Neurology

i Description of the specialty and clinical needs of patients

Neurology is the branch of medicine dealing with disorders of the nervous system, including the brain, spinal cord, peripheral nerves and muscle. These can be conditions managed almost entirely in the community (epilepsy and migraine), acute neurological emergencies (stroke and meningitis) or chronic disabling conditions (dementia, multiple sclerosis and Parkinson’s disease).

Specialist care is provided by consultant neurologists, increasingly in collaboration with specialist nurses, members of the professions allied to medicine, and other physicians and surgeons including primary care physicians. Neurologists provide a clinical lead in these teams and promote the cause of their patients.

Many neurologists have other roles in undergraduate and postgraduate education or research and clinical governance, and they may be involved in service planning for people with neurological disorders.

Academic neurologists are appointed by universities, the Medical Research Council (MRC) and occasionally by other agencies. They promote research and teaching of university students in addition to providing patient care and teaching other health professionals. They have an important responsibility in the planning and implementation of neurology teaching to both undergraduates and postgraduates and may have more general university responsibilities. They are likely to have fewer clinical responsibilities than is usual for other neurologists.

Patients referred to neurologists may have straightforward disorders or highly complex and unusual conditions. Sixteen common diseases account for 75% of all new outpatient referrals – the investigation and management of which have become more complex in the light of new medical and surgical treatments. The remaining 25% of patients have more unusual disorders, which may require expert assessment, sophisticated investigation and elaborate treatment. Without exception, patients need prompt, effective and competent diagnosis and treatment.

The model of care for neurological services in the future will be laid out in the National Service Framework (NSF) for Long-Term Conditions.

ii Organisation of the service and patterns of referral

Primary, secondary and tertiary levels

All patients with significant neurological symptoms need a diagnosis and prompt appropriate treatment. This can be achieved by rapid access to a local high quality neurological service which is part of a clinical neuroscience network. The network should include a group of local neurological services functioning in local hospitals and the community which are linked with neurology and neuroscience centres, share common protocols and guidelines, and use specialist services that may be based only in some parts of the network.
Neurology and neurosurgery centres  Neurology and neurosurgery centres are crucial to the provision of high quality care and are staffed by neurologists, neurosurgeons, clinical neurophysiologists, neuroradiologists, neuropathologists, neuropsychologists and other specialist staff. All relevant modern investigative equipment should be available. Where all the neuroscience specialties are based at such centres an appropriate environment is created for the management of both the more common disorders and rarer complex conditions that often require input from more than one professional. All neurologists should be attached to a neurology and neurosurgery centre to ensure that patients have equitable access to high quality facilities for care, including other specialist opinions on rare disorders, and to ensure high quality continuing professional development (CPD).

Neurology centres  Neurologists work together in neurology centres to provide a general and special interest neurological service with clinical neurophysiology, neuroradiology and neurorehabilitation services, but without inpatient neurosurgery facilities. It is anticipated that the number of these centres will increase.

Most acute hospitals have neurological outpatient departments but the extent of neurology consultant involvement in the management of inpatients at district general hospitals (DGHs) varies greatly depending on local circumstances. In many cases support is limited to advising the local admitting physician. With the increasing number of neurologists and a potential reduction in the involvement of general physicians in the care of those with neurological diseases, there is a trend towards the establishment of local neurological beds. An on-call service with adequate support services, facilities, beds, and senior and junior staffing has been introduced for the admission of neurological emergencies.

Some general neurology services are being devolved to community level where general practitioners with a special interest (GPSI) in neurology and nurse specialists take a lead in the diagnosis and management of patients. Neurologists will be involved in this development, providing training and supervising staff.

Clinical networks and community arrangements

Neurology is included in the national specialist services definitions set, and primary care trust (PCT) consortia should commission services. Increasingly, neurological services are being organised and commissioned on a network basis to ensure equity of access and to meet national targets. This may change if practice-based commissioning is developed.

