

# Managed Service Network For Neurosurgery

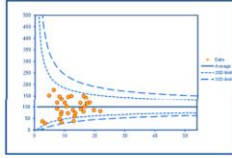
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## Projects

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### Active Projects




**Named Consultant Outcomes**

The MSN is working in collaboration with ISD to develop a case mix adjustment model for named consultant outcomes.



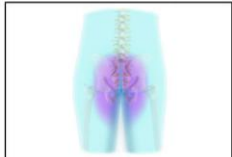
**eReferral**

The MSN is working with National Services Scotland to develop an electronic referral system that will meet the needs of the neurosurgical community and those who refer into the service.




**Clinical Audit of Paediatric Neurosurgical Activity**

The MSN is working on compiling a National Paediatric Operative Database, containing core data recorded for all children who undergo neurosurgery in Scotland.




**Cauda Equina Pathway**

The MSN has developed four national pathways in the adult service for four common conditions: subarachnoid haemorrhage, traumatic brain injury, brain tumour and cauda equina



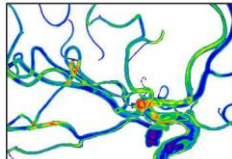
**Traumatic Brain Injury Pathway**

The MSN has developed four national pathways in the adult service for four common conditions: subarachnoid haemorrhage, traumatic brain injury, brain tumour and cauda equina




**Brain Tumour Pathway**

The MSN has developed four national pathways in the adult service for four common conditions: subarachnoid haemorrhage, traumatic brain injury, brain tumour and cauda equina




**Subarachnoid Haemorrhage Pathway**

The MSN has developed four national pathways in the adult service for four common conditions: subarachnoid haemorrhage, traumatic brain injury, brain tumour and cauda equina



**Quality Performance Indicators**

The MSN has launched two quality performance indicators: Traumatic Brain Injury and Central Nervous System Tumour



**Patient Experience Survey**

A survey was developed in order to gain insight into personal experiences of patients/carers undergoing paediatric neurosurgery in Scotland.

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## 1. Executive Summary

The annual report of the Managed Service Network for Neurosurgery (MSN) reflects progress in achieving objectives agreed for the financial year 2020/21.

The e-Referral system development was completed, the system is now operational in QEUH, the other three Boards are in the process of implementing the system. Once this is complete the system will be rolled out to all NHS Boards across Scotland.

The Consultant Database was also completed, this has been rolled out across Neurosurgery services and has been seen as a positive addition to the information available to Surgeons and Managers.

Senior personnel changes within the MSN management team afforded us the opportunity to review the work of the MSN and to ask stakeholders what they wanted to see from the MSN. Though the MSN communicated with all four Boards, there was a lack of communication between the four provider Boards. It was felt that they could be working together more closely. This has resulted in a transition period involving a restructure of the MSN with the Board taking the lead from a governance point of view and operational issues being managed by the new Inter Regional Group (IRG). The IRG will be supported by staff groups, including Nurses and AHP's. The aim of this group is to develop common practices, procedures and standards across the four units. This has not been fully implemented due to the COVID-19 pandemic which caused the cancellation of the first meeting.

One of the areas which continues to cause issues is staff recruitment and retention. It was noted that there was no clinical educator in two of the four Boards. The MSN agreed to fund 2 x 0.5 WTE posts, their role being to provide local Neurosurgery training to ward staff and additionally for the four clinical Educators to work together to develop Scotland wide training programmes and competencies. It is felt that provision of in house training will help with recruitment and training of staff, the impact of this investment will be reviewed in 12 months.

One of the main areas that continued to represent significant risk to patients was the ongoing recruitment and retention issue within the Interventional Neuroradiology service though toward the end of this period new consultant appointments were been made with individuals due to take up posts imminently. The ongoing COVID-19 situation also had a major impact though most units were able to deal with urgent cases through most of the crisis. Waiting times for all but the most urgent cases rose steeply throughout the year.

## 2. Introduction

As noted in the Executive Summary, this has been a challenging year for the MSN, as it has been across all services. However in the past 6 months plans have moved forward and new developments have been initiated, although some development require further work.

