‘Away Day’ Report
Friday 13th of February, Lecture Room 2, Queen Elizabeth Hospital Birmingham

Expert Advisory Group: Acute Neurology

Chair: Hani Benamer, Roland Etti, Tom Hayton

Sponsored by: NHS England, UCB Pharma

Agenda:

09.30 Registration and coffee

10.00 - 12.30 SESSION 1: Background and current set-up - Chair Roland Etti; Dudley Group of Hospitals (DGH) and University Hospital of Birmingham (UHB)

10.00 Welcome and introduction to acute neurology EAG –Roland Etti (DGH&UHB)
10.20 Introduction to the Strategic Clinical Network - Adrian Williams (UHB)
10.30 Results of the acute neurology survey – Tom Hayton (UHB)
11.00 Coffee
11.20 NORSe – National online referral system – Jim Williams (UHB) - CANCELLED
11.40 Proposed pathway for Acute Severe Headache – Brendan Davies University Hospital of North Staffordshire (UHNS)
12.00 An acute physician’s perspective – Katherine Willmer; Royal Wolverhampton Hospital (RWH)

12.30 Lunch

13.00 – 16.00 SESSION 2: Identification of challenges and possible solutions – Chair Dr Hani Benamer (RWH&UHB)
13.00 Neurology Academic Meeting – Setting up and running an acute neurology service – Ed Dunne Leeds Teaching Hospital NHS Trust (LTH)
14.00 Small group discussion – good practice, areas for improvement, variation across the region, key aims and objectives, proposed solutions
15.00 Summary and larger group discussion – Chaired by Hani Benamer (RWH&UHB)
15.45 Closing Statements – Roland Etti (DGH&UHB), Tom Hayton (UHB), Hani Benamer (RWH&UHB)
Introduction:

Strategic Clinical Networks (SCN) have been established, in partnership with NHS England, to bring together clinicians, commissioners and service users with the aim of improving the outcome and efficiency of complex patient care pathways. ‘Mental Health Dementia and Neurological Conditions (MHDNC)’ has been identified as one of four priority areas since neurological conditions are associated with long term disability, wide variation in levels of care and service and tend to involve co-ordination of a number of different services.

The expert advisory group for MHDNC has been divided into a number of sub-specialty groups tasked with examining specific conditions or aspects of neurological care, specifically: Acute Headache and Subarachnoid Haemorrhage; Acute Neurology; Epilepsy; Functional Disorders; Multiple Sclerosis; Neuromuscular Disease including Motor Neurone Disease; Neurosurgery; Parkinson’s Disease; and Rehabilitation. Initially the operation of each sub-group has been broadly similar: to document the current state of services and demand; to identify variation across the region including examples of good practice and opportunities for improvement; and to identify specific goals. A key step is a sub-group ‘Away Day’ or meeting, including as many stakeholders and interested parties as possible. This report has been generated by the away day for the Acute Neurology Subgroup.

This report constitutes a summary of data presented, discussions and conclusions reached. Copies of the slides presented at the ‘Away Day’ will be made available on the SCN website.
Session 1:

**Background and current set up.** Roland Etti.

This presentation gave a general introduction to the concept of Acute Neurology, which includes but is not limited to, the investigation and management of patients presenting to the acute medical services with new neurological symptoms or acute deterioration in established neurological symptoms; and the investigation and treatment of patients who are considered to be seriously ill with neurological conditions.

Neurological problems account for 10 to 15% of acute medical admissions (Morrow and Patterson 1987, Wetherall 2006).

A recent report was published by the Association of British Neurologists (ABN) and Royal College of Physicians (RCP) (RCP 2011) setting out ways in which local services for patients with neurological conditions could be improved. One of the major themes of the report was regarding the provision of emergency or ‘unscheduled’ care, with the specific recommendation that all district general hospitals be able to provide an acute neurology service for inpatients. This service should be lead by a consultant neurologist with specialist staff and should aim to include:

- daily consultant ward rounds
- local neuroradiology linked to a regional neurosciences centre
- local access to clinical neurophysiology
- access to local ITU and rehabilitation
- close operational links to the regional centre for rapid transfer and repatriation of appropriate patients, including surgically stable head injury and post-neurosurgical patients
- the development of on-call rotas as resources permit

It was advised that these recommendations could be established as a target for SCN.

In keeping with the principles of the NHS outcomes framework and the cross-cutting themes of the Strategic Clinical Network programme, the overall strategy of the EAG was set out as follows:

1. Establish how acute neurology services are currently provided in the West-Midlands comparing what is currently available against the targets set out in the RCP-ABN report.
2. Identify: variations across the region; areas where the risks of excess mortality and morbidity are most marked; and care pathways which can be improved.
3. Make recommendations on system reconfiguration and re-design with an emphasis on innovative, good-value solutions.

A few possible points of discussion were introduced, specifically:

- The role of neurologists with a special interest in acute neurology
- New ways of providing inpatient care including the role of ‘hospitalists’ and physicians assistants.
- The way in which neurology services are set up – a hub and spoke model; the role for telemedicine.

