REPORT OF THE COMMITTEE TO REVIEW NEUROSURGICAL SERVICES IN IRELAND

December 2005

TABLE OF CONTENTS

Foreword

The Health Service Executive (HSE) assumed full operational responsibility for running the country's health and personal social services on January 1, 2005 pursuant to the Health Act 2004. The HSE's objective, as outlined in the Health Act, is to use the resources available in the most beneficial, effective and efficient manner to improve, promote and protect the health and welfare of the public.

The Health Act, 2004, provided for the dissolution of the ERHA and its three area health boards, the health boards established under the Health Act 1970 and certain other bodies, including Comhairle na nOspidéal. In line with section 57(2) of the Health Act 2004, the functions of Comhairle na nOspidéal, as specified in section 41(1)(b)(i) and (ii) of the Health Act 1970, were transferred to the HSE on 1st January 2005.

Prior to the establishment date, the members of Comhairle na nOspidéal were requested by the then Minister for Health and Children, Mr. Micheál Martin T.D. and by Mr. Kevin Kelly, then Executive Chairman, interim Health Service Executive, to remain, albeit in a non-statutory capacity, until the scheduled end of their term of office in December 2005 to complete ongoing specialty reviews and to provide advice to the HSE on the regulation of consultant and SpR/SR appointments. These invitations were endorsed by Ms. Mary Harney T.D., Tánaiste and Minister for Health and Children when she met with members of Comhairle na nOspidéal on 17th November 2004.

This report was prepared by the Committee to Review Neurosurgical Services and was adopted by Comhairle in December 2005.

1.0 INTRODUCTION

1.1 Following a request from the Department of Health and Children, Comhairle na nOspidéal at its meeting on 20th March 2002, established a committee to review neurosurgical services, focussing in particular on issues of capacity and geographic configuration, in the context of high quality and safe services.

1.2 The following members were nominated to serve on the Committee:

Dr. E. McGovern (Chairman), Consultant Cardiothoracic Surgeon, St. James's Hospital
Ms. C. Carney, Assistant Secretary, IMPACT trade union
Dr. E. Connolly, Deputy Chief Medical Officer, Department of Health and Children
Dr. J.J. Gilmartin, Consultant Respiratory Physician, Merlin Park Regional Hospital, Galway
Prof. D. Moriarty, Consultant Anaesthetist, Mater Misericordiae Hospital and U.C.D.
Prof. T. Ryan, Consultant Neonatologist, Erinville Hospital, Cork and U.C.C.
Mr. T. Martin, Chief Officer, Comhairle na nOspidéal

Ms. R. Langan was Secretary to the Committee and undertook the research for and drafting of this report.

1.3 The first meeting of the Committee was held on 19th June 2002. The following terms of reference were adopted;

> *"Having due regard to geographic & demographic patterns, to examine the existing arrangements for the provision of neurosurgical services and consultant staffing nationally, and following consultation with the interests concerned, to make recommendations to Comhairle na nOspidéal on the future organisation and development of neurosurgical services in Ireland, in the context of current best practice, in order to facilitate high quality and safe services. The review should take into account the national / regional character of current neurosurgical services and focus on updating the recommendations outlined in the 1989 and 1991 Comhairle reports, taking into consideration recent advances in the neurosurgery/neuroscience group of specialties."*

1.4 Subsequently the committee undertook an extensive research, consultation and deliberation process, the culmination of which is this report. Details of meetings held, submissions received and visits undertaken by the committee are set out in Appendix A.

1.5 The Committee would like to record its sincere appreciation for the co-operation and assistance afforded to them during the consultation process, particularly those who assisted in the organisation of overseas visits. The information and advice received during the consultation process greatly assisted the committee in completing their task.

1.6 This report sets out recommendations regarding the future development of neurosurgical services in Ireland. The recommendations, if implemented, will ensure best practice in the development of neurosurgical services in Ireland; represent the most appropriate use of resources and most importantly, contribute significantly to the delivery of high quality, safe care to neurosurgical patients.

2.0 NEUROSURGICAL POLICY 1989-2004

As part of its statutory remit to advise the Minister and health authorities in relation to the organisation and operation of hospital services, Comhairle na nOspidéal prepared a number of reports in relation to neurosurgical services and other related specialties. The main findings of these reviews are set out below in order to give an overview of how neurosurgical services in Ireland have developed over time.

2.1 1989 report

In 1989 Comhairle published a report entitled "Draft Report on neurosurgical services in Dublin" (1989). This review was undertaken in the aftermath of the announcement by the Minister for Health in 1987 of a major review of acute hospital services in the context of significantly reduced resources and economic constraints.

At the time, there were two neurosurgical units in Dublin - one in Beaumont Hospital and a small unit in St. Vincent's Hospital, Dublin 4 – and one unit in Cork. The Committee's main task was to consider whether the services in Dublin should be concentrated in a single centre. As part of its work the Committee undertook a consultation process which included discussions with management and medical consultants in Bristol, Liverpool and Glasgow.

The Committee's findings indicated that the advantages in centralising neurosurgery in Dublin far outweighed any potential disadvantages. They found no cogent arguments for retaining two neurosurgery units in Dublin. While the Committee took a number of factors into account, including the economic climate of the time; the main basis for its conclusions was not the financial issue. It recommended that Dublin services should be centralised in Beaumont Hospital without further delay.

However, the Committee accepted that demographic and topographic factors, in certain circumstances may justify the establishment of a smaller unit, consistent with minimum levels of viability and links to a bigger unit. On that basis, the Committee recommended the further development of the unit in Cork by way of increases in staff and capacity.

2.2 1990 report

Comhairle sent the 1989 report to health boards and relevant voluntary hospitals for comments in advance of publication. The approach set out in the Report was welcomed by all parties with the

exception of St. Vincent's Hospital and the Western Health Board. St. Vincent's objected to the recommendation to centralise Dublin neurosurgical services in Beaumont on the basis that it would mean the closure of the unit in St. Vincent's. The Western Health Board felt that consideration should have been given to the establishment of a unit in Galway.

In response, Comhairle decided that before the report was published that a group should be established to visit Galway and engage in discussions with the Western Health Board regarding neurosurgical services and to advise whether any alterations should be made to the 1989 report.

The new group largely endorsed the recommendations of the 1989 report. In relation to Galway, they stated that they were not, at that time, in a position to make a recommendation on the question of neurosurgical services in Galway. However it was noted that Comhairle would be reviewing the situation nationally in January 1991 and that particular attention would be paid to the neurosurgical needs of the West of Ireland.

Comhairle agreed to adopt the 1989 report subject to further consideration of the merits of a neurosurgical unit based in Galway and the question of minimum criteria for viability of small neurosurgical units. A sub-committee was appointed for this purpose.

2.3 1991 report

As noted above, the main purpose of the Comhairle Committee was to examine the viability of small neurosurgical units and to make an assessment as to whether Galway would meet the criteria for the location of a neurosurgical unit.

In the course of its work the Committee consulted widely in Ireland and also visited neurosurgery units in Scotland, including Aberdeen, Dundee and Edinburgh.

The Committee concluded that the development of a neurosurgical / neuroscience unit in Galway was not a viable proposition. There was insufficient catchment population for such a unit. The potential workload would not support the appointment of three consultant neurosurgeons and related staff.

The Committee did, however, accept that neurosurgical / neuroradiological opinion and support in respect of head injuries was required at University College Hospital Galway and therefore endorsed the recommendation contained in the 1989 report that:

"each accident and emergency hospital throughout the catchment area served by the Beaumont unit should have neurosurgical advice available to it at all times over the telephone […] and recommends that the neurosurgeons at Beaumont Hospital should divide the catchment area between them to achieve a situation whereby each A/E hospital would have a named neurosurgeon with whom it can develop a special relationship. Ideally each A/E hospital should have personal contact with a named neurosurgeon who would visit the hospital on a regular basis".

2.4 Other relevant Comhairle reports

While no other review has since been undertaken in relation to neurosurgical services, a Comhairle report on neurology and neurophysiology services was published in April 2003. That Report recommended the consolidation and enhancement of existing services at the two neuroscience centres in Dublin and Cork, as well as expansion of the neurology department in Galway to include neurophysiology. The report also recommended that neurology units be established in Limerick, Waterford and Sligo.

The Comhairle Neurology and Neurophysiology Committee applied a ratio of one consultant neurologist per 100,000 in their recommendations regarding consultant staffing. The implementation of this would involve an increase in the number of consultant neurologists more than double from 14 to 39. 2 additional posts of consultant neurologist have been approved since the report was published in 2003.

In relation to clinical neurophysiology, the Report recommended the consolidation of services in Dublin and Cork, as well as the establishment of a service in Galway. This included a recommendation to treble the number of consultant posts nationally from 3 to 9.

Three additional posts of consultant neurologist have been approved since the report was published.

3.0 NEUROSURGICAL SERVICES IN IRELAND

There are currently two neurosurgical units in the Republic of Ireland; one in Beaumont Hospital, Dublin and one in Cork University Hospital. The unit in Dublin receives transfers from the Cork unit for certain complex procedures and is *de facto* the national tertiary referral centre.

There is also a neurosurgical unit in the Royal Victoria Hospital in Belfast. Details relating to the neurosurgical unit in Belfast are discussed in Chapter 5.

3.1 Beaumont Hospital, Dublin

Medical staffing

The Beaumont unit is staffed by six consultant neurosurgeons. Five of these are based fulltime in Beaumont. Each surgeon performs both adult and paediatric neurosurgery. Adult neurosurgery comprises the large majority of the workload. There is one post with a designated special interest in paediatric neurosurgery. The appointee to this post has 2 sessions in OLHSC, Crumlin and 2 sessions in the Children's University Hospital, Temple Street.

17 non-consultant hospital doctors - 4 specialist registrars, 3 registrars, 6 senior house officers and 4 interns - are assigned to the neurosurgery unit in Beaumont.

In addition to consultant neurosurgeons, there are 3 consultant neurologists based in Beaumont, 3 consultant neuroradiologists, 2 consultant neuropathologists and 3 consultant neurophysiologists (1.5 wte). Each of the consultant neurologists based in other Dublin hospitals has a 2 session commitment to Beaumont. This is used mainly to facilitate their attendance at a weekly case conference. There is no dedicated consultant neuroanaesthetist post but a number of the 21 (19wte) existing consultant anaesthetists have a significant, but non-exclusive, commitment to neuro-anaesthesia.

Beaumont Hospital has established a group called "the Neurosciences Cogwheel". This group brings together representatives from all of the Dublin teaching hospitals and academic institutions where neurosciences are practised. The neurosciences cogwheel includes representatives from directly relevant specialties like neurosurgery and neurology etc. and also from the other disciplines with an interest in neurological illnesses. This is intended to facilitate significant interaction between various allied disciplines, for example, endocrinology, otology, psychiatry and radiotherapy, thereby facilitating a multi-disciplinary approach to dealing with neurological and neurosurgical conditions.

Facilities

The unit in Beaumont Hospital has a complement of 62 inpatient neurosurgical beds. This includes 10 ICU beds and 12 HDU beds. There is no formal allocation of 5 day beds or day case beds. Access to such beds is obtained in other areas of the hospital depending on the level of activity there and is sporadic. There is no dedicated paediatric intensive care unit.

The Beaumont unit has two dedicated neurosurgery theatres available four days per week. A third theatre is available for neurosurgery one day a week.

Equipment

There is currently one MRI in Beaumont Hospital with a second due to be commissioned shortly. There is one angiography suite for endovascular coiling of aneurysms.

3.2 Cork University Hospital

Medical staffing

The Cork unit is staffed by three consultant neurosurgeons. Each surgeon performs both adult and paediatric neurosurgery. Adult neurosurgery comprises the large majority of the workload. In terms of NCHDs there are 3 SpRs, 3 SHOs and 2 interns assigned to the neurosurgery unit.

