



**Neuroscience Implementation Group**

**Report to Cabinet Secretary for Health and Wellbeing**

**January 2008**

## **Introduction**

1. The Neuroscience Implementation Group was established in 2006 to take forward the recommendations in the Kerr Neuroscience Action Team's report, published in 2005. *Delivering for Health*, which described the service model to be put in place, set a deadline for the group to report with their recommendations to Ministers by December 2007.
2. This report sets out the progress of the Implementation Group to date and its recommendations for further work in respect of neuroscience services. It also describes the two main options it has identified for taking forward the development of neurosurgical services in Scotland.

## **Background**

3. The service model described in Section 3.7 of *Delivering for Health* is of a service on 3 levels, including a new, community, level designed to promote local access to neurological advice, supported by rehabilitation teams. A more detailed description of the model is given in Annex 1. The Implementation Group also had in mind the full range of recommendations from the Kerr Neuroscience Action Team (May 2005), and these are given in Annex 2.

## **Membership**

4. The composition of the Implementation Group is shown in Annex 3. The representatives of each discipline or sub-specialty of neuroscience were chosen by their peers, and undertook to act as channels of communication between the Implementation Group and their colleagues. On the occasions when they were unable to attend meetings, they were encouraged to send substitutes to ensure that each subspecialty was always represented. Links were created with the work of the Specialist Children's Services Group because of the connection between certain of those services, especially those relating to cancer, and the work of the Implementation Group. Mr Malcolm Wright, Chair of the National Steering Group for Specialist Children's Services was co-opted to membership of the implementation group.

## **Remit**

5. The Implementation Group was given the following remit:

"To develop the national neuroscience service model, as set out in section 3.7 of *Delivering for Health* as a Managed Clinical Network, having particular regard to:

- the development of the standards to which the service should operate, and their practical implications in terms of the

neurosurgical procedures which should be performed at the prime site and in the other units;

- the creation of patient pathways, including referral protocols;
- the undertaking of a needs assessment for neurosciences;
- the development of a minimum dataset for neurosurgery and audit arrangements.

and to report to the Scottish Executive Health Department by December 2007.”

### **Approach**

6. The Implementation Group met on 7 occasions between November 2006 and December 2007. The minutes of its meetings are available on its website [www.scotland.gov.uk/neuroscience](http://www.scotland.gov.uk/neuroscience). It has been assisted in its work by a range of sub-groups and a diagram setting out the structure of the project is included as Annex 4. In particular the work covered:

- the development of the national neurosurgery MCN;
- data and audit;
- Patient Focus and Public Involvement;
- the development of an Options Appraisal Process to identify the best configuration for neurosurgical services in Scotland and produce financial and non-financial evidence to support a Business Case for the preferred configuration.

7. In addition to overseeing the work of these Sub-Groups, the Implementation Group agreed that the team responsible for the project should, on its behalf:

- commission a needs assessment for Neurosurgery from the Scottish Public Health Network;
- hold informal meetings with the Lead Neurosurgeons from each of the 4 neurosurgical units;
- set up a Liaison Group in order to bring together senior managers from each of the NHS Boards with a neurosurgical unit;
- have specific discussions with those responsible for the *Delivering for Health* workstream on specialist children’s services, given the link with the Implementation Group’s work on paediatric neurosurgery;

- initiate a formal operational managers' group with managers from each of the neurosurgical units in Scotland to allow them to compare practice;
- through the Patient Focus and Public Involvement sub-group, and using independent consultants, take forward a public and user engagement process intended to ensure that the views of those who may need neuroscience services were taken into account in any recommendations.

8. The Implementation Group has focused very largely on neurosurgery, since this is the most significant driver of change, but the key links with the other disciplines making up neuroscience have also been considered in the context of this work. It is grateful to all those who have contributed to its work.