**Introduction to the Strategic Clinical Network.** Adrian Williams

This presentation gave an introduction to the purposes and structure of the strategic clinical network, with specific reference to the Neurology expert advisory groups. The major stakeholders were identified as the NHS England, the National Institute for Clinical Excellence, the ABN, the Neurological Alliance, local Clinical Commissioning Groups and a clinical senate. Emphasis was placed on the fact that patient groups and clinicians have a loud voice in the process and the recommendations should be taken seriously by the commissioning bodies.
Of the nine subgroups within the Neurology EAG group, five had already had away-days with the Acute neurology sub-group meeting that day and the subgroup for Spinal problems and neurosurgery meeting on 17th of March.

A few key questions were raised, specifically:
- Are there problem spots in West Midlands where pts are being disadvantaged?
- Are some pathways/protocols poorly developed and need work?
- Who should we see and how fast?
- Are there any “silly” inefficiencies? For example unnecessary or prolonged admissions?
- Is anything clinically dangerous out there?

Results of the acute neurology survey. Tom Hayton

This presentation comprised a report of a recent survey of neurology and acute medicine clinical service leads (CSL) throughout the West-Midlands.

Methods: The questions for the survey were compiled by Roland Etti using the standards set out in the ABN-RCP working party published in 2011 (RCP 2011) and approved by Hani Benamer and Tom Hayton. Two separate questionnaires were compiled: one for neurology CSL and one for acute medicine CSL. A copy of the questionnaires can be found in the appendices to this document (Appendix1).

An electronic form was created using the online tool Kwiksurvey (Problem Free Limited, Bristol UK) and a link to it was sent out by individual email to the CSL for neurology and acute medicine for every acute hospital in the region; a total of 30 neurologists and 28 acute physicians were contacted working at 20 acute hospitals spread across 16 acute NHS trusts. The survey was launched on 24th of November 2014 and closed on 6th of February 2015. Frequent reminders were sent out to physicians who had not completed the survey form.

Results: Responses were returned by 27 neurologists, with only the Royal Shrewsbury Hospital and Leighton Hospital Crewe not returning a response. Responses were returned by 19 acute physicians from nine hospitals: Queen Elizabeth Hospital, Birmingham (UHB); Worcester Royal Hospital, New Cross Hospital, Wolverhampton (RWH); Princess Royal Hospital in Telford, Birmingham Heartlands Hospital; Hereford County Hospital; Sandwell Hospital; Solihull Hospital; Royal Stoke University Hospital (UHNS) (formally University Hospital of North Staffordshire); and County Hospital, Stafford.

The median number of neurologists providing acute care in a given hospital was three (range zero to eight FTE). However the three major neuroscience centres - University Hospital of Coventry and Warwickshire (UHCW), UHNS and UHB - had eight, 10 and 20 neurologists respective who worked there for at least part of the week and provided out-of-hours emergency care. The majority of hospitals had no neurology junior staff with between eight and 13 at the three major neuroscience centres, four at City and Sandwell (SWBH) and one at RWH. Four hospitals had neurology ward areas (the three major neuroscience centres and SWBH): UHNS 25 beds, UHCW 20 beds, UHB 18 beds, City 5, Sandwell 4. Responders from UHNS and UHCW felt their bed numbers were adequate to accommodate all the acute neurology patients in their catchment area, those from UHB and SWBH did not.

67% of responders report 24 hour access to CT scanning, seven days a week, whereas in 50% of cases MRI scanning was only available in working hours. 37% of responders reported no access to EEG and 58% of responders reported no access to EMG/NCS in their hospitals. Remote neurology input was widely available with only 6% of responders stating that they could not be contacted about neurological emergencies either by phone or email. However 28% of responders stated that there would be a delay of >24 hours for a face-to-face review of referrals made during the working week and only 25% could commit to reviewing patients referred at the weekend within 24 hours.
Transfer from district general hospitals to the major neuroscience centres occurs more slowly than clinicians would prefer, with only 27% of responders reporting that transfers can be made as quickly as they would like most or all of the time.

None of the hospitals in the region reported having a neurologist with a special interest in acute neurology and only Good Hope Hospital had a neurologist who would only see in patient referrals. The neurologist from Good Hope confirmed that he was contracted to do outpatient work at the rest of the Heart of England NHS Trust. Most hospitals seem to be embracing the use of clinical nurse specialists (CNS) with responders from 17 hospitals reporting specialist nurses in Parkinson’s disease, headache, MS or Epilepsy and the major neuroscience centres reporting CNS for neuro-oncology, motor neurone disease and stroke.

For the most part the neurologists felt that acutely ill neurological patients were managed by the acute physicians with minimal support from neurology. However Gullain Barre syndrome, transverse myelitis and particularly myasthenia gravis were identified as areas of concern. Detailed results for these questions are shown in table 1.

Table 1. responses from Neurology CSL to the question ‘How well do you think that the acute medical teams deal with acutely ill patients with[condition]?’