Relationship with other services/agencies

Closer links between the community rehabilitation teams, the local hospital and the regional neuroscience or neurology centre should provide seamless care so that rigid boundaries are removed from every level of the service. Neurologists should be part of the multidisciplinary teams (MDTs) providing care for all patients with chronic neurological diseases. These teams include specialist and general nurses, physiotherapists, speech and language therapists, occupational therapists, dietitians and social care workers. Within each district, a neurologist should work with the MDT for patient care in each major chronic neurological condition. Rapid access to these therapy services in the community is essential.
**Complementary services**
Neurologists do not routinely provide complementary services, though many of their patients use them for pain relief and the treatment of mechanical disorders of the spine.

### iii Working with patients: patient-centred care

*Patient choice and involving patients in decisions about their treatment*

At every stage, neurologists keep patients informed and involved in planning their care. Following the initial outpatient consultation and investigation a diagnosis can usually be made and treatment plans discussed with the patient, their family and the GP. A minority will require ongoing care, for which a detailed plan should be made jointly with the patient, the GP and, where relevant, rehabilitation services and other local community services. People with neurological conditions should be able to access the most appropriate part of the service at all times. Where indicated clinically they should have easy access to services at the regional neuroscience or neurology centre.

Neurologists aim to take account of the wishes and aspirations of their patients and respect and work within their ethical and religious traditions wherever possible.

*Opportunities for education and promoting self-care*

At present, patient education is often undertaken by specialist nurses and others rather than neurologists, partly because of the scarcity of neurological services. Good quality information is widely available from the Association of British Neurologists (ABN) and patient groups. Neurological patients are encouraged to develop strategies for self-care. Those with chronic disorders such as multiple sclerosis are particularly adept at this.

*Patients with chronic conditions*

Long-term management and care strategies are required for the common chronic disabling neurological disorders such as stroke, dementia, epilepsy, Parkinson’s disease and multiple sclerosis, and for many less prevalent conditions, including motor neurone disease and muscular dystrophy. Where relevant, a key worker should be appointed to assist in the patient’s management, especially at the interfaces between health and social services, vocational re-entry and education.

Neurologists are often part of the team providing palliative care for their patients. Particular skills are required to provide care in the final phase of chronic, deteriorating conditions. In some, such as motor neurone disease, input is appropriate from the point of diagnosis. Patients, carers and family need to be kept fully informed about the prognosis and the range of services available, whether in a hospice, nursing home or their own home. It is essential to coordinate pain control, and emotional and psychological care. Neurological teams should support carers and family with practical issues after death and offer bereavement counselling. All of this requires a new approach to train neurological palliative care staff and volunteers and to support the emotional well being of these staff.

*Access to information, patient support groups and the role of the expert patient*

Patients should have access to high quality information about their neurological condition, investigations and treatment. People with neurological conditions, carers and local branches of
neurological charities, together with a wide range of healthcare workers, all contribute to discussions about how neurological services can best be delivered and promoted in each district.

Increasingly, neurological patients are experts in their condition and can expect to be part of the MDT as expert patients. This patient expertise must be recognised by non-neurological hospital staff, for instance in the control of medication during a routine surgical admission.

Availability of clinical records/results
Since many neurological conditions are lifelong, patient records should be universally available to all treating agencies. This may become increasingly possible by electronic means.

iv  Interspecialty and interdisciplinary liaison

Multidisciplinary team working
The key to improving neurology services locally is a closer working partnership of neurologists and other neurological staff with primary care and social services, to offer a coordinated, comprehensive care package incorporating all relevant aspects of the local health system. This should include care and support in the interval between referral and the appointment with a neurologist.

