorded (if any) to previous training. Unevaluated experience will not normally count towards NST. Particular care is thus required to ensure that, in the selection of training posts in other countries, appropriate assessments are available.

Dual Accreditation

Trainees may wish to dually train and accredit in neurology and clinical neurophysiology or rehabilitation medicine to achieve two CCTs. In this case they must have applied for and successfully entered a training programme which was advertised openly as a dual training programme. This programme will need to achieve the competencies as described in both curricula and there must be jointly agreed assessments (proposed by both SACs in neurology and clinical neurophysiology or rehabilitation, and approved by PMETB). Postgraduate deans wishing to advertise such programmes should ensure that they meet the requirements of both SACs.

4) SUPERVISION AND FEEDBACK AND ASSESSMENT

A) Supervision

Each NST Neurology scheme will have a Programme Director and named consultant trainers who will undertake educational supervision of individual trainees. Upon enrolment with the JRCPTB the trainee will receive a copy of the Handbook, the curriculum for Training in Neurology and the Training Record. A written record of training will be maintained by the trainee, to be counter-signed by the relevant trainer and postgraduate dean annually; it will remain the property of the trainee but must be produced at the annual review. The Programme Directors' responsibility is to ensure that the JRCPTB requirements are met, to structure and coordinate rotations in liaison with the Postgraduate Dean, to facilitate where possible the educational needs of the trainees and, at each annual review, to suggest any future modifications in training or experience that may be necessary.

Training under the supervision of several trainers and in two or more different centres with a broad range of learning opportunities is strongly encouraged. All elements of work in training posts must be supervised with the level of supervision varying 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 personally discuss all cases if required.

Training Record and Appraisal

It is the responsibility of the trainee to keep their training record up to date with clear documentation of all generic and specific training experience, all assessments undertaken, reports from trainers and other required information. During any research period or other out of programme module the training record will include an account of work undertaken.

The trainee should have regular (at least six monthly) appraisal meetings with their educational supervisor to review progress, discuss strengths and weaknesses and set agreed targets for the next training period. Trainees will meet their Programme Director at least once each year and submit the training record for approval through the annual review process. The Programme Director, Postgraduate Dean, and external assessor will certify the training and assessments undertaken and, if necessary, advise the trainee and his/her trainer about any shortcomings of the trainee or the training posts, with suggestions how to remedy these in the coming year. A successful annual review (currently RITA) will be further required in each year of NST before a CCT can be recommended.

Trainees in NST are expected to be highly motivated in self-directed learning through reading, planning and organizing (in discussion with their trainers) clinical attachments, attendance at appropriate meetings and courses and specific projects. A proactive approach to such activities is an essential part of training for lifelong learning through Continuing Professional Development after Specialist Registration. Similarly a positive and proactive approach to appraisal, assessments and annual review documentation throughout training is essential and constitutes an important element in preparation for ongoing revalidation as a Specialist.

B) Assessment

Assessments of a) knowledge and understanding b) clinical skills and competencies c) attitude and conduct will be undertaken throughout training as recommended and updated from time to time by the SAC. Confirmation of satisfactory completion of these assessments will be through the annual review process. The assessment process will be expected to demonstrate knowledge and competency across a range

of specific and generic curricular topics with particular emphasis on common neurological presentations in the District General Hospital environment and in referral practice in larger centres. The range of assessment methods is set out below.

Important precepts in evaluations of trainees are that they should be frequent, broadly based, should involve multiple trainers, should cover clinically important areas of the curriculum on several occasions, should incorporate learning and feedback for the trainee and should be documented. It is not anticipated that every component of the curriculum be evaluated but that a sampling approach be adopted to ensure satisfactory performance across each educational domain in a broad range of topics. A log of experience through a patient logbook will back up this sampling methodology.

Knowledge & understanding will be assessed by a range of methods which include:

Evidence of exposure (portfolio of cases)	Record of involvement classified according to patient presentation
Presentations undertaken	Record
Audit undertaken	Record
Specific training undertaken	Documentation
Specific courses attended	Documentation
Formative tests of knowledge completed	Documentation
Trainer reports	Report
Basic and applied research undertaken	Report/Higher degree
Publications	Record
Summative assessment of knowledge	Neurology Knowledge Based Assessment

Skills & Competencies will be assessed by a range of methods which may include: Completed mini-CEX forms will be held by the trainee, their educational supervisor and the deanery.