<table>
<thead>
<tr>
<th>Condition</th>
<th>No problems</th>
<th>Minimal assistance</th>
<th>Substantial assistance</th>
<th>A lot of assistance</th>
<th>Direct supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guillian Barre syndrome</td>
<td>0%</td>
<td>36.84%</td>
<td>52.63%</td>
<td>5.26%</td>
<td>5.26%</td>
</tr>
<tr>
<td>Suspected viral encephalitis</td>
<td>5.26%</td>
<td>36.84%</td>
<td>47.37%</td>
<td>5.26%</td>
<td>5.26%</td>
</tr>
<tr>
<td>Myasthenia gravis</td>
<td>0%</td>
<td>0%</td>
<td>27.78%</td>
<td>50%</td>
<td>22.22%</td>
</tr>
<tr>
<td>Thunderclap headache</td>
<td>0%</td>
<td>41.18%</td>
<td>47.06%</td>
<td>5.88%</td>
<td>5.88%</td>
</tr>
<tr>
<td>Status Epilepticus</td>
<td>0%</td>
<td>47.37%</td>
<td>26.32%</td>
<td>26.32%</td>
<td>0%</td>
</tr>
<tr>
<td>Transverse myelitis</td>
<td>0%</td>
<td>15.79%</td>
<td>63.16%</td>
<td>10.53%</td>
<td>10.53%</td>
</tr>
</tbody>
</table>

The view from acute medicine was interesting with a substantial number of responders reporting that patients referred for a neurology opinion routinely waited more than 48 hours to be seen. Only one responder was aware of an out-patient clinic catering for urgent or emergency referrals and only one responder reported a joint meeting or case discussion with the neurologists. 14% of responders were aware that their hospital had a named neurology consultant for the day, week or month and 86% of responders stated that the first port of call for out of hours advice was the on-call neurology trainee at the regional neuroscience centre. Clearly there are some problems with accessibility; only 7% of responders reported that they never or infrequently had difficulty in contacting a neurologist.

The majority of acute physicians who responded stated that they would be confident in managing thunderclap headache and encephalitis, whereas only about half felt confident in managing Guillain-Barre Syndrome, status epilepticus, coma or limb paralysis. Similarly six responders stated that they would be happy to diagnose non-epileptic attack disorder (sometimes referred to as pseudoseizures), but only one felt that they could confidently identify functional limb weakness (i.e. weakness not caused by an identifiable structural lesion).

In terms of the open responses suggestions of improvements or innovations included:

- ‘Hot’ (emergency or urgent) out-patient clinics
- Better access to MRI
Direct access to neurology consultants
Neurology inpatient beds
Access to neurophysiology
Reliable neuroradiology
Teleconferencing

In terms of issues that the survey did not cover that responders felt were important or that were covered but responders wished to draw particular attention to were:

- The value of epilepsy nurses
- The need for more acute and more direct input
- The issue of a long waiting time for transfer to the ‘hub’
- The issue of telephone advice and any medico-legal problems that might arise
- Problems with Fridays (when all the neurologists in Birmingham are at a regional academic meeting) and weekends.

Summary: There is marked variability across the region, with much of the resources being easily accessed at the regional neurosciences centres but accessed only with difficulty or not at all at district general hospitals. All trusts have some neurologists working there and it should be possible to arrange for direct input for acutely ill patients. There is a perceived lack of beds in Birmingham, this is noted by both neurologists and the referring acute physicians at district general hospitals. CT scanning is widely available, but access to MRI and neurophysiology is limited. The speed with which patients are reviewed does seem to be something of a problem with 1/3 of patients being seen after more than 24 hours during the weeks and only ¼ of patients known to be seen within 24 hours at the weekend.

Neurologists feel that acute physicians need support with managing acutely ill neurological patients and acute physicians report that they are not confident to manage man conditions unsupported.

**NORSe, National Online Referral Service.** Jim Williams

Unfortunately Mr Williams was unable to attend the meeting. However the NORSe system was discussed in the afternoon session. It is an electronic referral system which has been collaboratively developed by the neurosurgery and IT departments at UHB. It is a secure database, located on the N3 network so accessible by anyone on an NHS computer system. Entries are time and date logged and there is an associated digital signature. The initial referral is logged by the neurosurgeon receiving the referral along with the initial plan. This can then be emailed, via an NHS email account, to the referrer and the referring consultant. The patient’s details can be updated as new information becomes available or the management plan changes.

The system is being updated to allow greater functionality including short-cuts to relevant imaging and automatic waiting list management.

The primary value of the NORSe system is that it provides a secure, permanent and transparent document of all interaction between the neurosurgeons and the referring team and ensure accurate and reliable handover of care. It was agreed that the system could potentially be adapted to perform the same function for acute neurology referrals and steps should be made to do this.

**Proposed pathway for acute severe headache.** Brendan Davies

This presentation was given by Dr Brendan Davies on behalf of the Acute Headache and Subarachnoid Haemorrhage subgroup.