Working with other specialists
People with chronic neurological conditions need to be under the direct care of a designated specialist who is skilled, available and who has access to the appropriate resources. This may be a neurologist or an elderly care physician, psychogeriatrician, clinical geneticist or consultant in rehabilitation medicine. Joint care may be appropriate so long as clinical responsibility is defined clearly. Care may be given by a neurological nurse specialist or other paramedical specialist with appropriate competencies but there must be direct access to an appropriate neurological specialist. More nurses are needed with a special interest in the major common neurological diseases (epilepsy, stroke, dementia, multiple sclerosis, Parkinson’s disease and motor neurone disease). More nurses with broader expertise in neurological conditions are also needed. If such nurses are well integrated in the regional neuroscience network they can play a major role in improving and hastening appropriate care and in liaison and communication. Advice and support from neurologically trained staff should be available to patients who have a chronic neurological problem such as Parkinson’s disease and are admitted to other wards or units.

Working with GP specialists
Neurologically trained GPSIs should play a greater role at the interfaces between community, primary, secondary and tertiary care to improve clinical care, communication, information and access to services. Neurologists need to work closely with GPSIs, nurse specialists and other healthcare professionals to explore the most effective way to meet outpatient standards and to consider new ways of delivering services. The confidence and competence of GPs in handling common outpatient neurological problems should be enhanced if they work more closely with neurologists. Shared care protocols and guidelines are being developed to offer wider access to appropriate key investigations, including computed tomography (CT). The aim is to break down traditional divisions between primary, secondary and tertiary-based practice, to provide a seamless high quality neurological service based around local needs as part of the broader neurosciences network.
v Delivering a high quality service

Characteristics of a high quality service

Neurologists want to ensure that people with neurological conditions have timely access to a high quality, comprehensive, coordinated, patient-centred and expert service, with equity of provision regardless of geography, age, race and gender. Neurologists need to explore the optimal sites for general neurology outpatient clinics with commissioners, including GPs. These may include community-based clinics in addition to local hospital outpatient departments. All emergency admissions with acute neurological problems to a local hospital should be placed under the care of consultant neurologists and their teams. These standards cannot be achieved without a significant increase in the number of neurologists and a change in the way neurologists work.

Short outpatient waiting times must be achieved. The NHS Plan requires that, by the end of 2005, patients referred by GPs must wait no longer than 12 weeks. These waiting times must be considerably reduced so that routine patients can be seen within four weeks. Outpatients considered urgent by the referring clinician or neurologist should not wait more than a week. These goals may be achievable by having a neurology outpatient clinic in each district every weekday. A designated consultant neurologist in each district should be easily accessible on a daily basis (including weekends) to speak to GPs directly about urgent clinical concerns.

In addition to general follow-up neurology clinics, specialist clinics are being established at local hospitals for the common neurological conditions (multiple sclerosis, epilepsy, Parkinson’s disease, stroke and dementia). These clinics need the support of doctors, allied health professionals, specialist nurses and other professionals. They will foster team-based working in order to provide patients with a full range of facilities. Patients with specific and unusually complex conditions should be reviewed in specialist multidisciplinary clinics where time is available to address their needs and those of their carers. Neurologists will need to access such clinics and will often be involved in their management.

Resources required for a high quality service

Specialised facilities

An increase in neurological beds to approximately 15 per 100,000 of the population is needed. Until these facilities are introduced all patients admitted to a local hospital with a major neurological problem should at least have immediate access to an expert neurological opinion and be assessed by a neurologist within 24 hours, or possibly via a telemedicine link. Neurosurgery and certain neurological emergencies require rapid access to the designated regional neuroscience centre, for which adequate numbers of neurocritical care beds are essential.

Neurological conditions should be investigated soon after consultation with a neurologist. Where possible, and where the patient desires it, a one-stop service should enable consultation and investigations on the same day. Adequate access to brain imaging is vital – emergency CT brain scanning in all local hospitals is needed 24 hours a day, seven days a week, and greater access to out-of-hours emergency magnetic resonance imaging (MRI) facilities is required. Emergency and routine scans should be reported by a neuroradiologist in person or by imaging link. Routine waiting times for CT or MRI should not exceed four weeks.

A clinical neurophysiology service is required by the local neurological service for electroencephalogram (EEG) and electromyogram (EMG) investigations. The service should offer urgent
appointments in local hospitals for emergency admissions, and routine appointments within four weeks for an EEG and eight weeks for an EMG. An adequate neuropsychology service is necessary and should be based locally.

