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PREFACE

- what others have said about this report

“Patients with acute and undiagnosed neurological problems are a source of great anxiety and concern to physicians. This report outlines the scale and scope of the difficulties, and the difference that can be made by neurologists. Greater clinical support from the neurology team will help improve the quality and efficiency of the care of these very sick patients. The RCP congratulates the ABN on this important contribution, which is likely to play a significant part in improving care”.

Prof Jane Dacre,
President of Royal College of Physicians, London

“Stroke is a major cause of death and disability in the UK. The cornerstones of specialist stroke services are rapid access TIA clinics, stroke units, and early supported discharge. The ABN Acute Neurology Survey demonstrates the valuable contributions which neurologists are making to stroke care, and highlights opportunities for future involvement.”

Professor Helen Rodgers,
President, British Association of Stroke Physicians

“Patients presenting with acute neurological conditions continue to pose the most challenging area of my clinical practice. This report affords commissioners and practitioners a clear template for the high-quality services we need to provide for our patients. Even in an age of high tech scanners, expanding the role of expert neurologists is fundamental in providing a world class, 21st century acute neurology service. I applaud the ABN as this report has the potential to make a hugely positive impact on patient care”

Dr Mark Holland,
President of Society of Acute Medicine
“As a jobbing Consultant Geriatrician, I welcome this report and speak highly of the input I get from my excellent neurology colleagues in Reading who deliver a 7 day neurology consult service in a hospital which is not a neuroscience centre. Clearly, from the ABN’s report we need to replicate this good practice nationally.”

**Prof David Oliver,**
**Clinical Vice-President Royal College of Physicians**

“The recent RCP Wales report, Physicians on the Front Line, lists amongst its priorities the need to work with general physicians to redesign acute and specialist medical services. An acute neurology service was created in Aneurin Bevan University Health Board in 2015. Working closely with Acute Physicians the neurology team deliver daily Medical Admissions Unit (MAU) ward rounds at the Royal Gwent Hospital, complemented by acute clinics which allows patients with neurological problems an early discharged from MAU. The service has enabled fewer admissions and patients that need admission have a clear plan with appropriate investigations. Co-locating stroke and other neurology patients utilises the nursing and therapist expertise, and reduces transfers to the Neurosciences Centre in Cardiff.”

**Dr Gareth Llewelyn,**
**RCP Vice President for Wales**

“Acute Medicine at Sandwell & West Birmingham Hospitals has a robust relationship with the neurologists which is fundamental for the way we work but more importantly for the care of our acutely unwell patients. They provide daily in reach onto the AMU, hot clinic access, telephone advice, feedback and teaching which is a great example of teams working seamlessly for patients. Acute neurology is a challenging speciality and we need neurologists to help us at the front door; without them we would no doubt struggle to function.”

**Dr Sarb Clare,**
**Clinical Lead Acute Medicine, Sandwell & West Birmingham NHS Trust**
EXECUTIVE SUMMARY

Acute neurological problems are common, accounting for 10-20% of acute medical admissions.

The ABN acute neurology survey identified a significant variation of provision of service across the UK:

- **20% of acute hospitals have access to a neurologist on 3 days or fewer per week.**

- **Wide variations in access to diagnostic investigations (e.g. 89% of neuroscience centres have access to 24/7 MRI. 72% of district general hospitals do not)**

It is vital that such national variations in care be addressed urgently and in a properly funded manner.

**The ABN welcomes the proposal, currently being considered by NHS England, for a National Strategy for Neurology. It recognises the strength of the existing National Strategy for Stroke and supports the development of a similar strategy for Acute Neurology in all parts of the United Kingdom.**
INTRODUCTION

Professor Phil Smith, President of the ABN

Acute neurology has rightly taken centre stage among the clinical priorities for UK neurology. Neurologists are moving their clinical focus from those patients with predominantly long term neurological disorders, to those with more acute neurological presentations. Greater specialist involvement in acute neurological presentations is likely to improve patient outcomes and to limit unnecessary admissions. Neurologists’ increasing involvement in the acute assessment and management of stroke is already helping to optimise services in this important field.