Acute severe headache (ASH) is a common cause for emergency medical admissions. In one study from a major teaching hospital in the UK it was found to account for 91,509 presentations to the emergency department over a 14 month period (Locker et al 2006). The
list of differential diagnoses is long and includes both medical and surgical emergencies with a major risk of morbidity and mortality and chronic conditions which are associated with substantial long term disability. Furthermore although the majority of acute severe headaches are assessed and managed by acute general medicine, 42% of ASH are secondary to an underlying pathological process that may be best dealt with specialties such as neurosurgeons, cardiothoracic surgeons, or infectious diseases which are frequently based at a second site; so the care pathway often involves multiple specialties, hospitals and even trusts.

Despite the scale and complexity of the problem there is no unified pathway within the West-Midlands to assist with the diagnosis and management of this problem.

One of the more immediately life-threatening causes for ASH is sub-arachnoid haemorrhage (SAH). This condition is the subject of a recently published report by the National Confidential Enquiry into Patient Outcome and Death (NCEPOD 2013). Although 70% of patients received good care, 13% of patients did not have a timely diagnosis, and 1 in 5 of these patients had a worse outcome as a consequence. 1/3 of hospitals did not have a protocol for diagnosing and treating SAH, which might not be a problem except that in study conducted by the neurology department of UHNS in 2009 one in five emergency department registrars had not heard of ‘thunderclap headache’ and nine out of ten did not know what to do if the first line investigation was in-conclusive (Apok personal communication). Any pathway dealing with ASH would need to include diagnosis and management of SAH.

It is commoner for ASH to be a presentation of a primary headache syndrome (Locker et al 2006) so any pathway for should also include diagnosis and management of the commonest primary headache syndromes and advice on onward referral where the diagnosis is not clear.

SAH his not the only cause for a secondary ASH, with conditions like meningitis, venous sinus thrombosis, spontaneous thecal leak and metabolic conditions also presenting this way.

A pathway proposed by the headache group at the National Hospital for Neurology and Neurosurgery (NHNN) (Schwedt et al 2006). However it was felt that this was relatively inflexible and could result in over investigation or prolonged stays where the infra-structure and expertise did not match that at the NHNN.

Summary: A possible pathway was presented incorporating existing NCEPOD advice on the management of SAH. This will need to be developed and agreed by the relevant stakeholders, presumably under the guidance of the EAG Acute Headache and Subarachnoid Haemorrhage subgroup. If implemented it serious consideration should be given to incorporating well designed observational studies to validate or refute contentious aspects, such as the need for lumbar puncture in all ‘CT negative thunderclap headaches’. Further decisions need to be made over who would implement it, i.e. who takes ownership of ASH – acute physicians, neurologists, both?

An acute physician’s perspective. Katherine Willmer

In this presentation Dr Willmer, one of the acute physicians from RWH gave a personal view on acute neurological services. She spent some of her career as a general physician and cardiologist in Whitehaven in Cumbria, where the neurology service was provided by the regional centre in Newcastle Upon Tyne. Such was the difficulty in getting either patients to the neurologist or neurologists to the patient that unless the patient was desperately unwell the general medical team would manage almost everything themselves. This extended to the provision of complex specialist services such as hereditary muscle disease.

In RWH, Dr Willmer reported that the acute medical team were well supported by both neurology and neurophysiology. This did not, she felt, make the medical team any more dependent on the neurological support. In fact because the team knew exactly who was going to review the patient and when the medical team were happier to hold on to patients and be proactive in their care and because there was good access to neurophysiology she felt that
the medical team would be more confident in dealing with problems such as seizures and Guillain Barre syndrome.

On the specific subject of neuromuscular respiratory failure, which was highlighted as an area of concern in the report of the acute neurology survey, Dr Willmer stated that the respiratory team at RWH were willing to take care of these patients and to perform the monitoring etc. as required.

The key points which she wanted to emphasise were: the importance of a close collaboration between neurology and acute medicine; good operative knowledge of the services and personnel available locally; and good access to diagnostic resources.

Session 2:

Setting up and running an acute neurology service. Ed Dunn

In this presentation Dr Dunn Presented his experience of setting up and running an acute neurology service in Leeds.

The way in which neurological services are delivered may need to change to reflect advances in diagnostic and treatment options, patient expectations and the challenges currently facing the NHS. Neurologists can streamline initial investigations, improved diagnostic accuracy, reduce the length of stay and improve outcomes. They may also be called upon to share some of the workload in the acute management of stroke and ‘neurosurgical’ problems.

Dr Dunn works in the Leeds Teaching Hospital (LTH) Trust. He has been in post for 10 years. It was a post that he chose and helped develop. Initially there was scepticism for his neurology colleagues about the capacity of acute neurology to sustain interest and its effects on work-life balance. There was also some resistance from the neuroradiology department who suggested that imaging costs would rise! Finally there was a mixed reception from the general and acute physicians with some expressing the view that they were well able to look after most neurological problems and were happy to get assistance on request for more complex issues.