### **Results/Progress**

9. The Implementation Group found its task a demanding one given the complexity of the issues involved and the demanding timetable faced. In particular, it was tasked with making progress against a background in which there was:

- a lack of continuity. The time which elapsed in setting up the Group allowed for retrenchment of positions, and bringing together a different group inevitably led to a reopening of discussions;
- a lack of clarity about the service model set out in Kerr, in particular the concept of a 'prime site' for neurosurgery (Recommendation 23 of the Action Team's recommendation);
- a continuing debate about the relevance and implications of the European Working Time Directive (EWTD);
- continuing concern about the quality of the data available on which to base service decisions;
- varying degrees of support among members of the main group, and its sub-groups, for the model described by Kerr/*Delivering for Health* and therefore a tendency for discussions to return to fundamentals rather than focus on the implementation of a set of givens;
- emerging public disquiet about the potential implications of the service model, particularly in the north east, where a campaign developed around the need to maintain the neurosurgery unit in Aberdeen and attracted around 25,000 signatures to a petition that was delivered to the Scottish Parliament.

### **Data**

10. The report of the Data sub-group is included as Annex 5. It shows that considerable progress has been made on cleaning up the data which are available, and work has been put in hand to improve prospective data collection by reviewing

and re-issuing the procedural and diagnostic coding guidelines developed and issued in 2003. The Implementation Group was disappointed to find that these had not been followed consistently, especially given the recognition accorded over many years to the centrality of robust data in relation to future service planning. An aggregated dataset is now available which has been agreed as being broadly accurate, but further refinement is needed to break these data down to the level of individual procedures where significant apparent anomalies still exist.

11. The data which have been gathered appear to show differences between the existing neurosurgical units in areas such as access and the nature of the work being undertaken by other clinicians. One example is spinal surgery. The reasons for the apparent differences in the relative proportions of intracranial and spinal work between the units are likely to be multifactorial and not exclusively due to orthopaedic surgeons undertaking high volumes of spinal work in the larger centres. To some extent, the differences may result from inconsistencies and anomalies in the way procedures are coded and recorded in the individual units. To the extent that other factors are involved, such as access to an early neurosurgical opinion or differences in selection criteria, the Implementation Group takes the view that these variations need to be examined in more detail and any variations in clinical practice or the availability of treatment tackled, since these are issues of particular significance for patients and their families.

12. A grid intended to match diagnoses to procedures, and indicate which procedures should be undertaken where, within what timescale, and by whom will be completed once the de-aggregated data have been further refined. This work would be essential in populating the top and middle levels of the service model.

13. Further work identified by this group which is now being taken forward by the Audit and Outcomes sub group of the Managed Clinical Network, is included in Annex 6 and described briefly in paragraph 22 below. **The Implementation Group recommends that this work has to be given a very high priority. Absence of a common data set and arrangements for prospective national audit to provide meaningful data have been identified as fundamental difficulties which have hindered national work on neurosurgery since 1996.**

14. In relation to volumes and outcomes issues, the Needs Assessment report draws attention to the importance of caution in relating work from the USA to the position in Scotland. It does, however, describe a number of studies which have looked at surgeon and centre volume in relation to outcome in a range of procedures. An association has been observed between higher centre and/or surgeon volume and improved outcome for procedures such as ventriculoperitoneal shunt insertion/revision in children, and paediatric craniotomy for tumour. In the UK, a similar association has been observed in relation to surgery for pituitary tumour. However, studies demonstrating a clear volume/outcome relationship relevant to the Scottish service are few, and currently provide inadequate evidence in favour of concentrating activity.

## Patient Focus and Public Involvement

15. The group presented an interim report (Annex 7) to the Implementation Group within which it indicated that the final report of the consultation exercise with patients and the general public would be available within the next 6-8 weeks. One of the key messages from this work is that “rationalisation” would be perceived as a cost-cutting exercise. It is worthy of note, however, that patients and the general public were aware only of their existing local service (which they perceived to be of good quality). Patients and the public were in agreement that emergency treatment should be provided as close to home as possible. At some of the groups there were expressions of acceptance that patients are prepared to travel further to a centre of excellence for elective treatment, but only if clear evidence can be cited and if appropriate support services are provided locally for patients and their carers. Other main issues highlighted by the group included: a requirement for improvement of services, diagnostics and rehabilitation locally; patient safety; the impact of increased travel time; and clarification of concerns regarding volume of procedures undertaken and the quality of outcomes.