There are 2 consultant neuroradiologists, 2 consultant neuropathologists, 2 wte consultant neurologists and 1 consultant neurophysiologist. There are no dedicated neuro-anaesthetists in Cork but, as in Beaumont, a number of the general anaesthetists have a significant, but non-exclusive, commitment to neuro-anaesthesia.

Facilities

The Cork unit has 25 neurosurgical inpatient beds and no dedicated neurosurgical ICU beds. Access to high dependency, intensive care, 5 day and day case beds is from the general complement as required.

The Cork unit has one dedicated neurosurgery theatre and general theatres have been used for neurosurgical emergencies.

Equipment

There are 3 MRI scanners in Cork – 1 in Cork University Hospital, 1 in the Mercy University Hospital and 1 in the Bons Secours hospital. All of these are privately owned, but there is a Service Level Agreement in place with the Cork University Hospital facility to obtain scans for public patients.

There is currently no angiography suite available for neurosurgical services in Cork and therefore no endovascular coiling has been undertaken in the unit to date.

3.3 Neurosurgical workload in Ireland

Public hospital workload

Comprehensive submissions were sought from the two neurosurgical units, including information in relation to the number and type of neurosurgical procedures undertaken annually.

In Beaumont Hospital, there were 2071 inpatient neurosurgical discharges from the neurosurgical unit in 2004. There were 2030 discharges with an operation. 1365 (66%) were emergency discharges and 706 (35%) were elective discharges. There was an additional 243 day case discharges, 229 of which were discharged having undergone an operation.

In 2004 there were 1357 neurosurgical inpatient discharges from Cork University Hospital of which 770 (57%) were elective patients and 587 (43%) were emergency. 1327 neurosurgical procedures were undertaken by the Department of Neurosurgery. There were 219 day case discharges of which 214 (98%) were elective and 5 (2%) were emergency.

Casemix information provided by the Department of Health and Children indicates that the neurosurgical unit in Beaumont treats a significantly greater number of complex cases.

Neurosurgeons in Beaumont have developed sub specialty interests in the following areas: complex spine, paediatrics, pituitary / epilepsy, skull base, stereotaxy and vascular surgery.

Subspecialty interests have been developed to a lesser extent in Cork. Neurosurgeons in Cork undertake a certain amount of work in the following subspecialty areas: skull base, neuroendoscopy, nerve root blocks, spinal, pituitary and paediatric. In December 2004 the Department of Health and Children granted capital funding for equipment and associated minor capital costs for the establishment of an endovascular coiling service.

Neurosurgical work in the private sector

Some elective neurosurgical procedures, mainly spinal surgery, is undertaken in the private sector by two private specialists and by consultant neurosurgeons who hold public contracts which permit them to work in the private sector. Information in relation to neurosurgical workload was sought from

private hospitals but the requests were either refused or granted with restrictions in relation to use of the figures. However, information provided by the VHI – the largest private health insurer in the country - indicates that in relation to their subscribers, 882 neurosurgery procedures were undertaken in 2004 in private hospitals in Dublin.

National Treatment Purchase Fund (NTPF)

The National Treatment Purchase Fund (NTPF) figures indicate that in 2002-2003, 125 neurosurgical procedures were carried out under the NTPF. This figure rose to 154 in 2004 and looks set to rise again as the figure to date in 2005 is 164.

3.4 Catchment population

The catchment area served by the neurosurgery unit at Beaumont Hospital has traditionally been the approximately 3 million people living outside Munster, with the unit in Cork providing services to the approximately 1 million people living in Munster.

Appendix B states the numbers of inpatient & day case discharges from each unit in 2004 by area of residence.

Transfer of neurosurgical inpatients between Cork and Beaumont was reported to be infrequent. Transfers to Cork from Beaumont are mainly post operative patients, while transfers from Cork to Dublin are usually for procedures not available in the Cork unit, examples include endovascular coiling, other complex vascular procedures, brain haemorrhages and complex paediatric cases.

3.5 Referral pathways

The neurosurgical units in Dublin and Cork are each staffed continuously by an on call team, which is made up of a consultant neurosurgeon, supported by junior doctors. This involves at least one neurosurgical registrar being on call and resident in the hospital over the 24 hour period. The consultant and SpR are available on-call from home out-of-hours. Hospitals wishing to gain access to neurosurgical opinion must telephone a member of the neurosurgical on-call team – usually the registrar or SHO - to discuss the case and, if necessary and/or possible, arrange for an electronic transfer of a CT image to be sent to a member of the on call team to assist the consultation. A decision is then taken as to whether or not the patient should be transferred to a neurosurgical unit.

3.6 Transport

Land ambulance is the most common mode of transport used to transfer patients requiring neurosurgical services.

A limited air transport service has been available from the Marine Search and Rescue Service and the Air Corps for interhospital transfer emergencies, but was a relatively informal arrangement and in reality was used infrequently. Neither Beaumont nor Cork University hospitals have a functioning helipad on site so transfers are made to the nearest airport, i.e. Dublin and Cork airport respectively.

In 2004, a consultancy company, in conjunction with the Department of Health and Social Services (Belfast) and Department of Health and Children (Dublin), conducted a feasibility study on a helicopter emergency medical service (HEMS) for the Island of Ireland [(11)]. The study concluded that a helicopter/fixed wing aircraft primary retrieval service was not feasible and that the best option in an Irish context would be a helicopter/fixed wing aircraft emergency interhospital transfer service.

In 2005 a service agreement was signed by Department of Defence, the Department of Health and Children, the Health Service Executive, the Defence Forces and the Air Corps for the provision of an Air Ambulance service by the Air Corps. This agreement establishes a clearly defined emergency inter-hospital transfer service for the essential rapid transfer of patients between hospitals in the Republic of Ireland. It does not encompass a primary response capability whereby critically injured patients are retrieved from the site of the incident and removed by helicopter to an appropriate health care location. Nor is it intended as a precursor to the development of implementation of such a service by the Air Corps.

3.7 Cost of neurosurgical services

Information was sought regarding the cost of neurosurgical services in Dublin, Cork and those visited abroad. With the exception of the Walton Centre in Liverpool, which has an annual revenue budget of £47million, limited information was available in relation to the cost of neurosurgical units overseas. Annual revenue costs for Beaumont and Cork are approximately €20 and €10 million respectively.

It was noted that the Department of Neurosurgery in Beaumont does have any preferential access to resources or facilities in the hospital to reflect its national / supra-regional role and is essentially treated as any other surgical departments in the hospital.

4.0 DEVELOPING SAFE, HIGH QUALITY NEUROSURGICAL SERVICES

A key task for the Committee was to gain a detailed understanding of issues relating to the development of safe, high quality neurosurgical services; international standards of best practice in the specialty and emerging factors influencing the future configuration of neurosurgical services.

4.1 Volume and outcome in neurosurgery

The viability of neurosurgical units is an issue which has, for many years, been a focus for debate amongst policy makers, those involved in the provision of neurosurgical services and patient advocacy groups. Viability is not a purely academic matter. It is about ensuring that patients are provided with high quality and safe services which are in line with appropriate standards of clinical practice.

It is increasingly recognised that the best results in treatment are achieved when patients are treated by staff working as part of a multidisciplinary specialist team and that better clinical outcomes are achieved in units with appropriate numbers of specialist staff with relevant skills and experience, high volumes of activity and access to the appropriate diagnostic and treatment facilities[(1)].

There has been much discussion around the validity of studies which examine the link between volume and outcome. In 1997, the NHS Centre for Reviews and Dissemination at the University of York published a systematic review of the evidence linking volume and outcome which concluded that most of the research evidence, having failed to adjust for casemix, was methodologically flawed[(2)]. However, there has been a significant body of more reliable research conducted since that review. As part of its work, the Neurosciences Action Team of the National Framework for Service Change in the NHS in Scotland undertook a conventional narrative review of the evidence. That review found that "*it is clear that concerns over case-mix adjustment no longer hold. There is now a core of studies of adequate methodological quality to establish volume / outcome associations in certain complex high-risk surgical procedures and more modest but clinically relevant effects in a wide range of common procedures*"[(3)].

4.2 Minimum criteria for provision of a safe, high quality neurosurgical service

The identification of minimum criteria for viability of a health service is primarily driven by the issue discussed in the previous section, i.e. that there be an adequate volume and diversity of work to

maintain expertise and satisfactory training in order to ensure that the service provided is safe and of a high quality.

Current minimum criteria for a viable neurosurgery unit are set out in a document published by the Society for British Neurological Surgeons (SBNS) entitled, "Safe Neurosurgery 2000"[4]. This publication states that a neurosurgery unit should be staffed by a minimum of 6 whole time equivalent consultant neurosurgeons and serving a minimum catchment population of 1 million people. A viable unit should have a throughput of approximately 250 neurosurgical operations per consultant.

"Safe Neurosurgery 2000" emphasises that all neurosurgery units, even the smallest ones, require that all the appropriate diagnostic, support services and required complementary specialties are closely available. This means that the provision of services by consultant neurosurgeon/s alone is not sufficient to ensure viability. Instead, neurosurgical services should be delivered in the context of a neurosciences unit where the full spectrum of neuroscience specialties is available. A minimum scale neuroscience centre must have, in addition to consultant neurosurgeons, at least two consultant staff in each of the following specialities; neurology, neuroanaesthesia, neuropathology, neurophysiology and neuroradiology. Other documents have also emphasised that a high quality and safe neurosurgical service requires the support of a wide variety of allied medical, psychiatric and surgical specialties[5].

In terms of facilities, "Safe Neurosurgery 2000" states that thirty neurosurgical beds and four dedicated neurosurgical intensive therapy beds per million population are needed to deliver safe practice. Every neurosurgical unit should have at least two fully resourced operating theatres; those serving a population of more than two million should have three.

4.3 Recent revision of the SBNS minimum criteria.

Recent journal and policy publications indicate that the published SBNS minimum criteria for the viability of small neurosurgery units are now regarded as outdated and in need of revision.

A 2003 editorial in the British Journal of Neurosurgery (BNJ) by Prof. D. Hardy discussed new factors which are likely to affect the location and provision of future neurosurgical services in the U.K.[6] The article suggests that the combined pressures of the European Working Time Directive (EWTD – law since 1st August 2004[7], the junior doctors hours legislation (known as "The New Deal" – a 56 hour work week introduced in the U.K. in 1996), staffing pressures and the "centripetal" tendencies implicit in sub-specialisation present considerable challenges to smaller units and are likely to raise questions about the future viability of such units. In this context, Hardy suggests that

minimum population catchments and staffing numbers will have to be revised upwards, noting that the minimum population catchments is likely to have risen to around 2-2.5 million with minimum staffing of 9 consultants, 8 intermediate trainees, and 8 or 9 SHOs or equivalent grades. The paper goes on to suggest that "managed clinical networks" might present neurosurgery with the means to resolve the various incompatibilities between "centripetal" pressures and the political realities of patient and political expectations.

In Scotland, The White Paper "Partnership for Care" set out aims and ambitions for healthcare services across the NHS in Scotland[8]. These include a commitment to safe, high quality, sustainable patient-centred care available close to the patient wherever possible and in appropriate, modern specialist facilities where necessary. Against this background the Scottish Executive decided to undertake a national planning exercise to, *inter alia*, explore and advise on strategies to secure a sustainable configuration of health services in Scotland for the long term.