In February Dr Angus Cameron stepped down as chair of the MSN, he has been replaced by Mr Gary Jenkins, CEO NHS State Hospital Board. The appointment of Mr Jenkins afforded us the opportunity to review the work of the MSN and to refocus our priorities. A Board Workshop took place in August 2021, it was well attended and included a presentation from the Centre for Sustainable Delivery (CfSD). This helped the attendees to focus on what we need to do to recover from impact of COVID and to agree aspects of the service prior to COVID that were not optimal. It has been agreed that a Neurosurgery Recovery Plan will be developed and presented to CfSD and will include 'Quick wins' but also consider how to build for the medium and longer term.

The e-Referral system has been implemented in QEUH and is currently being rolled-out across other services within the Board. NHS Lothian are in the process of introducing it into their EDs. Nationally progress is being made with all other Health Boards. The Trauma Networks are keen to use the e-referral system as part of their processes and procedures. Implementation of the system will allow MSN to progress the launch and audit of the four national pathways: subarachnoid haemorrhage, traumatic brain injury, brain tumour and Cauda Equina syndrome.

### **Update on Interventional Neuro-radiology and Stroke Thrombectomy**

Over the last 3 years Glasgow has suffered from multiple vacancies in Interventional Neuro-radiology (INR) at consultant level that caused considerable disruption to the normal pattern of services across the central belt: Edinburgh took on a large proportion of INR work, and neurosurgical patients from Dumfries & Galloway and Forth Valley were diverted to Glasgow neurosurgery.

Glasgow successfully recruited 3 INRs in 2021, meaning that the ability to take patients from the West of Scotland with sub-arachnoid haemorrhages has been restored, along with other less common neurosurgical presentations. Patient flows that had existed before the INR crisis have been restored.

The national Thrombectomy Advisory Group developed a costed proposal for a national thrombectomy service which was agreed, and funded, by Scottish Government in early summer 2020. There are plans for three thrombectomy centres (hubs) - Glasgow, Edinburgh and Dundee - all accepting referrals from spoke hospitals after CTA has shown large vessel occlusion suitable for thrombectomy.

Thrombectomy is a time-critical intervention: As a result there are plans in place for all 3 thrombectomy centres to have an additional bi-planar angiography suite so that there will be no delay in the interventions due to patients already undergoing interventions in the existing suites. In addition, there are plans to recruit staff to the 3 centres to ensure a first class service: This will include an increased number of INRs in the central belt (total of 5 each in Glasgow and Edinburgh), along with expansion of neuro-anaesthetists, radiologists, radiographers, theatre nurses, and ward staffing in the hyper-acute stroke units. The service in Dundee will be provided by interventional radiologists who have undergone training in thrombectomy, and who will be supervised by a locally appointed INR.

It is anticipated that patients will spend less than 48 hours in thrombectomy centres before being repatriated to the spoke hospital. Though this work does not fall directly under the care of neurosurgeons, it presents an opportunity to upscale INR services, further stabilising what was a longstanding concern.

A significant investment has gone to the Scottish Ambulance Service, along with investment in improved 24/7 CT scanning, and an Artificial Intelligence package that will assess the presence of large vessel occlusion, and analyse perfusion studies – both within 5 minutes of the CT/CTA being performed

There are approximately 9,000 strokes per year in Scotland, of whom around 900 will be suitable for thrombectomy. Initially the services will run on restricted hours, and gradually build to accepting referrals from all stroke receiving hospitals on a 24/7 basis. The fact that only 2 – 3 patients will be operated on each day across all 3 centres will mean that there is excess capacity which it is hoped, will provide support to neurosurgical services across Scotland.

Dundee has been accepting patients who present to Ninewells A&E on a pilot basis since October 2020, and has now extended the pilot to patients from Aberdeen. They anticipate further expansion in the service early in 2022. Glasgow will be starting a service for patients presenting to QEUH between 8am and 4pm later this year – with rapid roll out after that. They aim to complete development of a second angio suite in April 2022, meaning that they will develop full capacity shortly after that. Edinburgh started

a similar pilot scheme in September 2021 and hopes to roll out a full service after completion of the second angio suite which will be in summer 2022.

The full funding of an ambitious high quality thrombectomy service for the whole of Scotland should improve stroke morbidity significantly, as well as ensuring that there is a stabilised and sustainable INR service across Scotland.

There have been 6 neurosurgical cases referred to the Scottish Public Services Ombudsman (SPSO).