16. In order to keep NHS staff informed on the Implementation Group’s work, a staff newsletter was produced and distributed to the various NHS Boards. Further newsletters will be created to continue to keep staff informed at key stages of the project.

## Report from the National Needs Assessment Exercise

17. An independent national needs assessment of neurosurgery was commissioned from the Scottish Public Health Network (ScotPHN) at the request of the Implementation Group. The full text is available on the ScotPHN website at <http://www.healthscotland.com/documents/2292.aspx>. The key conclusions from each section of the report of the needs assessment are included as Annex 8.

18. In summary, the report’s main conclusion were:

1. Demographic change in Scotland’s population will have little overall impact on the need for neurosurgical services in Scotland.
2. Current neurosurgical activity is likely to increase slightly (4-6%) year on year.
3. There is no clear evidence in support of centralisation of neurosurgical services.
4. There are substantial obstacles to moving to a single national centre for neurosurgery which the NHS has no power to address, most notably public transport infrastructure.
5. The existing model of service, in which the four units work in isolation with little linkage between them, is unacceptable.
6. There would be benefits of managing neurosurgery as a single national service using either a commissioning or managed clinical network model.
7. Sub-specialisation at national level for certain procedures is desirable.

19. Copies of the draft report found their way to MSPs in the north-east of Scotland, who then wrote to the Cabinet Secretary for Health and Wellbeing suggesting that the conclusion about the lack of evidence for centralisation meant

that further work on developing the 'prime site' model would be inappropriate. Both the Implementation Group and the ScotPHN are clear, however, that the needs assessment work is only one factor which has to be taken into account in formulating advice to the Cabinet Secretary.

20. The Implementation Group had a number of criticisms of the report, and these were drawn to the attention of ScotPHN by the chair. This letter and the reply from ScotPHN are included in Annex 8. The final report was published on the Network's website on 19 December 2007.

### Development of the Neurosurgery Managed Clinical Network

21. Details of the work to date on developing the national MCN for neurosurgery are given in Annex 9. The Implementation Group was keen that the Network through its standards sub-group, should focus its initial efforts on the key area of standards development. Much of the work has been to tailor the existing Society of British Neurological Surgeons' (SBNS) standards to a Scottish context and in line with standards methodology. The latest draft standards for neurosurgery are also included in Annex 9. It is essential on grounds of patient safety, quality of services and equity of access to treatment that the future service should be compliant with these standards, once they have been finalised and accepted, and that data are identified to allow performance against the standards to be measured. The Implementation Group also emphasises the need for a close relationship between the Network's groups, particularly between the standards and audit groups, to ensure that performance against the standards can be measured.

22. The previous membership of the data sub-group has merged with the Network's audit group. It has accepted the list of recommendations for further work proposed by the data sub-group (detailed in Annex 6) and is now taking these forward. Key areas of progress to date are:

- further work on the analysis of the X55 code has concluded that its appearance was due to a historical coding convention for diagnostic scans; new codes are now being used for these;
- work is underway on revising and reissuing the short code list, in consultation with ISD and clinical coders;
- a pilot activity data collection exercise has been developed to gather accurate information on out of hours and unrecorded activity in the four centres;
- coding issues have been discussed with each of the four sites to further understand the reasons for inconsistency and/or non-adherence to the neurosurgical coding guidelines;
- paediatric shunt data have been requested from the UK Shunt Registry to give the group a clear picture of current participation. Where returns are incomplete, the reasons will be explored.

23. It will be clear that a large number of people, especially the neurosurgeons, have engaged with the MCN activity and that the development of the Network is proving an extremely practical way of encouraging both patient and carer participation in service development and constructive ways of working across the existing units.

### Business Case

24. A Business Case sub-group was established in September 2007 to identify the required business planning process which would need to be followed to reach a decision around the prime site for neurosurgery. It was agreed by this group that before a business case could be produced, an options appraisal process should be planned to identify the best configuration of neurosurgical services in Scotland. The group also agreed to provide a description of the financial and activity data which would be required and would recommend an options appraisal process to be carried out. It was noted that much of this information could then be used to produce a final business case.