The 2017 ABN Acute Neurology Survey builds upon our initial 2014 report, again highlighting areas of unexplained variation in service delivery across the UK, and identifying how resources might best be deployed to improve outcomes for people presenting with acute neurological disorders. We provide practical examples from units that are already providing a high-quality neurology liaison service. We look towards a future where people presenting with acute neurological conditions have prompt and appropriate access to specialist neurological assessment and care.
Background

In 2014 the Association of British Neurologists published its first review of acute neurology services across the UK. The study identified a wide variation of access to specialist services for patients presenting with acute neurological disorders. It noted that, as liaison neurology services had the potential to change the diagnosis and management in a high proportion of patients, improve outcomes and reduce length of stay, this presented an opportunity to improve patient care and cost effectiveness.

Acute neurological problems are common and account for between 10 and 20% of acute medical admissions (1,2). Stroke, epilepsy, meningoencephalitis, Guillain Barre syndrome, multiple sclerosis, subarachnoid haemorrhage, and myasthenia gravis among other conditions, may all lead to an emergency hospital admission.

Recent national audits have revealed deficiencies in the provision of acute neurological care. The National Audit of Seizure Management in Hospitals (NASH2 (3,4)) found only a minority of patients had adequate clinical assessments and half of patients with epilepsy attending emergency units were under specialist follow up. “Managing the flow? (5), a national audit for the diagnosis and management of subarachnoid haemorrhage, found 25% of hospitals could not perform lumbar puncture (LP) at all times and 5% could not perform an LP at all.

In 2011 a joint report from the Association of British Neurologists (ABN) and the Royal College of Physicians, Local adult neurology services for the next decade (1), recommended that all such patients should be admitted to hospitals that had an acute neurology service led by consultant neurologists. The central thrust was that patients with acute neurological problems, wherever they were admitted, should receive the same standard of care as patients with disorders affecting other organs who have ready access to specialists in those disorders. Acute neurology services in district general hospitals should mirror the services that patients with cardiac, respiratory, gastroenterological, renal, haematological or endocrinological disorders receive.

For many years there has been a shortage of neurologists in the UK (1). There has been considerable growth in numbers of consultant neurologists over the last fifteen years, from 403 consultant neurologists in 2002 to 783 in 2014 (11) largely driven by the pressure to meet the demands of out-patient services and waiting list targets. The provision of care to in-patients with acute neurological problems has not received the same attention despite studies finding that acute neurology services also provide cost savings in terms of admission avoidance, reduced length of stay, and a reduction in investigations requested (6). Involvement of a neurologist leads to a change in diagnosis and management in up to 79% of patients (7).
The ABN/RCP 2011 report (1) noted that, whilst patients required access to different parts of the neurological care pathway at different stages of their illness (acute admission, outpatient care and long-term care), these were poorly planned and organised. It called for better integrated primary, secondary and tertiary resources to achieve an easily accessible neurology network that could provide local care where appropriate and, when necessary, involve the regional neurosciences centre.

It was recognised that DGH services had suffered particularly due to lack of local neurologists, with an unplanned increase in outpatient demand driven by waiting time targets, inadequate resources and poorly structured services networked across health providers.

We are now more than half way through the decade referred to in the ABN RCP report (1), so it seemed timely to measure progress in the second national survey of the acute neurology services across the UK in which services were evaluated against key elements of the ABN Quality Standards for Un-Scheduled care (appendix 2).

Specifically:

**Statement 3** (appendix 2) - states that adult patients admitted as a neurological emergency should see a neurology specialist within 24 hours of admission to hospital.

**Statement 5** - Adults admitted to Acute Medical Units with an acute neurological problem should have access to daily consultation or advice from neurology specialists, if necessary by telemedicine.
Methods
The online survey ran from March - October 2016. The link to the online questionnaire was sent by email to all ABN Ordinary members in England, N Ireland, Scotland and Wales and was also copied to ABN Services and Standards Committee (SSC) members and Strategic Clinical Network (SCN) clinical leads.