This annual report details the achievements of the MSN for Neurosurgery during 2020/21 and identifies objectives for 2021/22 and further.

### **3. Vision of the MSN for Neurosurgery**

The 'vision' of the MSN for Neurosurgery is to continue to work towards a single neurosurgical service achieved through facilitated collaboration between the four centres in Scotland to ensure the delivery of a safe and sustainable national service for adults and children in Scotland.

### **4. Report against Main Objectives for 2020/21**

All of the objectives for 20/21 were delayed due to COVID-19, however some progress has been made against some of the objectives:

- **E-Referral**

The E-referral system is installed and is being used in QEUH with some success, allowing on call staff to prioritise and manage referral more appropriately. It is being rolled out to other ED's across NHS GG&C.

NHS Lothian are in the process of implementing the system.

There have been issues with using the system in NHS Tayside and Grampian, mainly due to size of units and current processes between ED and Neurosurgery. Discussions are now ongoing between services to take forward implementation of the system.

In recent months there have been some positive developments. The West of Scotland Trauma Network are very keen to use the system within their NHS Boards; NHS GG&C, A&A, D&G, Lanarkshire.

NHS GG&C kindly hosted a national demonstration of the system, which was attended by ED, E-Health and Trauma Network representatives from all NHS Boards. The system was well received the MSN will follow up on progress.

- **Develop the Neurosurgical Research Collaborative and increase participation in neurosurgical research**

Unfortunately there has been no progress in the past year, however there is a plan in place to re-launch the Neurosurgical Research Collaborative at the Inter Regional Group meeting in October 2021. As previously agreed the Clinical Co-ordinator will use part of her working week to support research projects. The Audit Facilitators will continue to support any research work undertaken

It remains the intention to grow the research portfolio and the NRC is committed to operating an infrastructure funded from a variety of resources such as commercial and grant funded research. It is still the intention to base this on the successful EMERGE (Emergency Medicine Research Group Edinburgh) model detailed in a previous annual report.

Our Audit Facilitators will continue to actively engage in supporting research projects and consideration will be given to any application for support on an individual basis dependant on current availability of resources.

- **Launch and report on the four pathways: SAH, TBI, Brain Tumour and Cauda Equina**  
An audit of the Cauda Equina pathway has taken place, this showed that there continues to be a high number of inappropriate referrals to Neurosurgery for this condition. It has been agreed that the pathway be reviewed and clarified as necessary, it will then be relaunched and audited. This relaunch is supported by an adaptation of the eReferral proforma for spinal referrals in GG&C.

The other pathways need to be audited.

- **Improve patient involvement via Voices groups**  
The Audit Facilitators have all been trained in managing *Voices* groups. The issue has been taken to the Inter Regional Group where staff with an interest in this work are being recruited to take it forward along with the Clinical Co-Ordinator and Audit Facilitators.

The following additional objectives were suggested and agreed appropriate by the Board for the coming year:

It was also agreed that the following additional objectives would be taken forward

- Either: Develop a 5<sup>th</sup> condition specific pathway for hydrocephalus including shunt malfunction for adults and children or develop a Scottish national shunt registry.  
*It was agreed through the Inter Regional group that a pathway be developed by the PAG.*
- Work with registrars to audit the high volume of out of hours referrals  
*This links in with the use of the e-referral system and will be carried forward to 2021-22, and be reviewed once we have data from e-Referral.*

## 6.2 Further Objectives

The following objectives were agreed following the Network Manager asking staff for objectives which were important to them, their patients and the services, there has been some progress against these objectives;

- **Develop networks for staff groups**  
As previously noted in Annual Report for 2019/20 following staff consultation it became apparent that there was a lack of communication between the four Boards, with staff not knowing who their counterparts were. There was no consistency in Policies and Procedures and there was a lack of formal and consistent training across the boards.

From this feedback it was agreed that the structure of the MSN be reviewed and amended to try to meet these needs. The Board will become a Strategic Board, overseeing the work of the MSN, membership has been amended to reflect these changes.

An Inter-Regional Group (IRG) has been formed, the role of this group is to look at operational issues across Neurosurgery in Scotland and work together to resolve issue and to develop the service. Membership of this group consists of Clinical Leads, Service Managers, Nurse Managers, AHP Manager, Clinical Educators, Audit Facilitators and representation from Trainees.