In April 2004, a National Advisory Group on Service Change in NHS Scotland, (chaired by David Kerr, Rhodes Professor of Cancer Therapeutics and Clinical Pharmacology at Oxford University), was appointed to examine how the NHS can plan and deliver better health care services in Scotland for the longer term. The group's remit was to develop a national framework for service change in line with the aims of White Paper to develop sustainable specialist services along with more local services delivered in community settings. The work of the Advisory Group was expected to complement future planning by Scottish Health Boards by giving a strategic national focus for the reconfiguration and redesign of services locally.

As part of its work, the Advisory Group established a Neurosciences Action Team (comprising, *inter alia,* consultant representation from each of the four neurosurgical units in Scotland) to consider the future organisation of neurosurgical services in Scotland[9].

In May 2005 the Report of the National Framework for Service Change in the NHS in Scotland was published[10]. The recommendations give the clearest signal yet of significant changes in how neurosurgical services are likely to be developed in the future. The results of an option appraisal project undertaken by the Neurosciences Action Group indicated that the maintenance of the current configuration of neurosurgical services was the least desirable option of all those considered. The report recommends that NHS Scotland should move towards providing adult and paediatric neurosurgical intervention on one prime site for the whole of Scotland within a 3 tiered service model. It also recommended that neurosurgical services should be planned and commissioned on a national basis.

4.4 Factors likely to influence the future provision of neurosurgical services

Many of the factors outlined in the aforementioned publications are applicable in the Irish context and are appropriately considered when making recommendations on the appropriate future configuration of neurosurgical services in this country.

4.4.1 Workforce issues

Global shortages in medical, nursing and allied health professional staff means that the creation of satisfying jobs and opportunities for career progression will be crucial to securing and retaining staff to provide services.

The European Working Time Directive, under which junior doctor working hours were to be reduced to 58 hours per week by August 2004, will have significant impact on the delivery of services in hospitals. For example**,** it is unlikely that a 24/7/52 EWTD compliant on call rota for a high intensity specialty such as neurosurgery could be sustained with less than 8-10 doctors.

4.4.2 Trends in neurosurgery

Neurosurgery, compared with other surgical specialties, is a relatively low volume specialty in terms of workload. Recent years have seen a significant degree of sub specialisation within the specialty.

The current subspecialties within neurosurgery include paediatric neurosurgery, vascular neurosurgery, complex spinal surgery, skull base surgery, epilepsy and functional neurosurgery and pituitary surgery.

Current guidelines suggest that within each of these subspecialties there may be some common ground with regard to techniques and methods of dealing with certain conditions. However, it is considered important to concentrate workload to maintain the competence of the surgeons and the viability of such highly complex subspecialty work.

For example, one neurosurgical condition that has seen a significant change in management is vascular neurosurgery. The direct surgical approach for dealing with intracranial aneurysms is becoming much less frequent since a significant proportion of patients with a ruptured aneurysm can now be dealt with more safely by less invasive interventional radiological techniques[(11)]. However this treatment is not generally available in neurosurgical units serving smaller population bases because, in order to maintain expertise in dealing with aneurysms by this technique, a sufficient volume of patients would need to be seen on a regular basis[(12)].

It can be difficult to predict the level and nature of future demand for health services. However, it appears likely that developments in the area of genomics as well as drugs and therapeutic interventions will have a significant impact on the type of treatments which will form part of a comprehensive neurosurgical service in the future. Technological advances – such as the development of stem cell therapy for Parkinson's disease and other neurological diseases – indicate the likelihood of further sub specialisation within the specialty[13]. The level of expertise and resources required to foster the specialty in this way - so that it can respond in the best way possible to patient needs, i.e. deliver a safe and high quality service for patients - supports the need for increasingly concentrated, highly specialised centres of clinical and academic excellence.

4.5 Paediatric Neurosurgery

The Society of British Neurological Surgeons document "Safe Paediatric Neurosurgery 2001" builds upon the recommendations of "Safe Paediatric Neurosurgery" (1998) which sets out the minimum requirements of safe paediatric neurosurgery in the United Kingdom[14].

Responding to the recommendations of the Public Enquiry into Children's Heart Surgery at Bristol Royal Infirmary, the 2001 document states as its objective the continued development and maintenance of the highest quality of paediatric neurosurgical care by paediatric neurosurgeons established within an environment of paediatric child-centred care.

The view is that specialist paediatric neurosurgical practice involves a close working relationship with other paediatric specialists. The physiology and pathology, psychological and emotional requirements in the children's age group are different and certain paediatric neurosurgical conditions are rare and do not normally occur in adults. In this context it is accepted that they would be best managed by neurosurgeons with the appropriate paediatric specialist training and expertise. However, it states that in neurosurgery the operative techniques needed to deal with head injury, haemorrhage, hydrocephalus and some brain tumours do not differ radically between children and adults. The expertise provided by adult neurosurgeons may also provide an appropriate degree of care and level of skill in these circumstances.

A minimum of 2 neurosurgeons specialising in paediatric neurosurgery is recommended for units providing specialist paediatric neurosurgical practice.

Editorial comment in the British Journal of Neurosurgery in 2002 stated that there clearly is a need to have close collaboration between paediatric and adult neurosurgery to avoid both the isolation of paediatric neurosurgery and the deskilling of their adult colleagues [15].

4.6 Providing services close to home

Consideration was also given to issues around timely access to services to ensure optimal clinical outcome.

It is often difficult to reconcile the need to provide safe, high quality neurosurgical care with expectations of geographic equity in service provision. Patient expectations often include a belief that the full range of health care services which may be required by a person during their lifetime should be available close to home. While this would, understandably, be highly desirable, it is not always possible. The priority must be to ensure high quality care and the best possible outcomes. For highly specialised services, such as neurosurgery, this can lead to a tension between the convenience of receiving care close to home and the need to access highly specialised care in a centre of excellence [16].

"Safe Neurosurgery 2000" stated that the recommendations regarding minimum criteria required to provide safe services should be reconciled with issues around equity of access. The SBNS recommend that where the surface journey time of two hours to a neurosurgery unit is exceeded and there is concern that equity of access is significantly compromised; consideration can be given to the establishment of a unit serving a population of less than 1 million, with the caveat that any such unit should be resourced to a level that allows its staff to maintain the level of skill required.

It appears that the influence of the factors outlined earlier in the report will have significant implications for a unit serving a population of less than 1 million. Recently published policy documents - such as the Report of the National Framework for Service Change in Scotland – indicate that questions are being raised about the viability of small neurosurgical units in the context of increased sub-specialisation in the specialty, medical staffing legislation and the subsequent consequences in terms of maintenance of the levels of expertise required to ensure a safe high quality service. Imaginative solutions – such as the establishment of Managed Clinical Networks – are being developed in other counties as a means to secure the future of small neurosurgical units which have been providing services to minimum sized population catchments for many years, not to justify the establishment of new small units.

4.7 Transport

Given that it is not possible to deliver the full spectrum of neurosurgical services - including the full range of sub-specialty procedures - in every hospital or in every neurosurgical unit, there is a need for a well developed transport system to deliver patients safely and in the shortest time possible to the most appropriate location for treatment.

5.0 NEUROSURGICAL SERVICES IN THE U.K. AND AUSTRALIA

5.1 Introduction

The foregoing sections of this report highlight the challenges in making recommendations regarding the future development of services in the context of the need to balance the requirement to provide safe services and equity of access for all those requiring those services.

In light of the strategic importance of the issue, the diversity of opinion in Ireland on the size and location of units, the focus on optimum patient care and the potentially significant resource implications of the report's recommendations, it was decided to visit neurosurgical units outside Ireland where broadly similar medical staffing systems and geographical / demographic considerations apply.

5.2 Neurosurgical services in England and Scotland

5.2.1 England

The Walton Centre for Neurology and Neurosurgery, Liverpool

The discussions and tour of facilities in The Walton Centre for Neurology and Neurosurgery in Liverpool provided a model for a large neuroscience centre, providing the full range of general and sub specialty neurosurgical and other neuroscience services. Of particular interest was how the centre's unique status as an independent trust had enabled them to present very focussed and powerful arguments for funding. The strategy had resulted in a significant annual budget of £42million sterling to provide services to their immediate catchments population of 3 million people from Northwest England, North Wales and the Isle of Man.

The centre is staffed by 12 consultant neurosurgeons and 22 consultant neurologists. There are 64 neurosurgical beds, 9 ICU and 4 Critical Care beds. There are also 6 days beds and 6 day chairs. There are 4 theatres and an angiography suite, giving each surgeon 3 operating sessions (1.5 days) per week.

The Walton Centre performs approximately 2,000 operations per year. There is a large amount of complex work and spinal procedures accounting for only approximately 20% of the surgical workload. It was stated that the high number of consultant neurosurgeons together with well developed departments of neuroradiology and neuropathology, have fostered the development of

a broad range of sub specialty interests. There has been a marked decrease in the amount of vascular neurosurgery and a corresponding rise in interventional radiological techniques such as endovascular coiling for the treatment of aneurysms.

The view at the Walton Centre was committed to the benefits of the centralised model of neurosurgical service provision. The success of the Walton Centre is in many respects attributable to the centralised model which facilitates the development of a high quality service where the specialty can develop and keep apace of developments in treatment techniques. There was a view that attitudes *vis-à-vis* small neurosurgical units in the U.K. were changing in the context of issues highlighted by Prof. Hardy in a British Journal of Neurosurgery editorial in 2003[17]. The need to balance the requirements of the very small cohort of people who require urgent surgery with the service requirements of an entire population was emphasised to the Committee representatives.

It was stated that referring hospitals in their catchment area are satisfied with the service they receive. Relationships had been fostered well via the hub and spoke model adopted for the neurology service whereby consultants travel to referring hospitals for new and review outpatient clinics.

5.2.2 Scotland

The 4 neurosurgery units in Scotland are located in in Glasgow, Edinburgh, Aberdeen and Dundee. Visits were made to two neurosurgical units –Aberdeen Royal Infirmary and South General Hospital, Glasgow– and one large hospital without onsite neurosurgical services - Raigmore Hospital, Inverness.

Inverness

Raigmore Hospital in Inverness is a large acute general hospital with 577 beds providing a broad range of medical, surgical and radiotherapy services. There are 9 operating theatres, a 6 bed ICU, a 4 bed coronary care unit and a maternity unit. The A&E department receives approximately 27,000 new attendances per year. The hospital does not have onsite neurosurgical services and refers patients for neurosurgical services to Aberdeen which is 113 miles away.

The staff and management in Inverness expressed a high level of satisfaction with the neurosurgical service available in Aberdeen. They reported little difficulty in accessing services when required. The relationship is enhanced by rotational visits – c. 6 per year in total - from the consultant neurosurgeons to Inverness for review clinics and educational purposes.

Fixed wing aircraft are usually used to transfer patients from the islands located off the Scottish coast. There are also two dedicated helicopters which have limited night flying capabilities. In all transfer situations, land transfer is used more frequently and considered preferable to air transfer. Some of the reasons cited for this were: most helicopters can only fly during daylight hours; can only land in designated locations; have limited use in adverse weather conditions; loud noise and cramped conditions make it more difficult for medical personnel to communicate with each other and treat the patient while in transit.

Aberdeen

Aberdeen Royal Infirmary is the largest hospital in the Grampian region. It has in excess of 1,000 beds and provides a complete range of medical and clinical specialties, with the exception of heart and liver transplantation.

The neurosurgical unit, with a population catchment of 500,000, is staffed by 3 consultant neurosurgeons, 4 consultant neurologists, 1 fulltime consultant neuroradiology, 1 consultant neuropathologist and 2 consultant neuroanaesthetists.

Approximately 700 operations per year are undertaken in the unit. A large proportion of the workload is elective spinal surgery. Paediatric surgery requiring post operative intensive care is referred to Edinburgh. Patients are also referred to Edinburgh for subspecialty surgery. In recent time, there has been an increase in transfers for interventional radiological techniques such as endovascular coiling. Outward referrals amount to approximately 100 operations per year.