25. Membership includes Directors of Planning, lead neurosurgeons and Directors of Finance from the four Health Boards with a neurosurgical unit. A report from the group is included at Annex 11. Its main recommendation is that a full options appraisal process should be carried out in order to provide a clear and transparent programme of work as well as the evidence required to identify the best possible configuration of services. The timescale for this process would be at least 6 months, assuming that evidence would be made available by the relevant NHS Boards.

### Key Issues

26. Several issues have formed a constant theme throughout the discussions of the Implementation Group and its various sub-groups: compliance with the requirements of the European Working Times Directive; the concepts of a 'prime' of 'single' site; the management of emergency cases; and spinal work. Because of their importance, these require to be covered in some detail.

#### The 'prime site' and 'single centre' concepts

27. The Implementation Group has found it difficult to obtain consensus on the way in which the concept of a "prime site" should be interpreted in practice. Although the Action Team apparently believed that its report made clear that this term described a single site where all operative neurosurgery would take place, it was generally taken to refer to a service model in which there would remain 4 neurosurgical sites but that only 1 of these sites would be responsible for the most specialised surgery. In February 2006 the then Health Minister wrote to MSPs describing the model in the following terms:

"The model, which is designed to give patients and clinicians a strong voice in the planning of services, has 3 tiers. The most highly specialised adult and child neurosurgery would be concentrated on a single prime site, providing services where that sort of concentration means patients

would get the best outcome. As much preparatory work as possible would be done locally. Patients would get home as soon as it was safe for that to happen, with support from local rehabilitation services. The next tier covers the rest of neurosurgery, which would continue to be delivered at the existing units.”

The letter noted, however, that a lot of work still needed to be done on the model and that ‘no decisions have been taken yet about exactly what procedures can be delivered by the existing units, and the ones which need to be concentrated on the prime site’.

28. The Implementation Group as a whole was unable to achieve a consensus on any such model. It was unable to establish a robust evidence base around the benefits that would accrue from concentrating certain types of procedures on one site and many members had reservations about the effect that the withdrawal of procedures would have on the other 3 sites, particularly with regard to the ability of these sites to maintain skills and sustain any inpatient neurosurgical activity over the long term. A sub-group of lead neurosurgeons established to consider this issue agreed that there could be advantages to a single site if, and only if, the status quo could not be sustained and problems of access and transport could be resolved. Otherwise, there was a clear preference for continuance of 4-site working. There was a rejection of any model which involved 2 sites, which was viewed as reducing access but offering no special benefit to patients

29. In line with discussions among Scotland’s neurosurgeons, work could continue to explore the option of a single, new build national centre of excellence for neurosurgery in Scotland. Mr D Currie, lead neurosurgeon in Aberdeen, set out his view of such a centre in a paper included at Annex 10.

#### European Working Time Directive

30. The European Working Time Directive (EWTD), Directive 3003/88/EC, is a directive of the European Union to protect the health and safety of workers in the European Union. It lays down minimum requirements in relation to working hours, rest periods and annual leave for all workers and working arrangements for night workers. The EWTD originally did not apply to doctors in training (junior doctors) but the Amending Directive (6), Directive 2000/34/EC, removed this exclusion so that by August 2009, they too will be subject to a 48 hour week.

31. The Implementation Group discussed the impact of compliance at each of its meetings. Some members of the Group have argued that the Directive was never intended to apply to the work of neurosurgeons, and others have argued that strict application of the terms of the Directive to all specialties will have a profound impact on NHSScotland. The Implementation Group received the strongest possible advice from the *Delivering for Health* Implementation Board that this was a binding legal commitment on the Scottish Government and that derogation from the terms of the Directive should not be taken into account in the Implementation Group’s work.

32. To achieve EWTD compliance with prospective cover each unit would require a minimum of 6 consultant neurosurgeons. The larger units with a higher emergency intensity and greater overall service load would require additional numbers. Within

this context it has to be remembered that for maintenance of competencies for revalidation the population of Scotland requires a maximum of 30 neurosurgeons, depending on case mix and configuration of units.