It is envisaged that this structure will help to build closer working relations across the four Boards, develop national standards and training programmes and promote cross Board working.

Meetings of the group have taken place, work streams have been prioritised, and these include:

- **Review current Standards for Neurosurgery**  
Work will continue looking at Standards for Neurosurgery, consideration is being given to use of GIRFT standards. The IRG will form a SLWG to agree the final standards. Once this is

completed a programme of rolling audits will be developed which will be carried out over a 3 year period, reviewed, amended and repeated.

- **Develop further pathways**  
To be agreed and carried forward to 2021-22
- **Review/ develop rehabilitation services**  
This work is under the remit of the Inter Regional, initially it will be looked at through the VOICES Group and in conjunction with SANON.

It has also been agreed that the MSN will support work to develop Rehabilitation Standards for Neurosurgery patients.

The MSN has been funding 2 x 0.5 WTE Educators for NHS Grampian and Tayside. Although appointment to NHS Grampian was delayed, this has been seen as a valuable and successful initiative. The Educator in NHS Tayside is due to retire at the end of 2021, the role has been seen as such a benefit to the service that Neurosurgery and Neurology services are looking to appoint a joint educator.

The four clinical educators will continue to work together to develop Scotland wide training, guidance and competences for Neurosurgery.

Including the objectives above, a rolling improvement plan will be developed in conjunction with the IRG and this will be implemented over the next 2-3 years, thus allowing adequate time for developments and for the objectives to be prioritised.

A Nurses Group and AHP group are being established, outputs from these groups will feed into the IRG.

#### *4.1 Building resources -*

##### *Clinical Co-ordinator*

Janet Gilchrist the MSN Clinical Co-ordinator retired at the beginning of 2021, she has been replaced by Denise Pentland who will continue to support the MSN and Audit Facilitators.

##### *Audit Facilitators (AFs)*

The Audit Facilitators will continue to support all clinical staff and managers with data collection and administrative duties, they will also develop a rolling programme of audits in line with the GIRFT standards which will be undertaken over a 3 year period.

#### *4.2 MSN Website*

Between 1st April 2020 and 31st March 2021 there was a total of 16,336 page views of the MSN website. The top two pages most frequently viewed continue to be the 'Physiotherapy after Lumbar Surgery' and 'Info for Patients' pages, which accounted for 19.53% and 11.69% of views respectively. Patients appear to be a key demographic in our website users and in the year ahead we plan to build on the patient area of the website in line with re-establishing our Patient Voices Group.

During 2020-21, the hosting of the MSN website moved from the Public Health Scotland team to Scottish Health on the Web (SHOW). Initial discussions with the SHOW team indicate that the MSN will be able to take responsibility for updating the site directly. This will allow the MSN team to have a greater level of control over the site and will streamline the process for making updates.

## **5. Challenges**

Each of the Boards faces a number of challenges although most of them are common across all Boards, they include;

- COVID-19 Recovery

- Long waits
- Staffing issues
- Reduced theatre capacity
- Rehabilitation Services
- Middle Grade and Junior Doctor rota

## 6. Work Plan for 2021– 2022

The MSN Board agreed that the following objectives will be carried forward to 2020/21:

- **COVID-19 Recovery**

The MSN held a workshop with Board and IRG members to look at the issues which continue to cause pressures on Neurosurgery services. The meeting was attended by representatives from the Centre for Sustainable Delivery (CfSD), who presented on some of the issues being looked at nationally and how the CfSD could support Neurosurgery services. Following the event the attendees discussed the main issues affecting services and considered what Boards were doing locally,

Neurosurgical services across NHS Scotland are aware that all specialities are challenged at the moment, however the delayed treatment of patients with neurosurgical issues can lead to long term harm for these patients resulting in them requiring ongoing care, adding to societal burden. The services have asked for access to the Golden Jubilee National Hospital to help reduce waiting times, specifically for spinal surgical cases, to date access has not been granted.