The lack of rehabilitation and long term care facilities for patients has resulted in increased length of stay for patients in the neurosurgical unit. This is problematic for patients who are waiting to access a neurosurgical bed as well as for the post operative patients who should be transferred to more appropriate care settings.

Management and consultant representatives in Aberdeen stated their belief that the neurosurgery unit in Aberdeen is viable and necessary, particularly to ensure rapid access to services. It was stated that there is a need to increase the consultant staffing to 4 consultant neurosurgeons.

Glasgow

The Southern General Hospital in Glasgow is a large teaching hospital providing services to an immediate catchment population of 340,000 on the south side of Glasgow and also a range of acute and specialist tertiary services for the west of Scotland and the whole country.

The neurosurgical unit, with a population catchment of approximately 2.7 million people, is staffed by 7 full time and 1 half time consultant neurosurgeons, as well as a senior lecturer post. Two of these posts have a special interest in paediatric neurosurgery. There are 6 consultant neurologists, 7 consultant neuroradiologists (3 with expertise in endovascular coiling), 2 consultant neuropathologists and 1 full time and 2 half time consultant neuroanaesthetists.

A wide range of views were expressed by the consultant neurosurgeons in Glasgow in relation to the viability of small neurosurgery units generally. In relation to proposals to centralise neurosurgical services in Scotland, the general view was that while one neurosurgical unit serving the entire population of Scotland would be the ideal scenario, on a practical level this was felt not to be possible owing to geographic and demographic factors.

Recent developments in Scotland

Since representatives of the Committee visited Scotland in 2004, there has been further discussion in Scotland around the future provision of health services generally, and neurosurgical services specifically. The recently published Report of the National Framework for Service Change in the NHS in Scotland has sounded the clearest signal yet of a significant change in how neurosurgical services are likely to be developed in the future[18]. This report recommended that the NHS Scotland should move towards providing adult and paediatric neurosurgical intervention on one prime site for the whole of Scotland within a 3 tiered service model which is described in more detail in that report. It also recommended that neurosurgical services should be planned and commissioned on a national basis. There were consultant neurosurgeon representatives from each of the four units on the Action Group which made this recommendation.

5.3 Neurosurgical services in Northern Ireland

A visit was undertaken to the neurosurgical unit in Royal Victoria Hospital in Belfast where they met with management and consultant representatives from the neurosurgical division.

The Belfast unit is the only neurosurgical service in Northern Ireland and provides services to the population of 1.5 million. The unit is staffed by 5 consultant neurosurgeons, 2 with a special interest in paediatric neurosurgery.

Representatives of the hospital confirmed that there is no pressure to establish neurosurgical services elsewhere in Northern Ireland.

It was suggested that there may be potential for referrals of both elective and emergency patients from the North West region as part of a formal and properly resourced agreement with the Health Service Executive in the South.

5.4 Neurosurgical services in Queensland, Australia

Description of Committee visits

Queensland, one of eight federal states/territories in Australia, has a population of 3.6 million. Queensland shares many of the issues that Ireland is currently facing with respect to the challenges in providing safe, high quality services to a geographically distributed population.

The Committee representatives visited a large acute general hospital without neurosurgical services in the Northern Queensland city of Cairns, a small neurosurgical unit in Townsville staffed by 2 consultant neurosurgeons serving a population of 630,000 and one of two large neurosurgical units in Brisbane, which between them are staffed with 10 surgeons serving a population of 2.5 million.

There is another neurosurgical unit in Queensland in Southport Hospital on the Gold Coast which is 60 miles south of Brisbane which serves a population of approximately half a million. The Committee was also told that there was a consultant neurosurgeon providing a single-handed service in Rockhampton, Queensland but this consultant has since gone into full time private practice.

Cairns Base Hospital

Cairns Base Hospital serves a population catchment of 250,000 spread over a large geographical area. It provides the full range of specialties except for neurosurgery, cardiac surgery and transplantation surgery.

Hospital management indicated that there are two views locally about the need for and viability of a neurosurgical unit in Cairns.

One view is that the population of the Northern zone (630,000) would justify 3 consultant neurosurgeons; two in Townsville and a 3rd post in Cairns to provide an emergency acute neurosurgical service. The case for an on-site neurosurgical unit at Cairns was based mainly on quick access to an acute neurosurgical service, particularly for subarachnoid aneurysms and head inquiries.

The other view was that on-site neurosurgical unit in Cairns is not a major priority and that workload, staffing and cost considerations would render the proposition unviable.

Representatives of Cairns hospital advised that Townsville, 200 miles away, provides a good neurosurgery service. Difficulties with on-call in the Townsville unit mean that patients sometimes have to be sent to Brisbane (700 miles away). The relationship is enhanced by fortnightly visits to Cairns by the Townsville consultants for out-patient clinics. Urgent emergency cases are usually transferred promptly; however there are some delays in gaining admission for elective surgery. Neurosurgical patients are returned from Townsville to Cairns for follow-up care. The number of emergency transfers, mainly neurosurgical, from Cairns Emergency Department to Townsville for the past 3 years was; 67 in 2001, 66 in 2002 and 57 + 10 direct transfers in 2003.

Visit to Royal Flying Doctors Service base, Cairns

The Queensland Royal Flying Doctors Service (RFDS) has its central office in the State capital, Brisbane, and has 7 airbases throughout Queensland. The RFDS provides a regular general medical and nursing service to remote areas without local general practitioners and provides retrieval and primary response services for accidents and emergencies throughout the region. Representatives of the Committee visited the RFDS base in Cairns.

About two thirds of the work undertaken by the Cairns RFDS is interhospital transfers. About 20 patients per week are transferred using their services, approximately 10% of whom have head injuries. The RFDS use fixed wing aircraft, helicopters and four wheel drive ambulances to transfer patients, depending on the length of the transfer journey. When air transport is required, a definite preference was expressed for fixed wing aircraft rather than helicopters. It was stated that this was because of the speed of fixed wing aircraft relative to helicopters, expense of night flying helicopters, as well the negative impact on the patient condition of helicopter vibrations, limited space and excessive noise. It was also stated that 3 fatal helicopter ambulance crashes in recent years had raised questions about their safety and frequency and had resulted in a reluctance to use helicopters except in circumstances when other feasible means of transport was not available.

Townsville Hospital

The Townsville Hospital is a major tertiary hospital (450 beds) with all regional and supraregional services including radiation oncology, cardiac surgery and neurosurgery as well as a medical school. There are about 40,000 admissions per annum.

The Townsville neurosurgical unit, a stand-alone unit with a population catchment of 630,000, is staffed by 2 consultants and 1 registrar. The unit undertakes a comprehensive range of general neurosurgical procedures with more complex workload - movement disorder surgery, elements of acute brain injury cases, and endovascular coiling - being referred to Brisbane. The unit performs approximately 750 neurosurgical operations per year. About 50% of the neurosurgical workload is spinal procedures.

The unit has good working relationships with the 2 other big hospitals without neurosurgery in the zone. Each consultant neurosurgeon visits Cairns every second week for elective outpatients, review of patients referred back to Cairns and ward consultations. Hospital representatives emphasised the value of a regular on-site visit by the consultant neurosurgeons to Cairns (weekly) and other referring hospitals in Mackay (fortnightly) and Mt. Isa (quarterly).

They said that the current staffing and on call arrangements are not sustainable. There are issues with the recruitment and retention of suitably qualified staff.

Royal Brisbane and Women's Brisbane

There are two neurosurgical units in Brisbane, the Royal Brisbane with 5 consultants [2 full-time and 3 Visiting Medical Officers (VMOs)][19] and Princess Alexandra with 5 consultants (1 full-time and 4 VMOs). The 2 units in Brisbane between them serve a population of about 2.5 million. Precise catchment populations are not possible as patients are not restricted to a particular unit. There are also two neurosurgeons who work exclusively in private practice in Brisbane.

Royal Brisbane Hospital is a level 6 tertiary hospital with 950 beds, including 36 ICU beds; 6,500 staff, 24 theatres; 5 CT and 2 MRI. It has 70,000 new attendances in the A & E department and 80,000 admissions per annum.

The Royal Brisbane neurosurgeons perform about 900–1000 operations including 150 paediatric cases at the nearby Royal Children's Hospital. Subspecialty interests in spinal neurosurgery; complex spinal work, stereotactic radiosurgery and paediatric neurosurgery have been developed in the unit. Surgeons referred to changing trends in neurosurgical workload, stating that here has been a reduction in head injuries over the past 20 years due, *inter alia*, to fewer road accidents, shootings and regulation of playgrounds. At the same time there is a higher demand for interventional neuroradiological techniques, such as endovascular coiling of aneurysms which is replacing more traditional vascular surgery techniques.

Management and consultant representatives acknowledged the tension between providing services close to home and ensuring sufficient workload to maintain skills and ensure the provision of safe high quality services.

6.0 FINDINGS

The main finding is that there are severe deficiencies in the current provision of neurosurgical services in Ireland and a significant investment in the area is required. These deficiencies have had a negative effect on the capacity of the service to meet demands. The causes are multifaceted and interrelated.

6.1 Neurosurgery as a national specialty

Neurosurgical services have suffered from being planned and commissioned on a regional, rather than national, basis. For example, the Department of Neurosurgery in Beaumont Hospital has been hindered by the failure to grant the specialty any preferential access to resources or facilities to reflect its national/supraregional role. It is not appropriate that the Department of Neurosurgery should have to compete for access to beds, theatres space, and anaesthetic cover, with other specialties which, unlike neurosurgery, are available in many other hospitals in Dublin and elsewhere in the country.

6.2 Waiting Lists

There are lengthy hold ups at all entry points to the neurosurgical services.

Emergency inpatient services

Emergency/Urgent referrals often wait unacceptably long to be admitted to a neurosurgical unit for surgery. This usually means that patients are cared for in the general intensive care unit of a general hospital without neurosurgical services until a bed becomes available. This has potential morbidity and mortality consequences for such patients and as such is considered unacceptable.

Elective inpatient services

There are lengthy waiting lists for non-emergency admissions to a neurosurgical unit for surgery. In September 2005, the waiting list for inpatient neurosurgery in Beaumont Hospital stood at 426, 272 of whom had been waiting for more than 12months[20]. The waiting list for neurosurgery in Cork University Hospital is 24[21].

Day patient services

There are lengthy waiting lists for day case neurosurgical services. A shortage of designated day beds in both units makes planning of day case surgery difficult. Failure to designate day beds for neurosurgical patients means that beds are allocated from other areas of the hospital depending on availability. Access is therefore unpredictable and sporadic. The inability to effectively plan day surgery exacerbates waiting lists which also develop because of staff and other infrastructural shortages, such as theatre space.

Outpatient services

There are lengthy waiting times for outpatient appointments. This means that there is potential for significant deterioration before assessment and can result in increased numbers of patients presenting at A&E in order to bypass the outpatient system.

6.3 Deficiencies in existing neurosurgical units

There are clear deficiencies in terms of staffing and facilities available to the existing neurosurgical units in both Beaumont and Cork University hospitals. Deficiencies were in the following key areas:

- Staff: medical (consultants in neurosurgery, other neuroscience and support specialties) as well nursing and allied health professional staff
- Beds
- Theatre access
- Specialised equipment required for subspecialty developments

These deficiencies impact negatively on the ability of both units to deliver an efficient and effective service. The situation appears to be particularly marked in Beaumont Hospital.

6.4 The development of subspecialty areas of neurosurgery

There has been limited development of subspecialty interests in neurosurgery in Ireland.