Observation by trainers	Report
Mini-CEX	Record/Score
Direct observation of procedural skills (DOPS)	Record
Participation in Skills based training	Documentation
Evidence of exposure (portfolio of cases)	Record
Review of casenotes by trainer and case based discussion	Report
Evidence of ability to interpret data, reports and notes	Record

Attitude & Conduct will be assessed by a range of methods which may include:

Observation by trainers	Report
Multi-Source Feedback (MSF)	Record
Attendance	Sickness/Absence Record
Complaints	Record

Review of assessments

The assessment methods will be collated by the trainee and presented at the annual review of in-training assessments (RITA). The RITA panel will review the evidence to determine whether progress is satisfactory. In particular they will review the evidence of experience, as documented by the log of involvement in patient care, to ensure breadth of coverage of the curriculum.

It is the responsibility of the trainee to obtain evidence to present at the RITA. A minimum of 4 mini-CEX must be provided each year (though the number required and the range of clinical experiences sampled will be subject to revision by the SAC). These should sample across the curriculum. Specific areas to be covered may be specified at the RITA. This number will be reviewed as the system is introduced. However, if areas of concern are identified by the trainee and educational supervisor during appraisal or at the RITA then further mini-CEX should be undertaken to further assess those competencies. A minimum of 2 MSF assessments during higher neurological training is required.

The panel may choose to specify types of evidence to be collected for future RITAs.

The neurology knowledge base assessment must be passed before the penultimate year assessment.

Summary of the range of evidence

1	Assessment of Knowledge			
		A	Evidence of exposure (portfolio of cases)	Record
		B	Presentations undertaken	Record
		C	Audit undertaken	Record
		E	Specific training undertaken	Documentation
		F	Specific courses attended	Documentation
		G	Knowledge based assessment passed	Documentation
		H	Trainer reports	Report
		I	Clinical research undertaken	Report
		J	Publications	Record
2	Competencies			
			Assessment of clinical skills Supervisors report	Mini-CEX record Report Mini-CEX; Review of letters
3	Conduct		Assessment of management	
			Supervisors report	Report
			MSF assessment	Summary
			Complaints or thanks	Summary

5) CONTENT OF LEARNING FOR NEUROLOGICAL SPECIALTY TRAINING

By the end of the specified NST period the trainee must have acquired the generic skills and competencies as laid out in ST Generic Curriculum and the Speciality knowledge, skills and competencies and attitudes for a CCT in Neurology. The curriculum may broadly be divided into:

the generic knowledge and skills for Neurology practice including experience of patients with broad range of common neurological presentations
the core subject areas which comprise the practice of Neurology (including its subspecialty areas)
appropriate experience and understanding of other related Specialities which interface with Neurology

The learning outcomes for each topic of the generic and core curriculum are set out in the tables below. These comprise a brief statement followed in some cases within brackets some more detailed information.

The curriculum below sets out the topic areas and learning objectives within each of these three groups and their methods of assessment. Subsequently there are notes relating to the more detailed learning objectives of these topic areas:

This is divided into:

- Background clinical science and neuroscience
- Generic clinical neurology
- Specific subjects within neurology
- Related disciplines, that have a specific curriculum

Background clinical science and neuroscience

Clinical science

To be able to practise clinical neurology it is essential to understand the scientific basis of clinical neurology.

This includes:

Clinically relevant neuro-anatomy, neurophysiology, neuropathology.

The basis of epidemiology and the relevance of epidemiology to the understanding of the aetiology of disease and the contribution to diagnosis.

Relevant statistical methods to understand trial design and analysis including meta-analysis.

The principles underlying evidence based medicine.