Respondents were invited to provide information about the services available at the hospitals where they worked. Individuals working at more than one site were able to submit information for all relevant sites. After entering details of the relevant health trust/health board and hospital site, they were asked to specify whether the site was a Neuroscience centre, a neurology centre or a district general hospital (DGH) and to state if their knowledge of the site was based on direct experience of working there or on secondary information.

The topics covered included the number of days neurologists were on site each week, how frequently ward consultations were seen as well as confirmation whether individual sites had acute neurology clinics, acute stroke thrombolysis service, dedicated neurology beds and access to a range of investigative techniques.

In the survey, all UK neurologists were asked to provide details of their local services. The data from outlying Trusts (either poorly performing or highly performing) was verified directly via their Medical Directors.

In the 2017 survey presented here, we only include data on UK hospitals with:
1) an A&E department with unselected take
2) at least 250 acute medical beds

As such, we have excluded data from Shetland, Orkney and other sites with an A&E department but fewer than 250 acute medical beds

358 responses were received, representing just over 45% of all consultant neurologists in the UK covering 166 hospital trusts (appendix 3). The data were reviewed to consolidate duplicate entries leaving 189 individual hospital sites (review of the 2014 ABN Acute Neurology survey revealed a small number of mental health Trusts which were excluded in this survey as they did not have an A&E). Where variation in response was noted, priority was given to data from those with experience working on the site.

Results
This survey found that the likelihood of a patient with a neurological problem being seen by a neurologist varies dramatically depending on where they are admitted.

Six hospitals had no acute neurology service at all. 20% of the 189 hospitals surveyed had access to a neurologist on 3 days or fewer per week.

The availability of a neurology review varies according to the type of hospital (definition, Appendix 1).
In the 28 Neuroscience Centres (1).
93% (26/28) provide ward consultations 7 days a week (two have a 5-day service).

19 of 28 neuroscience centres have a consultant neurologist on site 7 days a week. 24 of 28 neuroscience centres have a specialist registrar in neurology on site 7 days a week. 26 of 28 have an acute thrombolysis service for stroke on site (85%, i.e. 24 of 28, of centres had neurologists involved as part of the stroke rota); 5 of 28 shared in-patient beds with stroke, 23 of 28 did not.

All neuroscience centres have daily, 24-hour access to CT and access on-site to EEG. 25 of 28 have access to MRI on this basis while 26 of 28 have on-site access to EEG video-telemetry.

In the 21 neurology centres (2)
43% (9/21) provide ward consultations 7 days a week; the remainder (53%) provide a 5 day service.

4 of 21 centres have a consultant neurologist on site 7 days a week. 7 of 21 have a specialist registrar in neurology on site 7 days a week.

71% (15/21) have an acute thrombolysis service for stroke on site (neurologists are involved with the rota in 24% (5/21) (i.e. in 16/21 sites they are not). 19% (4/21) of neurology centres shared in-patient beds with stroke. All neurology centres have daily, 24-hour access to CT scanning. 43% (9/21) have similar access to MRI. 95% (20/21) have on-site access to EEG. 52% (11/21) have on-site access to EEG video-telemetry.

In the 140 District General Hospitals
26% (37/140) provided neurology ward consultations on 3 days or fewer per week. Of these, six DGHs (6/140; 4%) provide no neurology access at any time throughout the week.

93/140 (66%) of sites have acute stroke thrombolysis but only 15/140 (10%) of neurologists involved with the rota. 5/140 (4%) DGHs have neurologists involved in direct inpatient care.

101/140 (72%) do not have daily, 24 hour access MRI. 67/140 (47%) have on-site access to EEG while 4/140 (3%) have on-site access to EEG video-telemetry.

Access to acute neurology services were more developed at neuroscience centres (93% (26/28) and neurology centres (42% (8/19), than at those district general hospitals with neurologists based at them (3/138).

Some regions, notably the Northern, Northern Ireland, North West, Wales and West of Scotland had more sites with very limited service.