Workforce requirements: clinical and support staff
The workforce must include sufficient trained neurologists to meet this service, together with an adequate number of trainees. Neurological teams will include neurologically trained nurses and allied healthcare professionals. This will need to be mirrored in the community with enhanced training for GPs and trained GPISIs. There is a need to increase the pool of neurophysiological measurement technicians, radiographers and psychologists who have the skills to investigate people with neurological disorders.

Quality standards and measures of the quality of specialist services

Specialist society guidelines
- Acute neurological emergencies in adults.3 (www.theabn.org/downloads/AcuteNeurology.pdf)
- Neurology in the United Kingdom: numbers of clinical neurologists and trainees.4 (www.theabn.org/downloads/neurology numbers.pdf)
- Levelling up: Neurological Alliance 2002.6 (www.neurologicalalliance.org.uk/docs/levelling_up/level.pdf)
- Standards of care for people with neurological disorders.8 (www.theabn.org/downloads/Jun%2004-standards4-GSV.pdf)

National Institute for Clinical Excellence (NICE) guidelines
Clinical governance

Neurologists should not work in isolation and should either be attached to a specified neurology and neurosurgery centre, or be a member of a neurosciences network with a single contract of employment. Neurologists should have a base hospital at which the majority of their clinical work and other duties are undertaken. None should work at more than two trusts. Days split between two sites should be avoided whenever possible.

Clinical work and/or laboratory work of consultants in neurology

Contributions made to acute medicine

Most neurologists have no direct involvement with the acute medical take. Increasingly, however, they are involved in the acute care of people with neurological disorders as recommended in Acute neurological emergencies in adults.3

Direct clinical care

Direct clinical care involves work relating to the prevention, diagnosis or treatment of neurological illness, and emergency work carried out during, or arising from, on call, ward rounds, outpatient activities, clinical diagnostic work, other patient treatment, MDT meetings about direct patient care and related administration. This also includes the time spent supervising specialist nurses and non-consultant grade staff and trainees.

Inpatient work

Inpatient work may take the form of ward rounds, consulting on patients on other wards (ward liaison) and care of emergency admissions on the neurology unit or in intensive care. Job plans should assign one to three sessions for this purpose, including all relevant administration. Liaison with MDTs and other staff, discharge planning, writing discharge summaries and patient-related administration following ward liaison are also inpatient activities.

Outpatient work

The number of outpatient clinics will depend on other duties, in particular the amount of inpatient work. The ABN recommends that a job plan should not normally contain more than three outpatient sessions, including subspecialty clinics, in a week, each of which will normally be no more than a full (four-hour) programmed activity (PA).

When consultants are expected to spend time on more than one site, travel time must be included as working time within a programmed direct clinical care activity, either as additional paid time or by a corresponding reduction in clinical activity.

It is expected that the number of clinics per session per year would take account of other clinical duties (including ward work), teaching, holidays and study leave and lie between 38 and 44 clinics per session. Definitions of new and old patients can be found on the ABN website. Clinics should be reduced by 25% if trainees or students are to be supervised. The time to be allocated per neurological outpatient, as suggested by ABN, is:
30 minutes per new patient for a consultant appointment or 40 minutes for a specialist registrar (SpR)

15 minutes per follow-up patient for a consultant appointment or 20 minutes for a SpR.

Specialist investigative and therapeutic procedures
Most neurologists do not undertake investigative or therapeutic procedures, with the exception of activities such as botulinum toxin injection. This may change in the future with carotid stenting, the introduction of thrombolysis in acute stroke and the management of implanted devices in patients with movement disorders.

Specialist on call
On-call duties should not exceed one in three with appropriate remuneration in accordance with nationally agreed terms and conditions.

Other specialist activity
This would not normally form part of a neurologist job plan although some neurologists have regional or supra-regional clinical responsibilities.