Learning outcomes for curricular topics: general statement followed by more detail in square brackets []

Generic Clinical Curriculum in Neurology	
Ability to undertake the following clinical activities as applied to patients with neurological disorders:	Learning Outcomes
History taking	Able to take an appropriate, focussed and comprehensive history, including where appropriate information from others, and communicate this verbally or in writing and in summary form
Mental and physical examination	Able to undertake an appropriate, focussed and comprehensive examination of mental and physical state and communicate this verbally or in writing and in summary form
Differential diagnosis	Able to formulate an appropriately ordered differential diagnosis based on an appreciation of the patient, their past history and current problems and their likely causes
Investigation	Able to formulate a focussed and relevant series of investigations
Management plan	Able to plan and order appropriate observations, liaise with members of the MDM, determine and prescribe fluids and medications, seek appropriate opinions and interventions and, with others, develop an overall plan for the individual patient
Multidisciplinary team (MDM) involvement	Able to liaise with, refer to and communicate with all members of the MDM in a constructive and professional manner in the interests of the patient and their carers Able to liaise with and understand the role of specialist nurses
Communication issues	Able to communicate effectively with the patient, their family and carers and other staff in relation to the individual needs of the patient and with appropriate regard for confidentiality. Able to give a prognosis, to explain the patient's condition, to break bad news, to obtain full and informed consent for investigations and treatment. Able to inform concerning patient support groups and relevant charities
Clinical Pharmacology of Neurological Disorders	Able to plan and administer pharmacological treatments safely and effectively. Able to refer to local and national guidelines (NICE) and sources of evidence and information about treatments [Synapse and neurotransmitter physiology. Principles of neuro-pharmacokinetics and pharmacodynamics. Modes of actions of drugs used to treat neurological diseases] Understand principles of treatment especially: Vascular disease, migraine, epilepsy, pain, psychiatric disorders, movement disorders, multiple sclerosis, autoimmune disorders, infections, dementia, motor neuron disease. Understand limitations: compliance, adverse effects, interactions, cost implications

	Understand information needs of patients and others
Special patient groups	
Women and pregnancy	Understand the effects of menarche, menstrual cycle and menopause on common neurological disorders [methods of contraception, failure rate and interaction with drugs (especially antiepileptic drugs): teratogenic risks of commonly prescribed drugs (especially AEDs) and genetic risks of neurological diseases: presymptomatic/prenatal diagnosis of neurological conditions: psychosexual dysfunction in neurological illness (especially epilepsy)] Understand the effect of pregnancy on existing neurological disorders and neurological disorders as complications of pregnancy [eclampsia; neonatal complications in offspring of affected women; communication with obstetricians; effects of drugs on pregnancy (foetus and mother) and pregnancy on drugs]
The teenager	Understand the special needs of teenagers, particular issues of confidentiality, and transition disorders
The elderly	Understand the normal clinical and radiological findings in the elderly; special presentations of neurological disease in the elderly; diagnosis, investigation and management of dementia; effects of drugs in the elderly; hospital based & community services; communication with relatives and care agencies; role of departments of medicine for the elderly
Terminally ill	Understand end of life issues in neurological disorders and the role of palliative care services and specialist nurses [ethical and legal aspects of terminal care]
Common Neurological Presentations	Able to clinically evaluate patients with the presenting syndromes, initiate appropriate observations, investigations and treatment, make appropriate referrals and effectively communicate to patient and relatives and other staff about condition, procedures and prognosis. Able to effectively communicate with medical and nursing staff in referral situations

Specific subjects within neurology curriculum	
Ability to evaluate and manage people with the following neurological disorders:	Learning Outcomes
Head Injury	Ability to evaluate and manage people with acute head injury [Perform immediate resuscitative measures; formulate a strategy for immediate and short term management: primary and secondary effects of head injury: symptoms and signs of head injury and its complications: indications for investigations: indications for medical interventions, ITU referral, urgent and delayed neurosurgery] Ability to evaluate and manage post traumatic change in consciousness, behaviour and cognition, and other post-traumatic symptoms (including epilepsy)
Headache	Ability to evaluate and manage people with headache & facial pains. [Clinical features, differential diagnosis and specific pharmacological and general treatment of the causes of headache and facial pain: Investigations: role of brain scanning, urgent blood tests, lumbar puncture]
Disorders of consciousness	Ability to assess the unresponsive patient and to formulate plan of investigation and management. [Anatomy and physiology of consciousness, and the pathophysiology of disorders of consciousness: definitions, causes, pathophysiology, clinical features and prognosis of persistent vegetative state, locked in state and brainstem death: legal issues relating to disorders of consciousness: assessment of patient with disordered consciousness: use of tests for brainstem death: interpersonal skills for relating to management of the family of people with disorders of consciousness]
Disorders of sleep	Ability to evaluate and manage people with sleep disorders [Narcolepsy, daytime hypersomnolence, parasomnias, obstructive sleep apnoea, effects of neurological conditions on sleep: indications, scope and limitations of the sleep laboratory: effects of sleep on the EEG: principles of physical and pharmacological treatment: driving regulations: consequences and complications of sleep disorders]
Disorders of higher function & behaviour	Ability to evaluate and manage people with disordered higher function & behaviour [Understanding of memory, language, visuospatial function & behaviour: definition and epidemiology of dementia; pathology and clinical features of individual dementias; relevant investigations; specific treatments; genetic aspects; risks and costs of investigations; role of neuropsychological evaluation (inc dementia and mood scales): evaluation of competency: community and support services]
Epilepsy	Ability to evaluate and manage people with epilepsy. [Differential diagnosis of paroxysmal and transient events: scope and limitations of investigations: use of anti-epileptic