ABN Quality Standard for Unscheduled Care, Statement 6 (appendix 2) indicates that patients should have access to urgent inpatient imaging (CT and MRI)
where indicated. Whilst all hospitals met the CT target, MRI was available 24/7 at only 31% of hospitals.

**Discussion**
This is the most extensive national survey of acute neurological services in the UK to be undertaken. While the data have some limitations they do provide the most complete current overview of acute neurology in the 4 nations of the UK.

This study has identified a wide variation of access to specialist services for patients presenting with acute neurological disorders. As liaison neurology services change the diagnosis and management in a high proportion of patients, improve outcomes and reduce length of stay (6) there is an opportunity to improve patient care and cost effectiveness.

Using the ABN Quality Standards in the commissioning of Unscheduled care should lead to improvements in care for patients presenting with acute neurological disorders.

The UK has one neurologist for 83,000 people (cf the European average of 1:15,000) highlighting a shortage of neurologists in the UK (10,11). There has been considerable growth in numbers of consultant neurologists over the last fifteen years largely driven by the pressure to meet the demands of out-patient services and waiting list targets. The provision of care to in-patients with acute neurological problems has not received the same attention despite studies finding that acute neurology services also provide cost savings in terms of admission avoidance, reduced length of stay, and a reduction in investigations requested (6). Involvement of a neurologist leads to a change in diagnosis and management in up to 79% of patients (7).

The most recent NHS mandate includes as objectives, ensuring people have access to the right treatment when they need it and reducing unjustified variation between hospitals in avoidable deaths so that standards in all hospitals are closer to the best (8).

There are a number of limitations to the data. Firstly, although this is as complete a survey of acute neurological services we have performed, there may be some hospitals (particularly if there is no neurological service, or very limited service) that may have been overlooked. We have addressed this by contacting the Medical Directors of all 6 outlying Trusts with no apparent acute neurology service for comment.

The acute neurology services at the neuroscience centres (27/29) lead the way with almost all providing a seven day ward referral service with neurologists on site most days and good access to all the services patients might need. These centres mostly meet the ABN Quality Standard for Unscheduled Care, Statement 3 in providing daily neurology specialist review and Statement 6 by having CT (100%) and MRI (84%). However there are only 27 of these centres. In total, 112 hospitals, 59% of all sites covered by this survey, offered 5 or more days per week cover.
Those DGHs that do not have neurologists based at the hospital are a long way from meeting the ABN Quality Standard for Unscheduled Care. Twenty percent (36/183) of hospitals had access to a neurologist on 3 days or fewer per week. In addition, a significant number [6] had no neurology referral service at all.

Neurological services in the UK for the most part have been based on a hub and spoke model built around regional neuroscience centres. The centralisation of resources was inevitable when there were fewer neurologists and very limited access to specialist investigations. However, with the increasing numbers of neurologists and the wider access to investigations, particularly to MRI, different models have developed. The focus of most developments has been outpatient waiting times because of the centrally driven waiting time targets.

Neurologists across the country have attempted to develop and improve services for patients with acute neurological disorders. In some centres liaison services have been developed (9). Others have developed links between one hospital and another, for example where patients with neurological problems and stroke are admitted to one site within a multisite trust. In some regions there is a strong centralisation of neurologists at a neuroscience centre; in others groups of neurologists are based at the larger DGHs in the region. All of these have grown without specific commissioning strategies. This has resulted in significant inequity of service provision.

At the moment, there are no data collected on the number of ward referrals seen by neurologists and no funding directly attached to this activity. In England if a patient is seen in out-patients this attracts a tariff. If a patient is directly under a consultant’s care that consultant episode attracts a tariff. However, if a neurologist sees a patient and directs the investigation and management but does not take over their care as will happen with most inpatients seen, this activity will neither be measured nor funded despite being an essential element of the patient’s care. This is perhaps why this service has proved difficult to develop despite substantial benefits to the patients and the efficiency of the service (1,6,7).

Such services could not currently be delivered at all district general hospital sites with only 783 neurology consultants (and substantially fewer whole time equivalents) across the UK to cover about 200 hospitals. Commissioning acute neurology clinics in parallel provides an opportunity to prevent admissions and is an additional service development.