The job consists of a daily consultation service for the acute medical team: three weekly ward rounds on the acute medical unit (AMU); two acute clinics with direct access from AMU; inpatient ward round on the neurology ward; teaching. The AMU in LTH is at a separate hospital from the neurology unit and so issues of flow through the acute medical service there may be different from some trusts in the West-Midlands.

One of the first things that was set up was a database to record the use of the service. Length of stay, use of investigations, outcome of diagnostic process and feedback from the acute physicians were used as measures of the impact of the post.

Data were presented related to the length of stay for patients with acute neurology problems. The median length of stay fell from 4 days in 2005 to 2 days in 2009. Subsequent data covering the period of 2009 to 2014 showed this was unchanged. In terms of the diagnostic process for the first 150 patients he reviewed Dr Dunn recorded: the number of patients in whom no diagnosis was given (31%); the number of patients in which he was able to offer a single diagnosis (72%) and a differential (28%); the number of patients in whom this diagnosis differed from that of the acute medical team (25%); and the number of patients in whom his initial diagnosis differed from that at follow up (6%). These figures were broadly similar for a cohort of 150 patients audited during 2009-2010 after he had been in post for 5 years.

Among the first patient cohort he commonest ‘missed’ diagnoses, in order of frequency, were spinal cord pathology, alcohol withdrawal seizures, stroke, syncope, migraine, functional neurological problems, epilepsy and non-epileptic attack disorder. A few examples of missed spinal cord pathology were shown. Dr Dunn emphasised his role as an educator on the AMU,
highlighting the importance of correct neurological assessment. He then presented data from the second cohort 2009-2010 and the number of ‘missed’ spinal cord problems had dropped from 13 to 3. In the second cohort migraine and functional disorders were the most common ‘missed’ diagnosis, presumably being interpreted as a stroke or other pathology. However Dr Dunn emphasised the fact that ‘over-diagnosis’ may be safer than under-diagnosis of these conditions and supported this argument with some examples of patients who were thought to have functional disorders that later turned out to be serious pathology.

Dr Dunn concluded by saying that seeing patients in the acute phase was valuable for both the neurologist and the patients. He suggested that while it may not suit some neurologists, most could do acute neurology if required. A liaison neurology service was just one way to proved an acute neurology service, but one that suited him and the set up at LTH. Dr Dunn suggested that the acute neurology service could support the more specialist neurology services rather than divert resources away from them and that the majority of patients would get a better service if an acute service was provided.

Finally he pointed out that the liaison service at LTH had been highlighted as an example of successful innovation in the recent Future Hospital Commission Report (Futur Hospital Commission 2013).

Summary of the small and large group discussion. Hani Benamer

The following key issues were identified.

- The need for greater communication and collaboration between acute medical team and neurologists.
- The need for better education of acute medical trainees and medical students on the diagnosis, investigation and treatment of neurological conditions.
- The importance, within a hub and spoke model, of widespread understanding of what services are available locally – Is there a role for a ‘regional induction’ programme for neurology and acute medical trainees?
- The potential role for neurologists with ‘Acute Neurology’ as their sub-specialty interest – approximately 20% of the neurology trainees stated that they would consider this as a career.
- The potential value of acute (hot) neurology clinic.
- The need for a secure database of emergency referrals – it was felt that the NORSe system might be a suitable candidate for this.
- The monitoring and treatment of acute neuromuscular respiratory failure was identified as a potential area of concern – it was suggested that respiratory services may be able to assist with this.
Conclusions

Published data and audit of an established acute neurology service would suggest that there is a clinical need for acute neurology services. Reports from the ABN and RCP support the development of acute neurology services and give some standards for what constitutes a good service. The development of good acute neurology services fits in well with the aims and objectives of the SCN which will provide a good framework for this.

The results of the acute neurology survey suggests that there are still significant gaps in the availability of specialty advice and diagnostic resources and both neurologists and acute physicians feel that more input would be desirable.

The NORS e system could improve access to specialist services and provide a secure record of regional specialist input.

ASH represents a substantial challenge and that the development of a common pathway accommodating both SAH and non-SAH ASH would be desirable. This is in development.

Personal accounts from both an acute physician and an acute neurologist highlight the benefits to both sets of clinicians and to the patients of having a good acute neurology service.

The importance of good communication between the acute medical services and the neurologists with better integration of the two through the use of acute clinics and shared education programmes were identified as priorities.

References:


Acute Neurology Survey for Neurology Leads

Hospital

Which hospital do you principally work at?