	<p>drugs: treatment of refractory seizures: serial seizures and status epilepticus: role of epilepsy surgery: awareness of issues related to women and pregnancy, driving, vocation: sudden death: psychological and social consequences of epilepsy especially teenagers]</p>
Cerebrovascular disease	<p>Ability to evaluate and manage people with stroke. [Cerebral circulation and its determinants: pathophysiology of cerebral infarction, cerebral haemorrhage, subarachnoid haemorrhage, cerebral venous thrombosis & vascular dementia: epidemiology, risk factors and their management: features of stroke /TIA, intracranial haemorrhage and venous thrombosis: investigation and management of acute stroke and TIA, the role of medical and surgical interventions: role of evaluation scales: cerebral aneurysm and AVM; interventional, surgical and radiotherapy treatment: multidisciplinary stroke care, organisation of stroke units, nutrition after stroke, rehabilitation techniques, community stroke care]</p>
Tumours of the NS, neurological complications of systemic cancer, complications of treatment of cancer	<p>Ability to evaluate and manage people with tumours of the NS or effects of systemic tumours or their treatment. [Neuropathological classification of brain tumours: clinical features of the common tumours of the nervous system including malignant meningitis: clinical features and immunology of paraneoplastic syndromes: benefits and risks of therapies including surgery and radiotherapy: neurological complications of chemotherapy and radiotherapy]</p>
Infections of NS	<p>Ability to evaluate and manage people with infections of NS [Principles of neurological infectious disease: clinical features of these diseases and their causes: diagnostic techniques and their appropriate use: anti-microbial therapies and their use: the importance of liaison with infectious disease physicians, microbiologists, public health and occupational health medicine in relation to neurological infections]</p>
CSF disorders	<p>Able to evaluate and manage people with disorders of CSF [CSF composition and dynamics; anatomy and radiology of the ventricular system; genesis of hydrocephalus; biochemistry and immunology of CSF; blood brain barrier; indications, techniques, & contraindications of CSF examination: methods of intracranial pressure monitoring: treatments of raised intracranial pressure, management of shunts]</p>
Demyelination and vasculitis	<p>Ability to evaluate & manage people with demyelinating & vasculitic disorders [Biology of demyelination & vasculitis: clinical features of multiple sclerosis, related demyelinating disorders and vasculitic and arteritic disorders: management of specific impairments and disabilities arising in MS: role of disease modifying drugs, symptomatic treatments and therapies]</p>
Immunological disorder and NS	<p>Ability to evaluate & manage people with immunological disorder caused by disease or treatment. [Principles of immune responses in relation to the NS: immunological basis underlying auto-immune neurological disease: clinical features of these diseases: diagnostic techniques and their appropriate use: immuno-suppressive</p>