33. To suggest that the number of neurosurgeons might be increased to achieve EWTD compliance raises issues about the volume of procedures each could undertake, and maintenance of skills, given that the number of interventional procedures is not predicted to rise significantly. The degree of subspecialisation in neurosurgery compounds this problem, and issues relating to viable levels of activity in terms of revalidation (in particular the requirement for specialist recertification) also need to be considered.

34. As part of its work, the Implementation Group made attempts, through discussions with the Liaison Group and with the Lead Neurosurgeons, to gain a clear idea of the degree to which each unit would be able to comply with the Directive when the 48 hour requirement takes effect in August 2009. It has yet to fully understand all units' local arrangements and how these will work to ensure compliant rotas in future. The Needs Assessment contained an assertion that all 4 units were EWTD compliant, but acknowledged that that statement was based on assurances from each unit rather than on detailed examination of the arrangements in place.

35. The Implementation Group believes there would be value in obtaining definitive advice from a legal expert on the exact impact of the Directive on rotas, taking account of issues such as intensity of workload. Further work is needed to establish whether there are any neurosurgical procedures that can be carried out without 24/7 cover, given that measurement of out-of-hours working is a key factor in determining EWTD compliance. The Kerr Action Team had identified spinal surgery as one such procedure, but had not scoped what that service might look like.

#### Emergency cases

36. There have been ongoing concerns about the way in which the Kerr model would be able to provide a 24/7 service that included neurocritical care and the ability to deal with neurosurgical emergencies. The model was intended to strengthen capacity locally to deal with neurosurgical emergencies and account needs to be taken of the way in which all the other hospitals without a neurosurgical unit manage now. There is also a lack of clarity about whether a neurosurgeon is needed on site to stabilise patients and to decide whether a patient should be treated locally or transferred.

37. The effect of additional travel time on the management of neurosurgical emergencies is the issue which has been raised most strongly in Aberdeen and has been the focus of media attention in recent months. In the case of each neurosurgical unit the majority of admissions come from the immediate surrounding area with smaller numbers travelling longer distances. The potential for the loss of a local, accessible service has been a major source of concern in the centres that would no longer have a neurosurgical unit under the single centre model. Data on the nature and frequency of time-critical emergency work indicate a broadly comparable proportion of emergency/elective work between the centres, and smaller

rates of out of hours operating in Aberdeen and Dundee where emergency work is done largely by consultants and can generally be accommodated in daytime lists.

38. A number of studies have looked at the factors affecting time to transfer to a neurosurgical unit and the effect on outcome of delays. As the Needs Assessment points out, actual transfer time is only one cause of delay. Others include delays in the identification of patients needing transfer to neurosurgical units, and the availability of neurointensive care beds. A 1989 study analysed where these delays occurred and concluded that the actual travel time involved in transferring patients played little or no part in contributing to avoidable deaths, and that the actual distance from the neurosurgical unit did not significantly impact on the time taken to transfer a patient. It concluded that the most effective measures which could be employed to reduce delays were improvements in the local diagnostic facilities in locations admitting patients with head injuries and minimising delays in transfer by ensuring the immediate availability of transport at every DGH admitting head injuries. A few cases are exquisitely time-sensitive, but it is unlikely that statistical analysis of the whole population of acute neurosurgical cases will be able to pick them out .

39. SIGN guidelines on the early management of head injury (currently under revision, with publication of the new guidelines expected 2009) give detailed guidance on the assessment and triage of head injured patients and their onward referral, where necessary. While it is desirable to keep delays to a minimum, and it would be agreed that it would be unacceptable to delay the management of, for instance, intracranial haematoma, there is a lack of evidence to identify adverse outcomes associated with a specific length of delay. In other words, it is not clear within what window of time a patient should be treated to optimise outcome.

40. A priority for further work within the pathways and protocols group should therefore be to explore in more detail what issues cause avoidable delay in the Scottish context, how many patients this may affect and what measures could be used in minimising delay. Early work suggests that while there are clear referral protocols to neurosurgical units, there are probably local differences in admission which are dependent to a large extent on resource both within the neurosurgical unit (neurointensive care beds) and the referring hospital (facilities, expertise and experience in the care of the head injured patient). Recent evidence, including a publication by the Trauma Audit and Research Network (TARN) suggests significantly higher mortality rates in patients with severe head injuries treated in non-neurosurgical units than those treated in neurosurgical units (34% compared to 26%). Such evidence would support the admission of all patients with severe head injuries to a neurosurgical unit, whether or not the patient requires neurosurgical intervention. The SIGN guidelines will recommend that all 'severe' head injuries are managed in specialist centres. This is in accordance with NICE guidance and will have resource implications, both in local hospitals without a specialist service, where experience staff will be tasked with resuscitating and transferring the patient, and in the specialist centres where additional neurointensive care beds will be required.