Clinically related administration
The ABN recommends that a minimum of an additional 50% of time per clinic is included in direct clinical care for:
- responses to referrals (including the grading of letters) by telephone, email or other means
- administration relating to patients attending clinics, such as arranging and reviewing investigations, giving any further opinion, and arranging for copy and other letters to be sent to patients.

Work to maintain and improve the quality of care

Leadership role and development of the service
This is an integral component of the activity of many neurologists, especially those with clinical director roles. Provision must be made in the job plan for local clinical management, governance, unit meetings, audit and other meetings to support patient care and service development.

Education and training
This varies between university NHS trusts and ‘non-teaching’ trusts, but should be an identified component of the job plan where applicable. Allowance must be made for educational supervision, competence assessment and training needs for neurology trainees and others. The extent of this allowance will vary considerably depending on the role and seniority of a participating trainee, whether non-participating health professionals are present and whether undergraduate students needing teaching are present. A set period should be allocated in the weekly job plan for these activities.
**Mentoring and appraisal of medical staff and other professional staff**

Neurologists are involved extensively in mentoring and appraisal of junior medical staff and other team members.

**Continuing medical education**

Continuing medical education must be included in the job plan. A minimum of one PA or two half PAs for attending postgraduate educational meetings and for private study is recommended. On occasions, the meetings will involve the neurologist in teaching colleagues and neurological trainees. Provision and funding for 10 days study leave per annum for consultant neurologists is mandatory.

**Clinical governance**

All neurologists should be aware of the requirement for clinical governance.

**Research – clinical studies and basic science**

Consultants should understand research governance and be encouraged to continue research with up to one PA per week being made available where appropriate.

**Local management duties**

The following responsibilities, which are not usually undertaken by the generality of consultants, should be agreed between a consultant and the employer and cannot be absorbed within the time that would normally be set aside for supporting professional activities:

- medical director or director of public health
- clinical director or lead clinician
- Caldicott guardian
- clinical audit or governance lead
- undergraduate or postgraduate dean
- clinical tutor or regional education adviser.

**Regional and national work**

- trade union duties
- inspections for the Commission for Healthcare and Inspection (CHAI)
- external member of an advisory appointments committee
- assessments for the National Clinical Assessment Authority
- work for the Royal Colleges in the interests of the wider NHS, eg as examiner or member of a specialist advisory committee
- work for a government department
- specified work for the General Medical Council (GMC)
- work for the ABN.
ACADEMIC MEDICINE

Academic departments of neurology are based mainly at university medical schools and remain vital for the development of quality neurological services and for the training of undergraduates and postgraduates.

Clinical contribution to NHS

Academic departments are usually linked closely to neurology and neurosurgery centres. Such departments should be well integrated with local clinical services, and should support research and educational activities undertaken by NHS staff at all levels in the neuroscience network.

Teaching

Academic departments of clinical neurology should play a major role in the coordination and teaching of undergraduate basic neuroscience and clinical neurology.

Research

The future development of neurological services should benefit from health services research. Effective clinical networks increase opportunities for many forms of research, including randomised trials and observational epidemiology.

WORKFORCE REQUIREMENTS FOR NEUROLOGY

At present there is one neurologist per 140,000 population in England. To provide comprehensive neurological care, including the care of the acutely ill neurological patient, one whole time equivalent (WTE) consultant neurologist is required per 40,000 population.

Table 1. Current workforce

<table>
<thead>
<tr>
<th>Department of Health (September 2003)</th>
<th>Department of Health – WTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultants (England)</td>
<td>410</td>
</tr>
<tr>
<td>National training numbers (NTN) (UK stock)</td>
<td>190</td>
</tr>
<tr>
<td>Senior house officers (SHO) (UK)</td>
<td>149</td>
</tr>
<tr>
<td>Associate specialists (UK)</td>
<td>8</td>
</tr>
<tr>
<td>Staff grades (UK)</td>
<td>15</td>
</tr>
<tr>
<td>Hospital practitioners/clinical assistants (UK)</td>
<td>65</td>
</tr>
</tbody>
</table>

(Note: there are about 10 neurologists who are not members of the ABN, mostly in independent practice.)