The lack of peri-operative neurophysiological monitoring inhibits the ability of the Department of Neurosurgery in Beaumont to provide highly specialised services, such as functional stereotactic procedures and awake craniotomy. Patients requiring these services are currently referred outside Ireland for treatment. This deficiency could also eventually impact

on the provision of spinal cord tumour procedures in Ireland with recent trends indicating that it may be inappropriate to undertake this work in the absence of spinal cord monitoring.

Furthermore, the Department of Neurosurgery at Beaumont has had limited capacity to develop national programmes for specific patient groups in areas such movement disorder, epilepsy, functional neurosurgery, brain stem implantation, stroke.

The development of the subspecialty areas of neurosurgery is crucial if neurosurgery, as a specialty, is to be in a position to respond to the needs of patients in the future. As discussed earlier in the report, the development of less invasive therapeutic treatments for neurosurgical conditions, developments in genomics and stem cell research, reduced incidence of trauma and the changed needs of an aging population are all factors which are likely to have a significant impact on the type of treatments which will form part of a comprehensive neurosurgical service in the future. Ireland needs to be in a position to respond to these changing trends.

6.5 Neurosurgical workload in Ireland

Analysis of the current neurosurgical workload in Ireland indicates that there is an imbalance between the levels of emergency and elective workload in each of the units.

Beaumont

Unplanned emergency surgery represents a disproportionate level of the units total workload in Beaumont Hospital. For example, 66% of neurosurgical workload in Beaumont is comprised of emergency surgery. Of the 34% of the workload which is classed as elective, only a small proportion of this is non-complex. Non complex elective spinal surgery currently comprises only approximately 10% of neurosurgical workload in the Beaumont. A significant proportion of elective neurosurgery, particularly spinal surgery, in the Dublin area is currently met by the private sector.

This disproportionate level of unplanned emergency surgery in the Beaumont unit is undesirable as it (i) exacerbates already lengthy waiting lists, particularly for elective / less urgent surgical procedures (ii) limits the exposure of trainees to less complex, but nonetheless important, aspects of neurosurgery workload and (iii) compromises the maintenance of a consistent level of medical education, professional development and audit. It would be

appropriate for there to be a better balance between emergency and elective workload and complex and non complex workload in the Beaumont Unit.

Cork

Approximately 35% of the neurosurgical workload in CUH in 2004 was elective, non complex spinal surgery. Analysis of the overall workload indicates that there may be scope to increase the amount of complex neurosurgical work and to develop subspecialty interests in the unit.

6.6 Training programme for non consultant hospital doctors (NCHDs)

The profile of neurosurgical procedures being undertaken in the two public neurosurgical units has had an adverse impact on training, particularly in the Beaumont unit. Reports from the Specialist Advisory Committee (SAC) of the Joint Committee on Higher Surgical Training following training inspection of neurosurgery units in Beaumont Hospital and Cork University Hospital [(17)] gave an insight into the impact of service deficiencies on the operation of training the units.

The report in relation to the Beaumont unit highlighted the need to remove the restrictions in admissions and operative workload, to expand paediatric sub-specialisation and increase the amount of spinal surgery undertaken in the unit. The report also states that the planned arrangements for interaction between the three Irish units (including the Belfast unit) in terms of training had not translated into a formal process and recommended that this be addressed. The report was critical of the lack of a programme of educational meetings in protected training time.

In relation to the Cork unit the SAC reported that it is a small, compact and well run unit which had seen a significant increase in operations in spite of no change in the number of operative sessions. The unit has a good academic programme which is conducted in protected time and attended by both consultants and trainees.

6.7 Paediatric neurosurgery

Some paediatric neurosurgery is undertaken in Cork University Hospital and in Our Lady's Hospital for Sick Children, Crumlin but most is undertaken at Beaumont Hospital.

It was clear from the consultation process that paediatric neurosurgery is underdeveloped in Ireland and is being delivered in less than ideal circumstances.

While all the consultant neurosurgeons perform some paediatric neurosurgery, there is only one post of consultant neurosurgeon with a special interest in paediatric neurosurgery, structured with 7 sessions in Beaumont and 2 sessions each in Children's University Hospital, Temple Street and Out Lady's Hospital for Sick Children, Crumlin. When this consultant is away there is no cover for outpatient clinics and the outpatient service effectively ceases. During the consultation process, there was unanimous agreement that there is an urgent need for an increase in the number of consultant neurosurgeons with a special interest in paediatric neurosurgery. Clear indications were given by Comhairle na nOspidéal to consultant and management representatives that new applications for consultant posts in either of the existing units would not be held up pending the publication of this report.

Beaumont Hospital is an adult hospital but has a dedicated 28 bedded paediatric ward with paediatric qualified nurses who support the paediatric elements of the national neurosurgical and national cochlear implantation programme. Paediatric ENT surgery is also undertaken in Beaumont Hospital. There is no paediatric intensive care unit in Beaumont Hospital.

There are currently three paediatric hospitals, including two paediatric intensive care units, in Dublin and further fragmentation of tertiary paediatric services, particularly the establishment of a 3rd paediatric ICU unit in one city, would be undesirable and unsustainable.

The paediatric element of neurosurgery is an important consideration in decisions regarding the future configuration and location of neurosurgical services in Dublin.

6.8 Hospitals without neurosurgical services onsite

Each of the former health boards and voluntary hospitals were consulted regarding their views in relation to neurosurgical services.

Accessing neurosurgical opinion

The responses reported difficulty in accessing consultant or SpR neurosurgical opinion, especially out of hours. There was widespread dissatisfaction that referring consultants often had to discuss the care of the patient on the telephone with a neurosurgical registrar rather than the consultant on call.

Diagnostic facilities

It was also reported that a lack of appropriate diagnostic facilities can make it difficult for an accurate diagnosis to be made. A number of referring hospitals do not have CT scanners. In hospitals that do have such equipment, it is often only available 9-5, Monday to Friday. Finally, other referring hospitals may not have the facility to transmit the image electronically to the neurosurgery unit for examination. All these deficiencies can potentially delay diagnosis of a condition which may require neurosurgical intervention.

Lack of bed availability in neurosurgical units

Referring hospitals also reported that it is extremely difficult to have a patient transferred to a bed in a neurosurgical unit owing to the lack of availability. As mentioned earlier in the report this can result in patients being cared for in the ICU of the referring hospital until a bed becomes available in the neurosurgical unit. This is inappropriate from the point of view of the critically ill patient who requires a neurosurgical intervention and from the point of view of the referring hospital where an ICU bed is not available for other patients.

Transport of patients to neurosurgical units

Difficulties were also reported in relation to arranging the transport of a patient to a neurosurgery unit.

These difficulties were often related to logistical difficulties in arranging the transfer of patients rather than the geographic distance between referring hospitals and the relevant neurosurgical unit.

The use of air transport is seriously inhibited by the lack of a helipad in either Beaumont Hospital or Cork University Hospital which means that patients must be transferred by air to the nearest airport and then by land ambulance to the neurosurgical unit. Air transport, helicopters in particular, present other challenges which can affect their suitability as a means of transporting critically ill patients, for example noise, lack of interior space and limited flying capacity at night or in adverse weather conditions.

Most patients are transported overland by ambulance. Many health service areas reported that the transfer of intubated and ventilated patients can result in staffing difficulties at the referring hospital as critically ill patients must be accompanied by a suitably qualified junior doctor, usually an anaesthetic registrar. The absence of this doctor from the referring hospital for long periods of time has an adverse impact on the ability of that hospital to provide their own normal service. Many health service regions report that they feel the development of an appropriately staffed centralised transfer / retrieval service for neurosurgery patients would be useful.

In summary, the way in which referring hospitals without onsite neurosurgical services currently relate with and have access to such services is unsatisfactory from the point of view of the patient, the referring hospital and the neurosurgical unit.

Information in relation to neurosurgical inpatient & daycase discharges in 2004 by area of residence indicated that inpatient access to neurosurgical services is almost uniform from all areas of the country, except the South and South East where access is slightly higher (Appendix B). This may support the idea that problems in accessing neurosurgical care in Ireland are more closely impacted by availability of beds and other resources rather than geographical distance from a unit.

Problems encountered in accessing neurosurgical care in Ireland appear to be primarily related to:- a deficiency in/unavailability of resources in both the neurosurgical units and at the referring hospitals and poor diagnostic facilities and transport arrangements for critically ill patients in the referring hospitals. The situation seemed to be particularly marked in health service areas referring to the unit in Beaumont Hospital.

6.9 Relationship between neurosurgical units and referring hospitals

While many of the problems with the existing level of service provision are related to capacity issues, the committee also found a lack of collegiate networking between the two neurosurgical units and with referring hospitals in their catchment areas.

As discussed earlier in the report many units in other countries visited by the Committee had developed strong relationships with referring hospitals in their catchment area by way of outreach educational programmes in relation to the management of head injured patients and the development of protocols. Some units, notably Aberdeen and Townsville, even provided outpatient clinics and follow up care in referring hospitals, with the result that patients only had to travel to the neurosurgical unit for their surgical procedure.

All health service areas consulted stated that links with a named consultant neurosurgeon with whom they could develop a special relationship would be extremely helpful. This was a key recommendation of previous Comhairle reports and it is noted with disappointment that it has not materialised[(22)].

Furthermore, it seems that there may be scope to foster closer working relationships between the two neurosurgical units in the Republic and the unit in Belfast. Consultants and management in Belfast stated that emergency neurosurgical cases are often referred to the unit from across the border. They currently do this under existing EU arrangements but indicated their willingness to develop a more specific formalised agreement in relation to emergency and elective neurosurgical services, subject to proper resourcing of the project. They pointed out that patients from Donegal, Sligo and some border counties could access neurosurgical services more quickly if referred to Belfast rather than to Dublin.

6.10 Rehabilitation and long term care services

A significant proportion of acute neurosurgical beds are at any given time occupied inappropriately by patients awaiting return to referring hospitals, rehabilitation or long term care facilities. This impacts negatively on the neurosurgical unit in terms of:

- Reduced bed capacity to provide adequate acute service
- Difficulty in planning elective admissions
- Inefficiencies in theatre utilisation

In summary, it is clear that the current organisation of neurosurgical services is not adequately meeting current demands and that significant investment and reorganisation of services will be required to remedy the situation and ensure the provision into the future of safe and high quality neurosurgical services in Ireland. The next section of the report addresses the findings in relation to options for the development of neurosurgical services in Ireland.

7.0 OPTIONS FOR FUTURE DEVELOPMENT IN IRELAND.

7.1 Introduction

As previously stated, significant investment and reorganisation of neurosurgical services is required to address the current deficiencies and to ensure the provision of safe and high quality services into the future. A key task in the process of deciding how best to improve services was the assessment of the case for the establishment of a new, 3rd, neurosurgical unit.

7.2 Cases presented for and against an additional neurosurgical unit in Ireland

For many years, health service providers, concerned citizens and politicians in the area along the western seaboard have campaigned for the establishment of a neurosurgery unit on the site of University College Hospital, Galway. As was discussed in Chapter 2, a number of Comhairle committees have examined the issue over the years and concluded that a neurosurgical unit in Galway would not be a viable proposition on the grounds that the catchment population for such a unit and the potential workload would be insufficient to justify the appointment of what was, at that time, considered the minimum staffing level of three consultant neurosurgeons.

More recently, arguments in favour of a unit in Galway are being made by a group called the Western Neurosurgery Campaign. The Committee received numerous written submissions from the Western Neurosurgery Campaign and met with representatives of the Group in March 2004. The former Western Health Board stated that they supported the case for a neurosurgical unit on the site of University College Hospital, Galway.