The organisation of the acute neurology service needs to optimise effectiveness and efficiency. Acute neurology services should be coordinated with acute stroke services as many patients initially thought to have strokes or TIsAs have alternative diagnoses and require access to an acute neurology service.

However, with any change unintended consequences should be considered. Enhancing acute neurological services in isolation will inevitably divert neurology manpower away from out-patient clinics and the care of patients with long term neurological conditions. It will also increase the demand on these services as many patients will require follow up after the acute admission.
NEXT STEPS

The ABN welcomes the proposal, currently being considered by NHS England, for a National Strategy for Neurology.

It proposes that a national strategy for acute neurology be developed in all parts of the United Kingdom to help minimise some of the wide variations in access to neurological services. It recognises the strength of the existing National Strategy for Stroke and recommends that any strategy for neurology should build on existing stroke networks, particularly given the sizeable numbers of patients with acute neurological problems who present as stroke mimics.
References

(9) Future Hospital Commission, Caring for medical patients, http://www.rcplondon.ac.uk/sites/default/files/future-hospitalcommissionreport_0.pdf
(10) Morrish PK Inadequate neurology services undermine patient care in the UK. BMJ 2015; 350 http://www.bmj.com/content/350/bmj.h3284
Appendix 1 – hospital sites

Definitions

Neuroscience Centre: co-location of neurology and neurosurgery in-patient beds

Neurology Centre: base hospital for neurologists with in-patient neurology beds and neurological trainees.

District General Hospital: neurologists may visit or be based at hospital; no in-patient beds

Neuroscience centres (28):
There are 28 neuroscience centres in the UK (an exception - The Walton Centre in Liverpool is not included as has <250 beds and does not have an A&E).

- Charing Cross Hospital
- University College Hospital London (National Hospital for Neurology and Neurosurgery)
- Royal Hallamshire Hospital, Sheffield
- Derriford Hospital, Plymouth
- Southmead Hospital, Bristol
- St George's Hospital, Blackshaw Road
- Salford Royal Hospital
- University Hospital Coventry
- University Hospital Birmingham
- Royal Victoria Infirmary, Newcastle-upon-Tyne
- Leeds General Infirmary
- University Hospital Southampton NHS Foundation Trust
- John Radcliffe Hospital, Oxford
- James Cook University Hospital, Leeds
- Western General Hospital, Edinburgh
- Queen Elizabeth University Hospital
- Royal Victoria Hospital, Belfast
- Queen's Med Centre, Nottingham
- Addenbrookes Hospital, Cambridge
- Ninewells Hospital, Dundee
- Hull Royal Infirmary
- Royal London Hospital
- King’s College Hospital, London
- Aberdeen Royal Infirmary
- Royal Stoke University Hospital
- Queens Hospital, Romford
- Royal Preston Hospital
- University Hospital of Wales, Cardiff
Neurology centres (21):

Neurology centres are less clearly defined than neuroscience centres, the 21 include:

- Norfolk And Norwich University Hospitals NHS Foundation Trust
- Royal Free Hospital, London
- Leicester Royal Infirmary
- University Hospitals Of Leicester NHS Trust
- Kent & Canterbury Hospital
- Guy’s And St Thomas’ NHS Foundation Trust
- St Mary’s Hospital, London
- Morriston Hospital, Swansea
- Princess Royal Hospital
- Royal Cornwall Hospital (Teliske)
- Royal Devon And Exeter NHS Hospital
- Royal United Hospitals Bath NHS Foundation Trust
- Taunton And Somerset NHS Foundation Trust
- Chelsea And Westminster Hospital NHS Foundation Trust
- Sandwell Hospital, West Bromwich
- City Hospitals Sunderland NHS Foundation Trust
- Leicester General Hospital
- Poole Hospital
- York Teaching Hospital NHS Trust
- Pinderfield’s General Hospital
- Ipswich Hospital NHS Trust

DGHs with no access to a Consultant Neurologist anytime during the week(6)