	and immunomodulatory therapies: their actions, side effects and indications]
Parkinsonism & Movement disorders	Ability to evaluate & manage people with Parkinsonism & Movement Disorders [Clinical features and differential diagnosis of parkinsonism, chorea/athetosis, dystonia, tics and tremor: role of investigations in diagnosis and treatment: treatment of movement disorders: role of neurosurgical interventions]
Motor neuron disease	Ability to evaluate & manage people with motor neuron disease [Clinical features and differential diagnosis of motor neuron syndromes: disease modifying and symptomatic treatments: special issues of breaking bad news and prognosis: palliative care aspects]
Metabolic & toxic states	Ability to evaluate and manage people with metabolic/toxic state [Biochemistry and neuropathology of exposure to alcohol and other recreational drugs (cocaine, amphetamine, opiates), heavy metals, pesticides and therapeutic agents: clinical features of alcohol, cocaine, opiate, amphetamine neurotoxicity; of Pb, Hg, Mn, CO, NO and organophosphate poisoning; of therapeutic agents neurotoxicity (e.g. vincristine, lithium, radiation): role & value of blood and urine toxicology, imaging and neurophysiology: assessment of other organ damage: psychiatric morbidity associated with substance abuse: clinical features and management of hyper- hypo-thermia, sodium, potassium, calcium and acid base disorders]
Disorders of the visual system	Ability to evaluate and manage people with disorders of the visual system [Applied anatomy and physiology of the visual and oculomotor systems: clinical evaluation of the eye and adnexae, vision (acuity, fields and high function): clinical features & conditions which may affect these systems: driving regulations]
Disorders of cranial nerves	Ability to evaluate and manage people with disorders of cranial nerve function [anatomy of the skull base, particularly the orbit, cavernous sinus, pituitary fossa, foramen magnum and jugular foramen: pathological processes involving cranial nerves and their central connections: clinical features & clinical assessment of cranial nerve function: management of cranial nerve disorders including multidisciplinary approaches to visual, hearing & balance, speech & swallowing disorders]
Disorders of spine, spinal cord, roots and spinal injury	Ability to evaluate and manage people with disorders of the spine, spinal cord and roots and the acute & chronic consequences of acute spinal cord injury including effects of paralysis, autonomic dysfunction and sensory loss [Anatomy of the spine, spinal cord, roots: clinical features of spinal cord, root and cauda equina syndromes: indications for urgent investigation: potential and limitations of spinal CT, MRI, myelography and spinal angiography: emergency management of spinal cord or root compression, of spinal injury: management of neck & low back pain and sciatica]

Disorders of peripheral nerve	<p>Ability to evaluate and manage people with disorders of peripheral nerves (including plexus lesions) [Anatomy and pathology of peripheral nerves: clinical features & investigation of genetic and acquired axonal and demyelinating neuropathies, traumatic & entrapment neuropathies and plexopathies: management of Guillain-Barré syndrome and other severe paralysing neuropathies: general management of acute neuromuscular paralysis]</p>
Disorders of autonomic system	<p>Ability to evaluate and manage people with disorders of the autonomic nervous system (ANS) [Anatomy and physiology of ANS. clinical features of ANS disorders alone and as part of other condition eg multisystem atrophy: investigations including autonomic function tests: pharmacological and physical managements of urinary retention, erectile disorder, constipation, postural hypotension, autonomic dysreflexia]</p>
Disorders of muscle	<p>Ability to evaluate and manage people with disorders of muscle [Clinical features and investigation of genetic & acquired disorders of the neuromuscular junction and voluntary muscle including periodic disorders and disorders of energy metabolism (eg mitochondrial disorders): management including cardiorespiratory & anaesthetic considerations]</p>
Pain	<p>Ability to evaluate and manage people with neurological disorders causing pain and common non neurological causes of pain including musculoskeletal [Theories of pain generation: pain patterns in neurological and systemic diseases: effective use of pharmacological agents and other measures for pain relief including nerve blocks, TNS, acupuncture, & neurosurgical interventions: role of Pain Clinic: psychological and social effects of chronic pain]</p>