Submissions from the Western Neurosurgery Campaign state that the case for a unit in Galway is based on:

- capacity issues in existing units and the apparent inability of the existing units to meet the demand for neurosurgical services, particularly in a timely fashion;
- the catchment population for neurosurgical services in Galway of up to 750,000 which is widely dispersed over a large geographical area
- changing demographics, in particular the increasing population of Ireland as a whole, including the West of Ireland;

- influx of tourists into the region during the summer months;
- isolation of the West of Ireland; Galway is 135 miles from Dublin and parts of the western seaboard are up to 200 miles from Dublin;
- regional self-sufficiency in health services would not be possible for the West of Ireland without the development of neurosurgical services;
- benefits which would accrue to the medical school in Galway and research in general from the development of a neuroscience centre to complement the established neurology service and recent recommendations in relation to neurophysiology services. [(14)]
- The designation of UCHG as a supra regional centre for cancer, radiotherapy and cardiac surgery services.

On the other hand, during the consultation process, the consultant neurosurgeons in Ireland stated their unanimous opposition to the establishment of a 3rd neurosurgical unit in Ireland.

Consultant Neurosurgeons and the Royal College of Surgeons in Ireland have expressed the view that the Republic of Ireland has a need for 16 consultant neurosurgeons; six in Cork and 10 in Dublin. Such consultant expansion would, they say, require additional facilities, including an increase in beds and access to ICU and theatre, as well as additional staffing in allied medical and surgical specialties, particularly neuroradiology.

The two unit model would in their view be considered advantageous by the SAC in Neurosurgery from the point of view of training specialist registrars and would also allow consultants to practise a team approach with more than one consultant sharing a subspecialty interest in neurosurgery, thereby ensuring maintenance and delivery of services in the absence of their colleague. Furthermore, it would allow time for audit and continuing medical education.

7.3 Findings vis-à-vis the case for an additional neurosurgical unit in Ireland

Lengthy consideration was given to the case for a third neurosurgical unit in Ireland, and in Galway specifically.

The Committee believes that neurosurgical services should be planned and commissioned on a national basis and took a national perspective when considering the most appropriate configuration of neurosurgical services for Ireland.

Consideration was given to the concept of a Managed Clinical Network model for neurosurgical services in Ireland; comprising one large tertiary centre in Dublin which would undertake the full range of general and subspecialty neurosurgical work, supported by two smaller units conducting less complex work in Cork and Galway.

The conclusion was that this would not be a viable proposition and that the needs of the entire population, including those who would be referred to a unit in Galway, would be ill-served by the division of neurosurgical patients, expertise and resources between three neurosurgical units.

The reasons for this decision are detailed below:

- *Insufficient catchment population to maintain the skills of staff in a Galway unit*

  The likely population catchment for a unit in Galway would not be sufficient to justify the establishment of a neurosurgical unit there. The maximum population catchment for a unit in Galway would comprise counties Galway, Mayo, Roscommon, Leitrim, Sligo, as well as parts of Clare, Limerick, Offaly, Tipperary North and Westmeath – a population of less than 750,000.

  As discussed earlier in the report, current professional guidelines indicate that a minimum scale unit would need to be staffed by 6 consultant neurosurgeons, the full range of allied consultant neuroscience specialties as well as the required staff of allied health professionals[(23)]. The principle that surgical workload and resources should be concentrated in a way that ensures high standards of patient care, best possible patient outcomes, maintenance of clinical skills, and best use of specialist and sub-specialist expertise is accepted. In this context, Comhairle does not believe that the volume or range of workload generated by the maximum possible population of 750,000 would be sufficient to maintain the expertise of a minimally staffed unit in Galway. (There was also concern around the capacity of a unit serving such a small catchment population to attract and retain sufficient suitably qualified staff) It is far short of current recommended population catchment for the provision of safe, high

quality neurosurgical services. It is helpful to bear in mind that minimum criteria are laid down in order to ensure the provision of a safe, high quality service.

CSO population projections for Ireland to 2021 were also taken into consideration[24]. It is projected that the population of Ireland will be just over 5 million in 2021 (Appendix C). The projected demographic changes would see not see the likely catchment population rise sufficiently to justify the establishment of a unit in the region.

- *Insufficient catchment population to maintain the skills of staff in two regional units*

  The establishment of a unit in Galway could potentially result in two unviable regional neurosurgical units. In order to remain viable, the unit in Cork needs to be expanded significantly. It should be staffed by 6 consultant neurosurgeons and the development of subspecialty areas needs to be fostered. Its current population catchmen, at a maximum of 1 million people – needs to be increased. This can only be achieved by means of projected population increases and redirecting referrals from counties at the outer boundaries of its current catchment population from Dublin to the unit in Cork. In this context, the establishment of a unit in Galway would have a negative impact on the unit in Cork by reducing its catchment population.

- *The establishment of a 3rd unit would be likely to inhibit the development of a tertiary neuroscience centre*

  The establishment of a 3rd unit in Ireland could also potentially inhibit expansion in the unit in Dublin which has a national catchment population for highly specialised aspects of neurosurgery. The direction of resources towards the establishment of a new unit in Galway would impact negatively on the ability of the system to invest in much needed resources for the development of paediatric and other sub specialty areas in the *de facto* national unit in Dublin.

- *Changing trends in demand for neurosurgical services*

  Demand for neurosurgical services is changing. Reductions in the incidence of traumatic head injury along with developments in genomics, as well as in drugs and therapeutic interventions, are likely to have significant impact on the type of treatment which will form part of a comprehensive neurosurgical service in the future. Technological advances – such as the development of stem cell therapy for

Parkinson's disease and other neurological diseases – will lead to further sub specialisation within the specialty. The impact of an ageing population means that there is likely to be significant demand for these services in the future. The level of expertise and resources required to allow the specialty to develop in this way (so that it can respond in the best way possible to patient needs, including having the ability to offer the most modern treatments) supports the need for increasingly concentrated, highly specialised centres of clinical and academic expertise. The establishment of a 3rd unit would hinder the capacity of neurosurgical services to develop in this way.

- *International experience that the viability of small neurosurgical units is under threat*
  Much of the literature and professional opinion indicates that the viability of small neurosurgical units is under threat and plans are being drawn up to reconfigure services. This is happening against a backdrop of global workforce issues as well as the increasing specialisation and rapid technological development in neurosurgery as a specialty. The Managed Clinical Network model is largely gaining currency internationally as a way to maintain existing services, not as a justification to establish a new service. No location was encountered where a small neurosurgical unit was being newly established.

- *Significant scope for improving services by increasing capacity in existing units as well as improved transport and telemedicine facilities.*

  One of the most powerful arguments in favour of a unit in Galway was the issue of access for patients living in geographically remote regions.

  While the delivery of health services close to home is highly desirable, the provision of safe, high quality care provided by appropriately trained staff is, on balance, more important. Unfortunately, in reality, it is not always possible to deliver health services close to peoples homes, particularly in a highly specialised, relatively low volume specialty such as neurosurgery. However, the public has the capacity to understand and appreciate that the need to travel for services is not driven by a desire to inconvenience patients, but rather to ensure the highest possible standard of care, something which every patient in this country deserves.

  Data on neurosurgical inpatient & daycase discharges in 2004 by area of residence appears to indicate that access to neurosurgical services is almost uniform across the country, with a slightly higher ratio of discharges per population in the South and

South East. (Appendix B). The southern region had the highest ratio of inpatient & daycase discharges per head of population while Dublin and Galway had almost identical access per head of population. This information appears to indicate that difficulties encountered in accessing neurosurgical care in Ireland may be primarily related to a deficiency/unavailability of resources in both the neurosurgical units – but particularly in Beaumont - and at the referring hospitals; (1) difficulty in accessing consultant neurosurgical opinion (2) a lack of availability, usually of beds, in the existing units and (3) poor diagnostic facilities in referring hospitals and (4) logistical delays in transporting the patient to the unit.

Transport and telemedicine infrastructure have not been developed sufficiently in Ireland. There is significant scope for development in these areas to improve timely access to neurosurgical services for all patients but particularly those located a significant distance from their nearest unit.

In this context, the view has been taken that the needs of neurosurgical patients in geographically isolated areas would be better served by increased capacity in the existing units and the development of systems that promote rapid assessment, diagnosis of injury and transfer, than by the development of a unit in which the viability of clinical services would remain a central concern.

It is acknowledged that this decision will be a disappointment to many who have campaigned for the establishment of a neurosurgical unit in the West of Ireland. However, it is believed that the recommendations of the report, if implemented, represent the best way forward in terms of building a neurosurgical service that will meet the needs of the entire population, including those living in geographically remote areas.

8.0 RECOMMENDATIONS

8.1 Introduction

The committee has concluded that there is compelling evidence that neurosurgical services in Ireland are insufficient to meet the needs of the population and in this context a significant expansion of neurosurgical services is recommended.

With the establishment of the HSE, a single organisation has assumed responsibility for the running of the country's health services. This represents a significant opportunity to bring an integrated, national focus to the planning and commissioning of all health services, but particularly acute hospital services. In this context, it is recommended that neurosurgical services should be planned and commissioned on a national basis. The HSE National Hospitals Office should take a strategic leadership role in this regard.

A two pronged approach for development of neurosurgical services is recommended: increased capacity in Dublin and Cork and improved access to neurosurgical units, including transport and telemedicine facilities for referring hospitals.

The recommendations have been guided by international best practice in order to ensure the provision of safe high quality neurosurgical services to the entire population, regardless of geographic location.

8.2 The configuration of neurosurgical units in Ireland

Dublin

There should be one comprehensive national tertiary referral neurosciences centre in Ireland and it should be located in Dublin. This recommendation is consistent with the previous reports published by Comhairle na nOspidéal in relation to neurosurgical services.

The service to be provided by such a centre should have the following characteristics:

Scope of service provision

The centre should provide the full range of general neurosurgical services to adults and children, serving the population catchment located outside Munster and the full range of sub

specialty neurosurgical services to adults and children on a national level. Complex sub specialty cases should be referred to this centre.

Staffing

The centre should be staffed by 10 consultant neurosurgeons including two consultant neurosurgeons with a special interest in paediatric neurosurgery. The centre should also have appropriate staffing levels – for a unit of its size - in terms of allied neuroscience and support/diagnostic specialties – particularly neuroradiology - as well as nursing and allied health professional fields.

Access

Services should be consultant delivered with ready access to relevant consultant opinion – surgical and radiological - at all times.

Protected facilities

There should be a sufficient number of dedicated and appropriately equipped operating theatres and beds, including day, general, HDU and ICU beds. These facilities should be protected and ringfenced. Neurosurgical services should not be affected by theatre closures due to insufficient anaesthetic, nursing or other staff.

Referrals

The centre must undertake to accept all patients who, following consultation between the referring doctor and the neurosurgical department, are deemed to require neurosurgical care. Referring hospitals must be obliged to accept the patient when the decision is taken by the neurosurgical centre that care in the neurosurgical centre is no longer required by the patient. The development of appropriate rehabilitation and long term care facilities would facilitate this crucial recommendation.

Beaumont Hospital

The Committee acknowledges that Beaumont Hospital has played a valuable role in the provision of neurosurgical services for many years.

The Committee has certain reservations about Beaumont's current ability to fulfil the criteria described above. Specifically, Beaumont Hospital has no paediatric ICU facilities, which are a requirement for the delivery of best practice paediatric neurosurgical services. Given that there are three paediatric hospitals in Dublin, two of which – Crumlin and Temple Street – currently have paediatric ICU facilities, further fragmentation of tertiary paediatric services,

particularly the establishment of a 3rd paediatric ICU unit in the one city, would be undesirable and unsustainable.

It is recommended that this issue should be further reviewed by the HSE in the context of the broader strategic decisions in relation to the future development of paediatric hospital services in Dublin.