1. Alexandra Hospital, Redditch - Worcestershire Acute Hospitals NHS Trust
2. City Hospital, Birmingham - Sandwell and West Birmingham NHS Trust
3. County Hospital, Stafford - University Hospital of North Staffordshire NHS Foundation Trust
4. George Elliot Hospital, Nuneaton - George Elliot Hospital NHS Trust
5. Good Hope Hospital - Heart of England NHS Foundation Trust
6. Heartlands Hospital - Heart of England NHS Foundation Trust
7. Hereford County Hospital - Wye Valley NHS Trust
8. Hospital of St Cross, Rugby - University Hospitals of Coventry and Warwickshire NHS Foundation Trust
9. Leighton Hospital, Crewe - Mid-Cheshire Hospitals NHS Foundation Trust
10. New Cross Hospital - Royal Wolverhampton Hospitals NHS Trust
11. Princess Royal Hospital, Telford - Telford and Shrewsbury Hospitals NHS Trust
12. Queen's Hospital, Burton Upon Trent - Burton Hospitals NHS Foundation Trust
13. Queen Elizabeth Hospital, Birmingham - University Hospital of Birmingham NHS Foundation Trust
14. Royal Shrewsbury Hospital - Shrewsbury and Telford Hospitals NHS Trust
15. Russells Hall Hospital - Dudley Group of Hospitals NHS Trust
16. Sandwell Hospital - Sandwell and West Birmingham NHS Trust
17. Solihull Hospital - Heart of England NHS Foundation Trust
18. University Hospital Coventry - University Hospital of Coventry and Warwickshire NHS Foundation Trust
19. University Hospital of North Staffordshire, Stoke-on-Trent - University Hospital of North Staffordshire NHS Foundation Trust
20. Walsall Manor Hospital - Walsall Healthcare NHS Trust
21. Warwick Hospital - South Warwickshire Hospitals NHS Foundation Trust
22. Worcester Royal Hospital - Worcestershire Acute Hospitals NHS Trust
23. Other (Please Specify)
Expert Advisory Group: Acute Neurology

How many neurologists provide acute care in your hospital?

How many neurologists work in your trust?

How many of the following work in neurology?

1. Registrars/ST doctors

2. CMT doctors

3. FY1 and 2 doctors

Do you have a neurology ward area?

1. Yes
2. No

If 'Yes', how many beds do you have?

Is this sufficient to allow admission of all appropriate neurology patients?

1. Yes
2. No
3. Not applicable

Page 3

Do your patients have access to CT scanning? (check all that apply)

1. Weekdays, 9am to 5pm only
2. Weekdays out of hours up to a specified time
3. Weekdays 24 hours per day
4. Weekends up to a specified time
Expert Advisory Group: Acute Neurology

5. ☐ Weekends 24 hours per day
6. ☐ Don't know

Do your patients have access to MRI scanning? (check all that apply)

1. ☐ Weekdays, 9 to 5 only
2. ☐ Weekdays out of hours up to a specified time
3. ☐ Weekdays 24 hours per day
4. ☐ Weekends up to a specified time
5. ☐ Weekends 24 hours per day
6. ☐ Don't know

Do your patients have access to EEG? (check all that apply)

1. ☐ Weekdays, 9am to 5pm only
2. ☐ Weekdays out of hours up to a specified time
3. ☐ Weekdays 24 hours per day
4. ☐ Weekends up to a specified time
5. ☐ Weekends 24 hours per day
6. ☐ Don't know
7. ☐ EEG is not available at my hospital

Do your patients have access to nerve conduction studies/EMG? (check all that apply)

1. ☐ Weekdays, 9am to 5pm only
2. ☐ Weekdays out of hours up to a specified time
3. ☐ Weekdays 24 hours per day
4. ☐ Weekends up to a specified time
5. ☐ Weekends 24 hours per day
6. ☐ Don't know
7. ☐ NCS/EMG are not available at my hospital

Are you available for email or telephone advice? (check all boxes that apply)

1. ☐ Telephone
2. ☐ Email
Expert Advisory Group: Acute Neurology

How quickly are you able to see referrals? (check all that apply)

1. ☐ Weekdays <8 hours
2. ☐ Weekdays 8 hours to 24 hours
3. ☐ Weekdays >24 hours
4. ☐ Weekends <8 hours
5. ☐ Weekends 8 hours to 24 hours
6. ☐ Weekends >24 hours

Do you have specialist nurses based at your hospital for the following conditions?

1. ☐ Parkinson's Disease
2. ☐ Headache
3. ☐ Multiple Sclerosis
4. ☐ Epilepsy
5. Other (Please Specify) ____________________________

If 'Yes', do they see acutely ill patients in the emergency department, acute admission unit or other wards?

1. ☐ Parkinson's Disease
2. ☐ Headache
3. ☐ Multiple Sclerosis
4. ☐ Epilepsy
5. Other (Please Specify) ____________________________

Page 5

If you work in a DGH do you also have a contract with the regional centre?

1. ☐ Yes
2. ☐ No, I do all my clinical work at the DGH

Are you able to transfer acutely ill neurology patients from your DGH to the regional centre as quickly as you would like?

1. ☐ Never
2. ☐ Infrequently
3. ☐ About half the time
4. ☐ More than half the time
Expert Advisory Group: Acute Neurology

5. ☐ Most of the time  
6. ☐ Always

Do you have a neurologist at your trust whose special interest, or only job is acute neurology?