### Spinal work

41. There are particular issues in relation to spinal work. The Implementation Group heard discussions about whether degenerative spinal surgery was truly part of

neurosurgery or whether it should be considered as forming part of spinal surgery and peripheral nerve work and therefore undertaken by orthopaedic surgeons. If spinal surgery were to form part of neurosurgery, it should probably be regarded as a sub-specialty in its own right, as orthopaedic surgeons seem increasingly reluctant to undertake spinal procedures. Whether that type a workload composed entirely of elective degenerative spinal pathology would constitute an attractive neurosurgical post is however doubtful. The attraction of a predominantly spinal post would be the opportunity to build specific expertise in complex spinal pathologies and procedures such as intradural spine work and spinal fixations. However, the volume of intradural spine work is small and requires microsurgical skills, which are unlikely to be sustained by intradural spinal work alone.

42. The Implementation Group was clear that the key question should be whether the patient obtained greater benefit from the attentions of a neurosurgeon working within a dedicated spinal service. Spinal surgeons need to emerge through specialist training programmes, either as an orthopaedic surgeon or as a neurosurgeon working within a dedicated spinal team. If the prime site or single site model is pursued, a decision will need to be taken as to whether spinal surgery forms part of the work of that centre, or whether it should be performed more locally. There are also distinctions to be made between the less complex procedures, where there is significant overlap with what could be provided locally by spinal orthopaedic surgeons, and more complex specialised cases which should be referred to a surgeon with a specific interest in these conditions. While the volume of degenerative spinal work is a challenge for the neurosurgical service, especially with a declining number of spinal orthopaedic surgeons, a separation of spinal work in its entirety from neurosurgery would have to consider the issue of maintenance of microsurgical skills.

43. Whatever the service model adopted, this is also an issue which needs to be addressed as part of future training, especially to avoid spinal neurosurgeons becoming so specialised that they can no longer cover intra-cranial emergencies out of hours, or cranial surgeons becoming equally isolated from spinal work and no longer able to provide cover in this area out of hours. The aim of the training programme must therefore be to continue to produce core competent neurosurgeons who can handle emergency surgery but then hand the patient over to the appropriate person as soon as possible.

#### Further work

44. In addition to these main topics, there are a number of other issues which the Implementation Group has not been able to explore in detail. These include:

- workforce issues, including training;
- transport issues;
- national planning of sub-specialisation;
- the development of the middle and 'community' levels of the service model through:
  - augmentation of other aspects of the service, such as neuro-diagnostics, stroke care and neuro-rehabilitation;

- working with those responsible for implementation of the Rehabilitation Framework;
- implementation of the Society of British Neurological Surgeons' (SBNS) standards, as adapted for use in Scotland,
- exploring innovative models for community services;
- the promotion of academic neuroscience.

### **Recommendations for Adult Services**

45. The Implementation Group endorses the view that for neurosurgery, the status quo is not sustainable in terms of workforce and equity of access to treatment. It further believes that maintaining the status quo, for whatever reason, might hinder the realisation of benefits in terms of improvements in quality of services that could be achieved from a greater degree of integration and/or co-ordination across Scotland.

46. However, despite the considerable progress made to date, the Implementation Group does not feel that it can make detailed recommendations, at this stage, about the way in which the model described in *Delivering for Health* should operate in practice in Scotland. In particular, it believes that further work would be required to identify the adult neurosurgical procedures that should be concentrated on the prime site, to respond to patient and public concerns about the evidence supporting any such change and the need to develop safe transport arrangements associated with such a model.