<u>Related Speciality curriculum</u>	
Ability to recognise the role, limitations and utility of the Specialities below in the evaluation and management of neurological disorders:	Learning Outcomes
Clinical neurophysiology	Understand role and practice of neurophysiological investigations in disorders of the nervous system: ability to interpret a neurophysiology report [EEG - normal range of EEG findings: common epileptiform abnormalities: capabilities and limitations in neurological disorders: role of monitoring techniques (telemetry, ambulatory); evaluation of sleep disorders: neurological emergencies EMG/NCS/repetitive stimulation – principles of techniques: abnormalities in common nerve entrapments, peripheral neuropathies: motor neuron disease; disorders of neuro-muscular junction; muscle disease Evoked potentials - common abnormalities in neurological diseases, particularly demyelination: role of intraoperative EP] <i>see also sections on epilepsy, sleep disorders, peripheral nerve and muscle</i>
Neuroendocrinology	Understand the principles of the NS in endocrine function and neurological features of endocrine disorder and need for referral [Clinical features and investigations in endocrine disorders: emergency management of disorders: relationships with neurological disorders: steroid therapy]
Neurogenetics	Understand the principles of genetics as applied to neurological disorder: ability to interpret a genetics report [basic genetic principles and common diagnostic methods: roles of a detailed family history, of DNA based diagnostic tests, of liaison with Clinical Genetics: genetic contribution to multifactorial neurological disease (eg stroke, multiple sclerosis, subarachnoid haemorrhage, epilepsy): clinical features of common genetic conditions (hereditary ataxias, Huntington's disease, hereditary neuropathies, muscle diseases, and neurocutaneous syndromes): bioinformatic databases of human disease]
Neurointensive care	Ability to evaluate and manage (with others) people in ICU [Clinical features, causes, investigation and management of coma (including epilepsy and raised intracranial pressure), failure to regain consciousness and paralysis: diagnosis of and ability to define the vegetative state: ICU neurological complications of major surgery, sepsis, drugs & medical disorders: management of status epilepticus: the principles of cardiovascular and respiratory support: indications for and methods of artificial nutrition: clinical, legal and ethical issues in brain death, coma and vegetative state: communication issues with patients, relatives & staff in ICU]

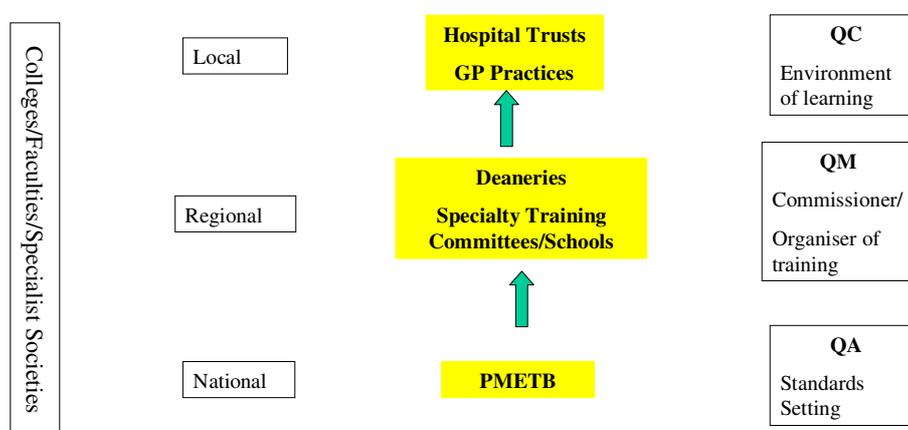
Neurootology	Ability to evaluate the deaf and / or dizzy person and interpret reports [Applied anatomy and physiology of hearing and balance: history and examination techniques: conditions affecting the vestibulocochlear system: appropriate referral pathways]
Neuropaediatrics	Understanding of neurological disorders in intrauterine life and childhood: ability to evaluate and manage neurological disorders in teenagers in liaison with paediatric neurologists [Key stages of development and range of normality: ability to examine teenage children: to interpret investigations: knowledge of developmental disorders (including effects of intrauterine and perinatal factors on neural development), effects of injury, metabolic conditions, cerebral palsy, learning disability and autism, epilepsy, migraine and stroke in childhood, neuromuscular disorders, and immunization: NHS and social service agencies; role of educational psychology (statements of special need); special educational services: role of paediatric neurology and paediatricians in the care of sick children: communication with children, parents and other agencies]
Neuropathology	Ability to appropriately request pathological investigations and interpret pathology reports [understand the pathological and biochemical basis of neurological disorders; anatomy of brain sections, brain preparation, histological, histochemical, immunocytochemical and E.M. techniques; biochemical, immunological & microbiological techniques; and understand and interpret reports issued: role of and consent process for necropsy examination]
Neuropsychiatry	Ability to evaluate and interpret psychiatric symptoms in and as presentations of neurological disorders, psychiatric consequences of neurological disease and neurological features in people with psychiatric disorders [Understanding of common psychiatric disorders (including learning disability), neurological features which may have psychiatric causes (including medically unexplained symptoms): the mental health act and when it can be used: ability to evaluate and manage acute organic brain syndromes: ability to liaise effectively and appropriately with Psychiatry services]
Neuropsychology	Ability to utilise basic clinical tests of cognitive function, to understand the need to refer to and the role of the Clinical Neuropsychologist and to interpret reports. [Understanding of neuroanatomical and neurophysiological basis of memory, attention, language and perception: understand the value and limitations of Neuropsychological interventions such as Cognitive Behavioural Therapy: understand mini-mental state examination, , basic neuropsychological tests employed by Clinical Psychologists, e.g. NART, WAIS]
Neuroradiology	Ability to request and evaluate neuroradiological investigations and reports and liaise effectively with the neuroradiologist: understand the role, risks & limitations of