Cork

In the context of emerging factors likely to affect the future provision of safe high quality neurosurgical services (sections 4.3 and 4.4) it is recommended that in order to remain viable into the future significant investment in staff and facilities is required in the neurosurgical unit in Cork University Hospital.

Scope of service provision

The unit in Cork should deliver the broad range of general neurosurgical services to its catchment population.

It is noted that prior to the establishment of the HSE, funding was provided by the Department of Health and Children for the development of intravascular coiling services in Cork University Hospital. While there is scope for subspecialty development in Cork, the main focus for complex subspecialty neurosurgical workload should be in the tertiary referral centre in Dublin.

The development of subspecialty interests in Dublin and Cork should be carefully planned on a national basis as part of the overall planning and commissioning process undertaken by the HSE. In particular this should be planned in advance of recruitment and not allowed develop in an ad hoc fashion depending on the particular interest of the consultant appointed.

Staffing

The unit in Cork should be staffed by six consultant neurosurgeons.

The centre should also have appropriate staffing levels – for a unit of its size - in terms of allied neuroscience and support/diagnostic specialties, as well as nursing and allied health professional fields.

Access

Services should be consultant delivered with ready access to relevant consultant opinion – surgical and radiological - at all times.

Protected facilities

There should also be a sufficient number of dedicated and appropriately equipped operating theatres and beds, including day, general, HDU and ICU beds. These facilities should be protected and ringfenced.

Referrals

The Cork unit must undertake to accept all patients who, following consultation between the referring doctor and the neurosurgical department, are deemed to require neurosurgical care. Referring hospitals must be obliged to accept the patient when the decision is taken by the neurosurgical centre that care in the neurosurgical centre is no longer required by the patient. The development of appropriate rehabilitation and long term care facilities would facilitate this crucial recommendation.

8.3 Improved access to neurosurgical units

Difficulties in transferring patients to neurosurgical units seemed to be related to lack of availability / capacity in the neurosurgical unit or logistical difficulties in arranging transport of the patient rather than geographical distance to be travelled.

The development of clearly defined and supported working relationships between the existing units and referring hospitals along with improved transport and telemedicine facilities presents significant scope for developing timely access to neurosurgical services for all patients in Ireland regardless of where they live.

This section details recommendations in this regard and implementation of same is crucial to ensuring timely access to neurosurgical services.

Responsibility of tertiary centre to referring hospitals

Named neurosurgeon

Each consultant neurosurgeon should be formally associated with a group of referring hospitals. Links between the neurosurgical centre and the referring hospital/group of hospitals would be to foster educational and collegiate links and must form a core element of future neurosurgical service development in Ireland.

Such links and visits would not require a huge investment in terms of time – perhaps annual visits by the consultants would suffice – however there are huge benefits to be reaped in terms of building successful working relationships and encouraging communications between the units and referring hospitals.

Such arrangements would provide a useful forum for ongoing review of agreed protocols and delivery of educational programmes in relation to the management, transfer and transport of head injured patients to the neurosurgical unit.

It is not envisaged that the same named consultant neurosurgeon should always be available to that hospital to discuss a potential neurosurgical patient – hospitals would still be expected to contact the on call team in this situation.

Protocols

Protocols have a significant role to play in minimising unnecessary delays in getting the patient to the most appropriate treatment location. The reduction of delays in accessing appropriate care can have significant clinical benefits in terms of morbidity and reduced mortality for patients.

Neurosurgical units and referring hospitals should be involved in developing and reviewing protocols to set out a clear framework in relation to the initial management, transfer and transport of head injured patients. Protocols could be modelled along the lines of those published by the National Institute for Clinical Excellence (NICE) in the United Kingdom.

Protocols should address issues such as

- initial transfer of patient to A&E department
- resuscitation and stabilisation of the patient
- assessment of head injury
- arrangements for consultation with the consultant neurosurgeon in the relevant neurosurgical unit
- the electronic transmission of CT images
- transfer and transport arrangements.

Telemedicine and teleconferencing facilities

There are currently deficiencies in diagnostic facilities in the hospitals referring to neurosurgical units. Each hospital receiving trauma should have a CT scanner available for use 24 hours a day, 7 days per week. The hospital must have the capability to transmit these images to the neurosurgical unit in Dublin and / or Cork. This would reduce delays in diagnosis and result in more informed decision making vis-à-vis the management of head injured patients. It would facilitate speedy transfer to a neurosurgical unit if necessary and conversely minimise the number of unnecessary transfers.

Consideration could also be given to the use of videoconferencing to enhance the relationship between referring hospitals and their named consultant neurosurgeon.

Transport

Most patients are currently transferred by land ambulance and this is likely to remain the case. Notwithstanding this there should be facilities to transfer emergency cases to a neurosurgical unit by air. The service agreement which has been signed by the Department of Health and Children, the Department of Defence, the HSE, the Irish Defence Forces and the Air Corps for the provision of inter hospital transfers within the Republic of Ireland by the Air Corps will formalise previously informal arrangements.

Both neurosurgical units should be equipped with a functioning helipad.

Referring hospitals should develop rotas to ensure availability of appropriate staff to accompany patients being transferred to a neurosurgical unit. Consideration could also be given to the development of dedicated regional retrieval teams to stabilise patients in remote and rural areas and to transport seriously injured patients to the appropriate care location as soon as possible.

Potential for cross border cooperation

Under existing EU legislation, the neurosurgical department in Belfast accepts emergency transfers from the Republic, most commonly from hospitals in the north western region of the country. Consideration should be given to the development of a formal agreement with health authorities in Northern Ireland in relation to the transfer of emergency neurosurgical cases from the North West to Belfast for treatment. This could offer the opportunity to reduce travel times further for patients in this part of the country.

8.4 Rehabilitation and long term care facilities

The deficit of non-acute, rehabilitation, community and continuing care services needs to be addressed. Dealing with this deficiency in the care pathway would minimise inappropriate use of acute beds in both the neurosurgical units and the referring hospitals and facilitate the timely transfer of patients from acute hospitals to more appropriate facilities.

8.5 A national committee for neurosurgical services

A national committee for neurosurgical services should be established by the HSE. This committee should oversee the implementation of neurosurgical service developments and should closely monitor and audit progress to assess the degree to which the changes impact on neurosurgical services and improve the ability of the service to respond to the needs of patients requiring neurosurgical services.

This Committee should reflect the broad range of perspectives in relation to the delivery of neurosurgical services: including neuroscience and managerial staff, relevant staff in referring hospitals and the patient perspective.

Implementation of recommendations

A number of the recommendations in this report would not require significant capital investment and should be implemented immediately to bring improvements to neurosurgical services in Ireland. These include:

- A national committee for neurosurgical services should be established to oversee the implementation of neurosurgical service developments.

- An additional, second, post of consultant neurosurgeon with a special interest in paediatric neurosurgery should be appointed in Dublin.

- An additional fourth post of consultant neurosurgeon should be appointed in Cork.

- Beds, including ICU beds, should be protected for neurosurgical services in Dublin and Cork.

- Neurosurgical services should not be adversely affected by rolling theatre closures due to staff shortages.

- Existing and new consultant neurosurgeons should take responsibility for the development of educational and collegiate links with specified referring hospitals

- Uniform protocols as outlined earlier in the report in relation to the management, transfer and transport of head injured patients should be developed

The remaining recommendations should be implemented as quickly as possible.

8.6 Concluding comments

The recommendations of this report, if implemented, will facilitate the development of neurosurgical services in Ireland in line with international best practice; represent the most appropriate use of resources and most importantly, ensure the delivery of high quality, safe care to all neurosurgical patients in Ireland.

References

1. "The Report of the National Taskforce on Medical Staffing" Department of Health and Children, 2003; Teasdale and Murray 2002 "The relationship between volume and health outcomes: Report to Advisory Group to National Framework for Service Change NHS Scotland" (Feb 2005); "A National Framework for Service Change in the NHS in Scotland – Building a Health Service Fit for the Future" Scottish Executive Health Department (SEHD), May 2005

2. Centre for Reviews and Dissemination, "Concentration and choice in the provision of hospital services" University of York, 1997

3. SEHD "A National Framework for Service Change in the NHS in Scotland – Building a Health Service Fit for the Future" pg. 141

4. Society of British Neurological Surgeons, "Safe Neurosurgery 2000" SBNS, 2000

5. RCSI "The future of surgical specialties in Ireland" RCSI, 2003

6. Hardy D., "Editorial: Factors likely to affect the location and provision of future neurosurgical services in the U.K." British Journal of Neurosurgery, 2003; 17 (1): 8-14

7. In Ireland, the relevant legislation is Statutory Instrument 494 of 2004

8. SEHD "Partnership for Care: Scotland's Health White Paper" SEHD, Edinburgh 2003

9. SEHD "National Framework for Service Change in the NHS in Scotland – Neurosciences Action Team" SEHD, May 2005

10. SEHD "A National Framework for Service Change in the NHS in Scotland – Building a Health Service Fit for the Future" SEHD, May 2005

11. "Coil don't clip: ISAT of neurosurgical slipping versus endovascular coiling in 214 patients with a ruptured intracranial aneurysm: a randomised trial" The Lancet, 2002: Vol 360, No. 9342

12. RCSI "The future of surgical specialties in Ireland" RCSI, 2003

13. SEHD, "National Framework for Service Change in the NHS in Scotland – Neurosciences Action Team" SEHD, May 2005

14. SBNS, "Safe Paediatric Neurosurgery 2001" SBNS, 2001

15. Pickard JD, "Paediatric neurosurgery in the United Kingdom: reports and models for provision" British Journal of Neurosurgery 2002 16 (3) 206-207

16. SEHD, "A National Framework for Service Change in the NHS in Scotland - Building a Health Services Fit for the Future" SEHD, May 2005

17. Hardy D., "Editorial: Factors likely to affect the location and provision of future neurosurgical services in the U.K." British Journal of Neurosurgery, 2003; 17 (1): 8-14

18. SEHD, “A National Framework for Service Change in the NHS in Scotland - Building a Health Services Fit for the Future” SEHD, May 2005

19. A visiting medical officer is a doctor who works in the private sector but works on a part time basis in the public hospital

20. National Treatment Purchase Fund, “A Report on the Patient Treatment Register” NTPF, 2005

21. Email communication with the National Treatment Purchase Fund.

22. The Committee was made aware by consultants at Beaumont Hospital that following publication of the previous Comhairle report, a letter was sent in July 1992 to each health board offering to establish such a relationship but that no response was received from any health board to the correspondence.

23. SBNS, “Safe Neurosurgery 2000” SBNS, 2000

24. Central Statistics Office (Ireland) “Regional Population Statistics 2006-2021” May 2005

Bibliography

"Proposal for a neurosurgical unit at Waikato Hospital" February 2001

"Radiosurgery: a review for clinicians and commissioners" September 2002

"Recommendations for the transfer of patients with acute head injuries to neurosurgical units" The Neuroanaesthesia society of Great Britain and Ireland (date etc.)