- Cramlington Hospital, Northumbria Foundation Trust
- Queen Elizabeth Hospital, Gateshead
- Queen’s Hospital, Burton
- South Tyneside District Hospital*
- Weston General Hospital, Weston-super-Mare
- Withybush, Haverfordwest, Wales

* visiting neurologists provide 2 outpatient clinics per month
Appendix 2- quality standards
Unscheduled care: neurological emergencies and acute neurology

Revised February 2016 by the ABN Acute Neurology Advisory Group

Introduction: These quality standards apply to patients with symptoms and signs consistent with an acute neurological problem (e.g. acute headache, confusion, seizure, progressive weakness). The problem in some patients will constitute a neurological emergency that may require inpatient care supervised by a neurologist. Patients with acute neurological problems will benefit from, and can be managed effectively and safely in a general medical setting if adequate neurology liaison services are available, coupled with rapid access outpatient neurology services. Patient presenting with features of a stroke will have access to a stroke pathway, but as many will turn out not to have had a stroke (stroke mimics), close cooperation between stroke and acute neurology services is important.

Statement 1 - Adults referred to hospital as a neurological emergency should have access to care in an appropriate inpatient setting without delay (no more than 2 hours after presentation to hospital). ¹

Statement 2 - Adults admitted as a neurological emergency should be able to receive advice on their management from a neurology specialist at all times.

Statement 3 - Adults admitted as a neurological emergency should see a neurology specialist within 24 hours of admission to hospital.

Statement 4 - Adults referred to hospital with an acute neurological problem should have access to care in appropriate inpatient setting within 4 hours after presentation to hospital. ²

Statement 5 - Adults admitted to Acute Medical Units with an acute neurological problem should have access to daily consultation or advice from neurology specialists, if necessary by telmedicine.

Statement 6 - Adults admitted to hospital with an acute neurological problem should have access to urgent inpatient imaging (CT and MRI) where indicated.

Statement 7 - Lumbar Puncture, when indicated, should be available 24/7 to all patients admitted with an acute neurological problem

Statement 8 - Rapid access pathways need to be established for adults referred from Emergency Departments and Acute Medical Units to neurology outpatient services on discharge.

Statement 9 - No patient should be discharged from a hospital setting without documentation of the neurological examination, including fundoscopy.

Statement 10 - Immediate transfer of care information should be sent electronically to a named GP for all patients, as well as printed information for the patient.

¹Depending on the nature of the emergency this may be Critical care, High Dependency Unit or specialist neurology inpatient care. If a hospital lacks appropriate facilities to care for a neurological emergency, pathways need to be established for patients to be transferred to such a setting with staff trained in the care of adults with neurological emergencies

²Depending on the nature of the acute neurological problem and the setting, this may be an Acute Medical Unit or specialist neurology inpatient care.

³Where doubt exists over suitability for early discharge and for any referral to a rapid access neurology clinic this is best discussed with a neurology specialist.
Appendix 3 - charts

Number of sites with inpatient beds

Number of sites

Number of beds

250 - 500
501 - 750
More than 750

All sites
Neuroscience Centre
Neurology Centre
DGH
Days per week ward consultations seen

Days per week MAU ward rounds done
Number of sites where acute neurology clinic or equivalent runs x days per week

Days per week
- None
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Number of sites
- All sites
- Neuroscience Centre
- Neurology Centre
- DGH
Number of sites with inpatient beds

- 250 - 500 beds:
  - Neuroscience Centre
  - Neurology Centre
  - DGH

- 501 - 750 beds:
  - Neuroscience Centre
  - Neurology Centre
  - DGH

- More than 750 beds:
  - Neuroscience Centre
  - Neurology Centre
  - DGH

Association of British Neurologists (ABN) 2017 Acute Neurology Survey. March 2017
Number of sites with x consultant neurologists (people)

Number of sites with x consultant neurologists (FTE)
Days per week ward consultations seen

Days per week MAU ward rounds done
Days per week Consultant Neurologists on site

Days per week registrar Neurologists on site