47. There are 2 main options for taking forward the redesign of adult neurosurgery across Scotland.

#### **Option 1: Continue the work of the Group to further refine and develop the service model set out in 'Delivering for Health'**

48. There are 2 variants to this option. One is the 'prime site' approach. The other is the 'single centre' model, as set out in paragraphs 27 and 28. The Implementation Group believes that up to 12 months' further work may be required to complete a thorough options appraisal process for identifying the best model of service provision. In terms of developing a 'prime site' or single centre for adult neurosurgery, this would allow time for lead neurosurgeons and other clinicians to work together in order to:

- detail the resources required to support this site and assess the impact that its creation would have on the other 3 sites in Scotland
- agree proposals for strengthening diagnostic and rehabilitation services to ensure pre- and post-operative expertise and technology are available as locally as possible to patients who are treated on a prime or single site;
- build on the initial MCN work to identify pathways based on the highest clinical standards to ensure the model is both safe and offers the best possible care to patients;

- establish an evidence base to support the quality of care and service change. A culture of ongoing audit and data collection must emerge in order to identify and tackle inequalities in service provision;
- undertake further scoping with the Scottish Ambulance Service in terms of the facilities needed to transport patients to the prime or single site in a timely manner with the appropriate support required. Neurological patients at risk of deterioration frequently require intubation and mechanical ventilation and their transfer will require personnel capable of performing airway support and protection;
- enhance the capacity and capability of the management of neurosurgical emergency cases locally, i.e., in all hospitals with an A&E department.

## **Option 2: Development of a 'single service' for Scotland**

49. The Needs Assessment endorsed the view described by the Kerr Action Team that it is no longer acceptable for each of the 4 units to work independently of each other and recommended that consideration should be given to supporting and improving them through the establishment of a single national management structure. The Implementation Group believes that these benefits could be secured through the development of a 'neurosurgical Managed Service Network'. This would cover all of neurosurgery, both inpatient and outpatient. While it would need to relate to the closely-associated neuroscience disciplines, it would not be practicable to bring these within the service Network at this stage.

50. The Network would be responsible for:

- Workforce planning, including succession planning across all 4 units, with the Network being responsible for approving the appointments of all staff to neurosurgical units. New appointments would be made to the Service Network rather than to an individual NHS Board and the costs shared by all 4 Boards;
- Supporting a single Scottish national training programme for neurosurgery (replacing the 2 programmes that operate currently);
- Planning and managing sub-specialities, including paediatric neurosurgery, on a pan-Scotland basis;
- Working with NHS Boards to make sure the single service would achieve compliance with the provisions of the EU Working Times Directive;
- ensuring that each unit met the SBNS standards;
- Ensuring that each unit collected data and participated in national audit arrangements, in accordance with the revised SBNS standards;

- Identifying specified improvements in outcomes, in conjunction with the Scottish Government, and agreeing delivery plans to realise these improvements;
- enhancing arrangements to manage emergency neurosurgical cases;
- Implementing clinical care pathways;
- Working with NHS Boards in the planning and delivery of the local neuroscience services envisaged as part of the Kerr model, linking effectively to the neurological standards being developed by NHS Quality Improvement Scotland and the implementation of the Rehabilitation Framework, and taking account of innovative models being developed in local communities, such as the Towpath Trust in Glasgow;
- Ensuring comprehensive patient and public involvement in its work.

### **Consideration of Options**

51. Both variants of option 1 have the advantage of being consistent with the recommendations set out in *Delivering for Health*. However, the Implementation Group does **not** recommend this option on the grounds that:

- there are no good outcomes data which would support the creation of larger units. The data available have thrown up variations in practice, but nothing which would allow the conclusion to be drawn that any unit is underperforming. More sub-specialisation is probably desirable, but it does not follow that it should all be undertaken at the same location;
- concerns that creating a prime site or single centre increases the risk to service continuity;
- transport is a major problem for the prime or single centre model, and achieving access which is at least as good as at present would be very difficult in practice;
- while a single site would provide a major boost to academic neuroscience, this is not a factor which can readily be presented as outweighing the considerations already mentioned;
- there remains a lack of consensus on the location of either the prime site or national centre of excellence. It may be that the Group is only able to produce a “majority report” in 12 months time. There must also be concerns about the effect on the morale of patients and staff, especially at the smaller units, of a further delay of this length.