	<p>common techniques</p> <p>[Request, interpret and utilise neuro-radiological investigations appropriately: explain the nature, risks and benefits of neuro-radiological investigations (CT scan cranial / angiography; MR scan cranial/spinal/ angiography; catheter angiography diagnostic/interventional; myelography; ultrasound carotid/trans-cranial/cardiac; other special investigations e.g. PET, SPECT) to patients]</p>
Neurorehabilitation	<p>Ability to evaluate the requirement for rehabilitation in people with neurological disorders in the context of a multidisciplinary team and make appropriate referrals</p> <p>[Understand the difference between pathology, impairment, activity & participation: understanding the potential and limitations of neuro-rehabilitation; ability to perform and utilise a functional assessment; contribute to and, if appropriate, lead an MDT meeting being aware of the different roles, skills, approach and agenda of rehabilitation teams: understand the social perspective, relevant social work legislation and availability of care in the community]</p>
Neurosurgery	<p>Ability to evaluate the requirement for neurosurgical interventions in people with neurological disorders and to liaise effectively with the neurosurgeon</p> <p>[Understand the role of neurosurgery in the management of head injury, raised intracranial pressure, intracranial haemorrhage and ischaemic stroke, aneurysm, vascular malformation and tumours, spinal cord and root disorder and peripheral nerve lesions; understand the purpose, limitations, process and complications of biopsy procedures (brain, muscle, nerve); understanding of the principles of general and specific risks and complications of neurosurgical interventions]</p>
Uro-neurology	<p>Ability to evaluate, manage and or refer people with disordered micturition and sexual function due to neurological disorder</p> <p>[understand normal control of micturition and sexual function: differential diagnosis of causes of disordered micturition and erectile dysfunction: understand hypo- and hyper-sexuality: understand treatment strategies for disorders of micturition and sexual function: ability to refer appropriately to Urology, Genitourinary Medicine or Uroneurologist]</p>

6) MANAGING CURRICULUM IMPLEMENTATION

Deaneries are responsible for quality management, PMETB will quality assure the deaneries and educational providers are responsible for local quality control, to be managed by the deaneries. The role of the Colleges in quality management remains important and will be delivered in partnership with the deaneries. The College role is one of quality review of deanery processes and this will take place within the SACs on a regular basis.

The Organisation and Quality Assurance of PG Training



Intended use of curriculum document by trainers and trainees.

The curriculum will be issued to the trainees when they enrol with the JRCPTB. All educational supervisors and trainees will be issued with up to date curricula and be expected to use them in their discussions. All specialty curricula are available on the JRCPTB website. Trainers and trainees are expected to have a good appreciation of the curriculum and to use it as a blueprint for their training.

Means of ensuring curriculum coverage

The trainers and trainees should use the curriculum as a guide to the range of neurological knowledge and skills that trainees may need to acquire. Not all elements are of equal weight and the relative importance of different elements will be determined by the prevalence and incidence and importance of the range of conditions. The relative importance may be further adjusted if the trainee wishes to develop particularly subspecialty expertise. The trainee and their educational supervisor should discuss any areas of deficiency at their appraisal meetings. When an area of deficient experience is identified then the trainee and trainer may recognise this may be addressed in other parts of their rotation or identify other training opportunities, for example specialist clinics, to provide this experience.