1. ☐ Yes  
2. ☐ No

Do you have a neurologist who only sees inpatients or acute referrals?

1. ☐ Yes  
2. ☐ No

Do you have acute physicians who only see inpatients or acute referrals (a 'hospitalist')?

1. ☐ Yes  
2. ☐ No  
3. ☐ Don't know

Does your hospital have Physician's Assistants?

1. ☐ Yes  
2. ☐ No  
3. ☐ Don't know

Page 6

How well do you think that the acute medical teams deal with with acutely ill patients with Guillan Barre Syndrome?

1. ☐ No problems: always very competent  
2. ☐ Require minimal assistance: get the diagnosis and management right most of the time, may need advice on optimal management  
3. ☐ Require substantial assistance: get the diagnosis or management right about 50% of the time  
4. ☐ Require a lot of assistance: frequently get the diagnosis and or management wrong, may need step-by-step instructions  
5. ☐ Require direct supervision: would be concerned about the safety of patients with this condition

How well do you think that the acute medical teams deal with with acutely ill patients with suspected viral encephalitis?
1. ☐ No problems: always very competent
2. ☐ Require minimal assistance: get the diagnosis and management right most of the time, may need advice on optimal management
3. ☐ Require substantial assistance: get the diagnosis or management right about 50% of the time
4. ☐ Require a lot of assistance: frequently get the diagnosis and or management wrong, may need step-by-step instructions
5. ☐ Require direct supervision: would be concerned about the safety of patients with this condition

How well do you think that the acute medical teams deal with acutely ill patients with myasthenia gravis?

1. ☐ No problems: always very competent
2. ☐ Require minimal assistance: get the diagnosis and management right most of the time, may need advice on optimal management
3. ☐ Require substantial assistance: get the diagnosis or management right about 50% of the time
4. ☐ Require a lot of assistance: frequently get the diagnosis and or management wrong, may need step-by-step instructions
5. ☐ Require direct supervision: would be concerned about the safety of patients with this condition

How well do you think that the acute medical teams deal with acutely ill patients with thunderclap headache?

1. ☐ No problems: always very competent
2. ☐ Require minimal assistance: get the diagnosis and management right most of the time, may need advice on optimal management
3. ☐ Require substantial assistance: get the diagnosis or management right about 50% of the time
4. ☐ Require a lot of assistance: frequently get the diagnosis and or management wrong, may need step-by-step instructions
5. ☐ Require direct supervision: would be concerned about the safety of patients with this condition

How well do you think that the acute medical teams deal with acutely ill patients with transverse myelitis?

1. ☐ No problems: always very competent
2. ☐ Require minimal assistance: get the diagnosis and management right most of the time, may need advice on optimal management
3. ☐ Require substantial assistance: get the diagnosis or management right about 50% of the time
Expert Advisory Group: Acute Neurology

4. Requires a lot of assistance: frequently get the diagnosis and or management wrong, may need step-by-step instructions

5. Requires direct supervision: would be concerned about the safety of patients with this condition

How well do you think that the acute medical teams deal with acutely ill patients with status epilepticus?

1. No problems: always very competent
2. Require minimal assistance: get the diagnosis and management right most of the time, may need advice on optimal management
3. Require substantial assistance: get the diagnosis or management right about 50% of the time
4. Require a lot of assistance: frequently get the diagnosis and or management wrong, may need step-by-step instructions
5. Require direct supervision: would be concerned about the safety of patients with this condition

Page 7

What innovation do you think would improve the care of acutely ill neurology patients?

Any other comments? Anything you feel that this survey doesn't cover?
Expert Advisory Group: Acute Neurology

Acute Neurology Survey for Acute Medicine Leads

Hospital

Which hospital do you principally work at?

1. ☐ Alexandra Hospital, Redditch - Worcestershire Acute Hospitals NHS Trust
2. ☐ City Hospital, Birmingham - Sandwell and West Birmingham NHS Trust
3. ☐ County Hospital, Stafford - University Hospital of North Staffordshire NHS Foundation Trust
4. ☐ George Elliot Hospital, Nuneaton - George Elliot Hospital NHS Trust
5. ☐ Good Hope Hospital - Heart of England NHS Foundation Trust
6. ☐ Heartlands Hospital - Heart of England NHS Foundation Trust
7. ☐ Hereford County Hospital - Wye Valley NHS Trust
8. ☐ Hospital of St Cross, Rugby - University Hospitals of Coventry and Warwickshire NHS Foundation Trust
9. ☐ Leighton Hospital, Crewe - Mid-Cheshire Hospitals NHS Foundation Trust
10. ☐ New Cross Hospital - Royal Wolverhampton Hospitals NHS Trust
11. ☐ Princess Royal Hospital, Telford - Telford and Shrewsbury Hospitals NHS Trust
12. ☐ Queen's Hospital, Burton Upon Trent - Burton Hospitals NHS Foundation Trust
13. ☐ Queen Elizabeth Hospital, Birmingham - University Hospital of Birmingham NHS Foundation Trust
14. ☐ Royal Shrewsbury Hospital - Shrewsbury and Telford Hospitals NHS Trust
15. ☐ Russells Hall Hospital - Dudley Group of Hospitals NHS Trust
16. ☐ Sandwell Hospital - Sandwell and West Birmingham NHS Trust
17. ☐ Solihull Hospital - Heart of England NHS Foundation Trust
18. ☐ University Hospital Coventry - University Hospital of Coventry and Warwickshire NHS Foundation Trust
19. ☐ University Hospital of North Staffordshire, Stoke-on-Trent - University Hospital of North Staffordshire NHS Foundation Trust
20. ☐ Walsall Manor Hospital - Walsall Healthcare NHS Trust
21. ☐ Warwick Hospital - South Warwickshire Hospitals NHS Foundation Trust
22. ☐ Worcester Royal Hospital - Worcestershire Acute Hospitals NHS Trust
23. ☐ Other (Please Specify)