52. The Implementation Group therefore recommends Option 2 and suggests that it develops proposals for the operation of such a network that could be submitted to the Cabinet Secretary within 6 months.

53. In doing so, the Implementation Group is conscious that its recommendation would represent an innovation in terms of the service models used in NHSScotland and that careful consideration would need to be given to its development, especially in terms of governance and employment arrangements. In particular, the Implementation Group is aware that the concept would involve NHS Boards sharing accountability in relation to issues such as appointments. It would also be likely to involve different ways of working on the part of clinicians, and that would require time and agreement to negotiate. One possible management arrangement might be an inter-regional approach. The Chairs of the RPGs are a sub-group of the Board Chief Executives, and might be an appropriate mechanism through which an inter-regional management group could be established to take responsibility for the operation of the service Network. The Implementation Group believes that this would be consistent with the support for an enhanced role for Managed Clinical and Service Networks described in the *Better Health Better Care* Action Plan and recognises the need to ensure that the Network is developed alongside and as an integral part of the wider system of planning and commissioning services at local, regional and national level.

54. The biggest risk associated with Option 2 is that it would be perceived as a 'do nothing' option that simply preserved the status quo. It could be argued that it does not address the main drivers for change and will therefore not achieve the changes needed. For these reasons, the Implementation Group considers it essential that there should be a short period of further work prior to public consultation which would be used to:

- define the structure and way of working of the management group in a way that demonstrates that it would have "real teeth" in terms of the planning and delivery of services, especially EWTD sustainability, sub-specialisation, operative volume and value for money;
- identify and secure the resources necessary to support the Network;
- ensure that the work is compatible with wider work on planning and commissioning being led by NHS Board directors of planning; and
- prepare a full consultation plan in conjunction with patients, the public and staff representatives.

### **Recommendation for Children's Services**

55. *Delivering for Health* recommended that there should be a single service for all elective paediatric neurosurgery (around 120 cases a year) and the Implementation Group sees no reason for changing existing policy in this regard. The volume of paediatric activity remains small and no significant change to the overall number of elective procedures is predicted.

56. If option 1 for adult neurosurgery were to be adopted, the Group takes the view that the decision on paediatric neurosurgery would follow automatically, with services being concentrated on either the prime site or single centre agreed for adult services. Should the Cabinet Secretary concur with the Group's recommendation to pursue Option 2 for adult services, then the question of where to concentrate paediatric services remains open for the time being. Given the Youngson (2001) and Kerr recommendations that paediatric neurosurgery needs to be co-located with adult neurosurgery and with a paediatric Intensive Care Unit, the only options are Edinburgh and Glasgow, on the assumption that both children's hospitals will be relocated to the same site as adult neurosurgical services.

57. The work of the National Specialist Children's Services Steering Group (NSCSSG) has recognised the relationship between children's cancer services and paediatric neurosurgery in putting forward its recommendations for the disposition of children's cancer services in Scotland. The Steering Group points out that the children's hospitals currently see around 150 new diagnoses of childhood cancer each year in the 0-15 age group, a third of them with a brain tumour. It notes that NICE defined 4 levels of care, which for the first time clarified the key components of a specialist service and staffing levels for children's cancer services in the UK. The decision on the future location of paediatric neurosurgery services has been cited by the Steering Group as potentially having a major impact on where neuro-oncology services are provided within Scotland.

58. Other established services and their co-dependencies must also be considered. These include paediatric neurology, the Scottish craniofacial service (Glasgow), the nationally designated paediatric spinal deformity service (surgery in Edinburgh, clinics in Glasgow and Edinburgh), the nationally designated Vein of Galen service (Glasgow) and the Queen Elizabeth National Spinal Injuries Unit (Glasgow).

59. The Implementation Group supports the concept of a single national service for paediatric neurosurgery but it is not in a position to determine the location of a single site. The Implementation Group believes that such a decision needs to be informed by the consideration of the consequences for other specialist children's services in these locations.

60. Discussion on the co-location of specialist children's services should continue as the national managed service is developed, in co-operation with NHS Boards.