Suggested roles of local faculty in curriculum implementation
Responsibilities of trainees for curriculum implementation

Programme directors along with regional specialty advisors, deaneries, particularly specialty deans, will together ensure local delivery of the curriculum. The educational supervisor will liaise with other clinicians to identify local educational opportunities.

The trainees are expected to be proactive in ensuring they are making appropriate progress through the curriculum. The trainee will review the curriculum in the light of their experience, particularly areas where they have not yet been assessed, for example using the mini-CEX, to identify areas where there are deficiencies.

Curriculum management in posts and attachments within programmes

The programme director will collate information on availability of subspecialty experience in different posts within the programme and make this available to educational supervisors and trainees to allow planning of experience through the programme.

Curriculum management across programmes as a whole

The Programme director will organise the rotation to allow optimum use of subspecialty experience for trainees.

The Regional Training days will be designed to cover the curriculum over a 4 year cycle.

7) CURRICULUM REVIEW AND UPDATING

Curriculum review will be informed by a number of different processes. For instance the SAC will be able to use information gathered from specialty heads, specialty deans and the National Health Service. It will have available to it results of the trainee survey, which will include questions pertaining to their specialty. Interaction with the NHS will be particularly important to understand the performance of specialists within the NHS and feedback will be required as to the continuing need for that specialty as defined by the curriculum. It is likely that the NHS will have a view as to the balance between generalist and specialist skills, the development of generic competencies and, looking to the future, the need for additional specialist competencies and curricula.

The specialty curriculum, along with the core medical training, acute medicine and generic curricula will be reviewed regularly. The curricula should be regarded as living documents and the SAC will ensure that it will respond swiftly to new developments. In addition the curriculum in haematology will be subject to 3 yearly formal review within the SAC. This will be informed by curriculum evaluation and monitoring. The SAC will have available to it the trainees' questionnaire (PMETB to provide) plus specialty specific questionnaires, reports from other sources such as educational supervisors, programme directors, specialty deans, other contacts such as at PYAs which SAC members attend, service providers and patients.

Trainee involvement in curriculum review will be facilitated through the involvement of trainees in local faculties of education and through informal feedback during appraisal, RITA, College meetings

Curriculum revision needs to be informed by a review of how the trained CCT specialist performs within the National Health Service. There are two aspects to this:

- 1 Specific to the person
Was the trained specialist able to carry out the duties of the consultant post they were appointed to, i.e. did they have the requisite skills, knowledge and attitudes required for the post, did the possession of a CCT in that specialty meet the requirements of the person specification?

- 2 Specific to the role
Did the specialty competencies meet the requirements of the service, i.e. was the design of the specialist fit for purpose

8) EQUALITY AND DIVERSITY

In the exercise of these powers and responsibilities, the Royal Colleges of Physicians will comply, and ensure compliance, with the requirements of relevant legislation, such as the:

- Race Relations (Amendment) Act 2000;
- Disability Discrimination Act 1995 and Special Educational Needs and Disabilities Act 2001;
- The Disability Discrimination Act 1995 (amendment) (further and higher education) regulations 2006
- Age Discrimination Act in October 2006

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. Accordingly, it warmly welcomes contributors and applicants from as diverse a population as possible, and actively seeks to recruit people to all its activities regardless of race, religion, ethnic origin, disability, age, gender or sexual orientation.

Deanery quality assurance will ensure that each training programme complies with the equality and diversity standards in postgraduate medical training as set by PMETB.

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
- Ensuring trainees have an appropriate, confidential and supportive route to report examples of inappropriate behaviour of a discriminatory nature
- Monitoring of College examinations
- Ensuring all assessments discriminate on objective and appropriate criteria and do not unfairly disadvantage trainees because of gender, ethnicity, sexual orientation or disability (other than that which would make it impossible to practise safely as a physician). All efforts shall be made to ensure the participation of people with a disability in training

Statutory responsibilities

The Royal Colleges of Physicians will comply, and ensure compliance, with the requirements of legislation, such as the:

- Human Rights Act 1998
- Freedom of Information Act 2001
- Data Protection Acts 1984 and 1998