Consultant workforce requirements to manage new referrals to neurology clinics

Assuming there are approximately 320,000 new referrals to neurology clinics per year, based on the figure of 79,972 in the second quarter of 2003, and assuming that neurologists have an average of three clinics per week with six new patients per clinic, then 423 WTE are required to meet outpatient demand in England. This equates to 2.16 WTE per 250,000 population or one neurologist to 115,000 population.
Increasing numbers of follow-up cases and the effects of the NSF in facilitating re-entry into the neurology service, suggest that current manpower projections may underestimate the true need.

**Consultant workforce requirements to provide acute care for people with neurological disorders**

There are a number of models of care that can be used. Previously, ABN guidelines have recommended one neurologist per 100,000 of the population, which requires approximately 600 WTE neurologists in the UK, with 2.5 WTE in each DGH. 4 Assuming that academic neurologists spend time in a DGH, the numbers would be made up of 560–570 NHS neurologists and 78 academic neurologists.

To provide a 24-hour service in every DGH requires five consultant neurologists per hospital (excluding academic neurologists who tend to be based at centres), making a total of 1,250.

Other neurologists are based primarily at neurology and neurosurgery centres. At least five are needed at each neurosurgery centre to deliver the basic 24-hour service. With approximately 35 such centres nationally, an additional 175 neurologists will be needed.

In summary, this model demands 1,250 NHS neurologists, 175 centre-based neurologists and 78 academic neurologists, which gives a total of approximately 1,400 nationally, or a population ratio of 1:43,000.

This model represents an excellent aspiration but it is not a realistic possibility as there are currently insufficient neurologists in training. Additional NTNs and recruitment from overseas may help but neurology faces recruitment difficulties in common with other specialties. In 2003, 23.5% of consultant posts were unfilled following advertisement. A more desirable and realistic target is 909 WTE across the UK by 2012 (3.9 WTE for 250,000 population).

Present numbers of SpRs are insufficient to generate the expansion required to deliver this service and neurologists will need to come from other health systems. However, even if this level of penetration of neurological services into the country was ever achieved, the workforce would still be between a half and a third of the number of neurologists currently found in almost every other European country. (In Europe, the population per neurologist is between 8,100 and 38,500, which contrasts to the current UK ratio of 177,000 population per neurologist.)
## CONSULTANT WORK PROGRAMME/SPECIMEN JOB PLAN

<table>
<thead>
<tr>
<th>Activity</th>
<th>Workload</th>
<th>Programmed activities (PAs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct clinical care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inpatient work including ward rounds</td>
<td>10–15 patients</td>
<td>2</td>
</tr>
<tr>
<td>Ward liaison and emergencies</td>
<td>1–2</td>
<td></td>
</tr>
<tr>
<td>MDT including radiology meetings and other clinical administration</td>
<td>1–2</td>
<td></td>
</tr>
<tr>
<td>Outpatient work including travel</td>
<td>6 new patients</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total number of direct clinical care PAs</strong></td>
<td></td>
<td>7.5 on average</td>
</tr>
<tr>
<td><strong>Supporting professional activities (SPA)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work to maintain and improve the quality of healthcare</td>
<td>Education and training, appraisal, departmental management and service development, audit and clinical governance, CPD and revalidation, research</td>
<td>2.5 on average</td>
</tr>
<tr>
<td><strong>Other NHS responsibilities</strong></td>
<td>eg medical director/clinical director/lead consultant in specialty/clinical tutor</td>
<td></td>
</tr>
<tr>
<td><strong>External duties</strong></td>
<td>eg work for deaneries/Royal Colleges/specialist societies/Department of Health or other government bodies etc</td>
<td>Local agreement with trust</td>
</tr>
</tbody>
</table>

### References


15. www.publications.doh.gov.uk/stats/d_results.htm