Page 2

Does your hospital have direct admissions from the community to neurology inpatient beds or an acute neurology unit?
Expert Advisory Group: Acute Neurology

1. ☐ Yes
2. ☐ No

If ‘Yes’, how many beds?

Do the neurologists in your hospital provide a consultation service for inpatients?

1. ☐ Yes
2. ☐ No

Do your patients have access to CT scanning? (check all that apply)

1. ☐ Weekdays, 9am to 5pm only
2. ☐ Weekdays out of hours up to a specified time
3. ☐ Weekdays 24 hours per day
4. ☐ Weekends up to a specified time
5. ☐ Weekends 24 hours per day
6. ☐ Don’t know

Do your patients have access to MRI scanning? (check all that apply)

1. ☐ Weekdays, 9am to 5pm only
2. ☐ Weekdays out of hours up to a specified time
3. ☐ Weekdays 24 hours per day
4. ☐ Weekends up to a specified time
5. ☐ Weekends 24 hours per day
6. ☐ Don’t know

Do your patients have access to EEG? (check all that apply)

1. ☐ Weekdays, 9 to 5 only
2. ☐ Weekdays out of hours up to a specified time
3. ☐ Weekdays 24 hours per day
4. ☐ Weekends up to a specified time
5. ☐ Weekends 24 hours per day
6. ☐ Don’t know
7. ☐ EEG is not available at my hospital
Expert Advisory Group: Acute Neurology

Do your patients have access to nerve conduction studies/electromyography (NCS/EMG)? (check all that apply)

1. □ Weekdays, 9am to 5pm only
2. □ Weekdays out of hours up to a specified time
3. □ Weekdays 24 hours per day
4. □ Weekends up to a specified time
5. □ Weekends 24 hours per day
6. □ Don't know
7. □ NCS/EMG are not available at my hospital

Page 3

Does your hospital have neurology trainees?

1. ☐ Yes
2. ☐ No

If there are trainees are all referrals also seen by a consultant?

1. ☐ Yes
2. ☐ No

If 'No' are all referrals discussed with a consultant?

1. ☐ Yes
2. ☐ No

On average, how quickly do you think neurology referrals are seen by a neurologist - consultant or trainee? (you can select more than one answer)

1. ☐ Within 8 hours, 7 days a week
2. ☐ Within 8 hours Monday to Friday
3. ☐ Within 24 hours, 7 days a week
4. ☐ Within 24 hours, Monday to Friday
5. ☐ Within 1 to 2 days
6. ☐ > 2 days after referral

Do you have a 'hot' clinic in which a neurologist sees urgent out-patients?

1. ☐ Yes
2. No

If 'No', are you actively planning this service?

1. Yes
2. No

Page 4

If your team needs specialist neurological input out of hours (5pm to 9am and at weekends) what is the first line of assistance?

1. Phone advice from the neurology team for my hospital
2. Phone advice from the on-call neurology specialist trainee at the regional neuroscience centre
3. Patients are seen by a neurology trainee (FY2/CMT/ST) out of hours and discussed with a neurology consultant if necessary?

Do your team complain that they have difficulty contacting a neurologist?

1. Never
2. Infrequently
3. Sometimes
4. Quite often
5. Very often

Do you have a named on-call neurology consultant for the Day, Week or Month

1. Yes
2. No

Page 5

Which of the following common neurological emergencies do you think that you and your team would feel comfortable managing without input from a neurologist?

1. Guillain Barre syndrome
2. Status Epilepticus
3. Coma
4. Thunderclap headache
5. Encephalitis
6. Limb paralysis
Expert Advisory Group: Acute Neurology

Do you feel that your team would be able to safely identify a patient with one of the following functional disorders?

1.☐ Non-epileptic attack disorder (pseudoseizures)
2.☐ Functional paralysis

Do you have a joint meeting/case discussion with your neurologists?

1.☐ Yes
2.☐ No

Page 6

What innovation do you think would improve the care of acutely ill neurology patients?

Any other comments? Anything you feel that this survey doesn't cover?