Bennett, O Brien, Phillips & Farrell "Clinicopathologic Observation in 100 consecutive patients with fatal head injury admitted to a neurosurgical unit" IMJ Vol. 88, No. 2

Booz, Allen, Hamilton for the Department of Health, Social Services & Public Safety (Belfast) and Department of Health and Children (Dublin) "Feasibility study on a helicopter emergency medical services (HEMS) for the Island of Ireland" February 2004

Brien & Phillips JP "Head Injuries in the Republic of Ireland: A Neurosurgical Audit" IMJ Vol. 89, No. 6

British Neuropathological Society and RCP, "Standards for Neuropathological Services" 2003

Bulger et al. "Management of severe head injury: Institutional variations in care and effect on outcome" Critical Care Medicine Vol 30 No. 8 2002

Caird & Phillips "Optimal management of extradural haematoma" IMJ Vol 92 No 6

Caird, Brett & Phillips "Extradural haematoma – a preventable cause of death" IMJ Vol 92 No 2

Carroll, O'Brien, Rawluk "CT scan image transfer from peripheral hospitals to the national neurosurgical unit: audit of the first six months"

Central Statistics Office (Ireland) "Regional Population Statistics 2006-2021" May 2005

Centre for Reviews and Dissemination, "Concentration and choice in the provision of hospital services" University of York, 1997

Comhairle na nOspidéal, "Consultant Staffing" January 2004

Comhairle na nOspidéal, "Draft Report on neurosurgical services in Dublin" October 1989

Comhairle na nOspidéal, "Report of the Comhairle Group appointed to make recommendations on alterations, if any, to the "Report on neurosurgical services in Dublin" arising from its examination of the neurosurgical requirements in the west of Ireland" 1990

Comhairle na nOspidéal, "The report of the committee to review neurology and neurophysiology services" April 2003

Comhairle na nOspidéal,"Report of the Committee to assess the viability of small neurosurgical units" February 1991

Dardis, Roberts, Phillips "A cost benefit evaluation of helicopter transfers to the Beaumont Neurosurgical Unit" IMJ, March/April 2000

Department of Health and Children, “Health Strategy: Quality and Fairness, A Health System for You” 2002

Department of Health and Children, “The Report of the National Taskforce on Medical Staffing” 2003

Guidelines for the inter and intra hospital transport of critically ill patients” Critical Care Medicine (2004, Vol. 32, No. 1)

Hardy D., “Editorial: Factors likely to affect the location and provision of future neurosurgical services in the U.K.” British Journal of Neurosurgery, 2003; 17 (1): 8-14)

Havill and Sleigh, “Management and Outcome of patients with brain trauma in a tertiary referral hospital without neurosurgeons on site” Anaesthesia and Intensive Care 26 (6) 642-647 Dec 1998 (abstract)

Ingebrigtsen T. “Neurosurgery at the University Hospital of North Norway: The History of the Northernmost Neurosurgical Department in the World” unpublished at time of submission to Committee

Intensive Care Society “Guidelines for the transport of the critically ill adult” 2002

International Sub Arachnoid Aneursym Trial (ISAT) “Coil don’t clip” The Lancet Vol 360 No 9342 October 2002 (abstract)

Jamjoom, “The difference in the outcome of surgery for traumatic extradural haematoma between patients who are admitted directly to the neurosurgical unit and those referred form another hospital” Neurosurgical Review Vol. 20

Joint Standards Development Group of the Clinical Standards Committee of the British Society of Neurological Surgeons and Regional Specialised Services Commissioning Group, “Standards for patients requiring neurosurgical care” 2002

Murray GD and Teasdale GM, “The relationship between volume and health outcomes. Report of volume / outcome sub-group to Advisory Group to National Framework for Service Change NHS Scotland” February 2005

National Institute for Clinical Excellence “Head injury: Triage, assessment, investigation and early management of head injury in infants, children and adults Clinical Guideline 4” 2003

National Treatment Purchase Fund “A report on the patient treatment register” September 2005

O’Brien DP and Phillips JP “Problems of inter-hospital transfers of patients with serious head injuries” (abstract)

Pickard, JD “Paediatric Neurosurgery in the United Kingdom: reports and models for provision” Editorial BJN 2002 16(3): 206-207

Redmond, Barton, McQuillan O’Higgins “An audit of road traffic accident victims requiring admission to hospital (St. Vincent’s Hospital, Dublin)” IMJ 83 (4) 133-6, Dec 1990

Royal College of Surgeons in Ireland “Report on future of surgical specialties in Ireland” (2003/4)

Specialist Advisory Committee of the Joint Committee for Higher Surgical Training, “Report of visit to Beaumont Hospital September 2002”

Specialist Advisory Committee of the Joint Committee for Higher Surgical Training, "Report of visit to Cork University Hospital September 2002"

Scottish Executive Health Department (SEHD) "A National Framework for Service Change in the NHS in Scotland - Building a Health Services Fit for the Future" May 2005

Scottish Executive Health Department (SEHD) "Final report of Neurosciences Action Team of National Framework for Service Change in the NHS in Scotland" (May 2005)

Shaw, D. "The working time directive: the potential impact on a neurosurgical centre's medical manpower and service delivery from 2004" BJN, 2002

Snorre Sollid, Jens Munch Ellingsen, Mads Gilbert, Tor Ingebrigtsen "Pre and inter hospital transport of severely head injured patients in rural northern Norway" Journal of Neurotrauma Vol 20 No 3, 2003

Society of British Neurological Surgeons, "Report on Safe Neurosurgery 2004 Conference" June 2004

Society of British Neurological Surgeons, "Report on Safe Neurosurgery 2003 Conference" June 2003

Society of British Neurological Surgeons JWG "Report on stereotactic radiosurgery / radiotherapy" 2001.

Society of British Neurological Surgeons, "Safe Paediatric Neurosurgery 2001"

Society of British Neurological Surgeons, "Safe Neurosurgery 2000"

Society of British Neurological Surgeons, "Guidelines for the initial management of head injuries. Recommendations from the SBNS" BJN 1998 12(4) 349-352

Stocchetti et al "Intensive care management of head injured patients in Europe: a survey from the European Brain Injury Consortium" Intensive Care Medicine 2991. 27 400-406

Street, Winter, Buckley, Nicholson, Twomey, "Trauma on rural roads: the role of a peripheral hospital" Injury, Vol. 30

Sullivan, Gray & Buckley, "Extradural haematoma in the Irish Republic: an analysis of 82 cases with emphasis on 'delay'" Br.J. Surg. Vol. 77

Sullivan, Gray & Buckley, "Non-neurosurgical operative intervention in head-injured patients" BJN (1990)

Teasdale and Murray "The relationship between volume and health outcomes: Report to Advisory Group to National Framework for Service Change NHS Scotland" SEHD, 2005

Teasdale G. "Planning for the future: Provision of Neurosurgical Services in Scotland, The neurosurgical point of view. A report to the Chief Medical Officer" August 2003

Thomas B "Telemedicine in the 1990s: Issues and Opportunities" New Telecom Quarterly 1998

Trunkey, "Is a trauma care system necessary for Ireland?" Journal of the Irish Colleges of Physicians and Surgeons, Vol. 21

Wester Knut, "Decompressive Surgery for "Pure" Epidural Haematomas: Does Neurosurgical Expertise Improve the Outcome?" Neurosurgery Vol 44 No. 3 March 1999

Appendix A – List of meetings held, submissions received and visits undertaken by the Committee

Submissions were received from the following:

Beaumont Hospital, Dublin
Cork University Hospital
St. James's Hospital, Dublin
Tallaght Hospital, Dublin
A joint submission was received from the Mater and Temple Street
Midland Health Board
Mid-Western Health Board
North Western Health Board
South Eastern Health Board
Western Health Board

Representatives of the Committee visited the following hospitals where they met with management and consultant representatives:

Beaumont Hospital
Cork University Hospital
Western Health Board
Royal Victoria Hospital, Belfast
The Walton Centre for Neurology and Neurosurgery, Liverpool
Raigmore Hospital, Inverness, Scotland
Aberdeen Royal Infirmary, Scotland
The Southern General Hospital, Glasgow
The General Hospital, Townsville, Queensland
Cairns
Brisbane

The committee also met with:

Professor Graham Teasdale, Consultant Neurosurgeon, Scotland
Representatives of the Western Neurosurgery Campaign.

Appendix B – Neurosurgical Inpatient & Daycase Discharges by area of residence, 2004 *

Health service Region	Counties	Population	No of inpatient & daycase discharges Beaumont	No of inpatient & daycase discharges CUH	Total no of inpatient & daycase discharges	Ratio of inpatient & daycase discharges per population
East						
	Dublin	1,122,600	819	3	**822**	
	Kildare	163,995	108	3	**111**	
	Wicklow	114,719	78	0	**78**	
		1,401,314	1005	6	**1011**	**1: 1386**
Midlands						
	Laois	58,732	42	0	**42**	
	Longford	31,127	26	1	**27**	
	Offaly	63,702	50	2	**52**	
	Westmeath	72,027	49	0	**49**	
		225,588	167	3	**170**	**1: 1326**
Midwest						
	Clare	103,333	25	56	**81**	
	Limerick	175,529	27	135	**162**	
	Tipperary North	61,068	10	32	**42**	
		339,930	62	223	**285**	**1: 1192**
North East						
	Cavan	56,416	38	0	**38**	
	Louth	101,802	72	0	**72**	
	Meath	133,936	93	0	**93**	
	Monaghan	52,772	27	1	**28**	
		344,926	230	1	**231**	**1: 1493**
North West						
	Donegal	137,383	75	1	**76**	
	Leitrim	25,815	30	0	**30**	
	Sligo	58,178	46	0	**46**	
		221,376	151	1	**152**	**1: 1456**
Southern						
	Cork	448,181	26	885	**911**	
	Kerry	132,424	4	165	**169**	
		580,605	30	1050	**1080**	**1: 537**
South Eastern						
	Carlow	45,845	37	2	**39**	
	Kilkenny	80,421	39	10	**49**	
	Tipperary South	79,213	23	107	**130**	
	Waterford	101,518	20	83	**103**	
	Wexford	116,543	96	6	**102**	
		391,517	215	208	**423**	**1: 925**
Western						
	Galway	208,826	129	13	**142**	
	Mayo	117,428	98	3	**101**	
	Roscommon	53,803	43	1	**44**	
		380,057	270	17	**287**	**1: 1324**
Other			17	13	**30**	**-**

***** Table derived from information provided by the Casemix Unit in the Department of Health and Children. The data is derived from the Hospital Inpatient Enquiry (HIPE) data collected by the HIPE & National Perinatal Reporting System (NPRS) Unit of the Economic and Social Research Institute.

Appendix C - Central Statistics Office (Ireland) "Regional Population Statistics to 2021" *

Regional Authority Area	County	Population 2002 (000's)	Projected Population 2021 (000's)	Total projected increase (000's)	Total projected increase (000's)	Average annual projected increase (%)
Border	Cavan					
	Donegal					
	Leitrim					
	Louth					
	Monaghan					
	Sligo					
	Total	**433**	**546**	**113**	**26%**	**1.2%**
Midland	Laois					
	Longford					
	Offaly					
	Westmeath					
	Total	**225**	**296**	**71**	**31%**	**1.4%**
West	Galway City					
	Galway Co					
	Mayo					
	Roscommon					
	Total	**380**	**513**	**133**	**35%**	**1.6%**
Dublin	Dublin City					
	Dun Laoghaire Rathdown					
	Fingal					
	South Dublin					
	Total	**1123**	**1440**	**317**	**28%**	**1.3%**
Mid-East	Kildare					
	Meath					
	Wicklow					
	Total	**413**	**623**	**210**	**51%**	**2.2%**
Mid-West	Clare					
	Limerick City					
	Limerick Co					
	North Tipperary					
	Total	**340**	**410**	**70**	**21%**	**1%**
South-East	Carlow					
	Kilkenny					
	Sth Tipperary					
	Waterford City					
	Waterford County					
	Wexford					
	Total	**424**	**537**	**114**	**27%**	**1.3%**
South West	Cork City					
	Cork County					
	Kerry					
	Total	**580**	**705**	**124**	**21%**	**1%**
National	**All counties**	**3,917**	**5,070**	**1,153**	**29%**	**1.4%**

* Central Statistics Office (Ireland) "Regional Population Statistics 2006-2021" May 2005