The following are the areas which are causing most concern currently across the 4 Neurosurgical services:

1. **Waiting Times** – Across the 4 centres, waiting times for both inpatient/day case (TTG) and new outpatient appointments are notably high, and well in excess of the specific 12 week access standards set by Scottish Government. Although all Neurosurgery services have worked hard to reduce waiting lists, utilising both additional waiting list initiatives (WLI's) and private sector capacity, the COVID-19 pandemic has resulted in longer waits for patients. In NHS GGC in particular, waits for spinal surgery have increased from 1 to 2+ years. Across Scotland, outpatient appointment waits for new patients are also around 2 years in some Boards, for routine appointments. It is imperative that waits are reduced to improve access and reduce harm to patients. While all 4 Boards are looking at how these waits can be reduced, further assistance is required both to reduce the number of patients currently waiting and also to redesign services to improve longer term sustainability.

Some specific areas of focus are:

- In order to reduce waiting lists it is felt that support is required nationally for this to progress, such as access to the Golden Jubilee National Hospital, as part of a targeted approach to bringing down the waiting times across all centres.
- Utilise expertise developed in the roll out of Active Clinical Referral Triage (ACRT) across other specialties, and development of clear and agreed national triage criteria for Neurosurgery across Scotland.
- Likewise, redesign access for follow up (return) patients by implementing across all centres the Patient Initiated Review (PIR) methodology.
- Investigate feasibility of day or 23 hour surgery services for specific neurosurgical procedures, such as some spinal surgeries or nerve root blocks.

2. **Maximising Theatre Capacity** - there are currently issues with maximising theatre capacity and with lists being cancelled at short notice due to nursing and anaesthetist staffing issues across all centres. The ongoing challenges with beds and ward nurse staffing are also impacting on theatres, leading to theatre nurses in some cases being utilised to make ward areas safe, thus impacting on theatre lists.

- The MSN would like to be included in any national recruitment drives being carried out by NHS Scotland.
- In order to maximise local resources NHS Grampian are currently training existing theatre staff to become Band 4 Scrub Practitioners, the information relating to this has been shared with other Neurosurgery services. However, a clear national approach to this development is required across all health boards to develop this model for NHS Scotland.
- Staffing is a problem which has been exacerbated by the recent cancellation of ODP training course. It would be helpful if consideration could be given to increasing the number of ODP training sessions which would allow more staff to be trained.
- There is a clear need for benchmarking and analysis of theatre utilisation across the 4 neurosurgical centres. The MSN for Neurosurgery will be looking at theatre turnaround times and best practice in this area.
- As a MSN we are planning on looking at fallow theatre sessions within each host Board area, and how they can be utilised for neurosurgical cases. However, staffing these session would be an issue both from anaesthetic and nursing, in particular.

**3. Provision of Rehabilitation** - it is agreed that there are inequalities in access to Rehabilitation services, resulting in delayed discharge and patients receiving varying standards of rehabilitation. There are also a high number of vacancies in Rehabilitation services in some NHS Boards.

- AHP staffing is an issue in Neurosciences and it is felt that there is a lack of opportunity for progression for this staff group;
- Staffing was increased in some units during the pandemic, this resulted in a perceived reduction in length of stay, data to be reviewed
- Although there have been developments in Neurosurgery services there has been no change in AHP staffing levels
- With funding being put into Scottish Trauma Network it has become apparent that there is a two tier service for Neurosurgery patients with those admitted via the Trauma route receiving more rehabilitation sessions than other patients.

As most Boards' rehabilitation services are not provided under the same management structure as Neurosurgery it is difficult to directly influence the service. With this in mind a decision has been taken that the MSN for Neurosurgery will work with teams to develop Rehabilitation Standards for Neurosurgery patients, this will then be shared with rehabilitation providers.

The three areas highlighted above are causes of concern and the MSN has asked for support and guidance from CfSD in progressing national strategies to make sustainable improvements in these areas.

- **E-Referral**

Implement across all Health Boards.

- **Develop the Neurosurgical Research Collaborative and increase participation in neurosurgical research**

Grow the research portfolio, the NRC is committed to operating an infrastructure funded from a variety of resources such as commercial and grant funded research. It is still the intention to base this on the successful EMERGE (Emergency Medicine Research Group Edinburgh) model detailed in a previous annual report.

Our Audit Facilitators will continue to actively engage in supporting research projects and consideration will be given to any application for support on an individual basis dependant on current availability of resources. Encouragement has been given to all groups of staff to undertake research/ audit projects.

- **Launch and report on the four pathways: SAH, TBI, Brain Tumour and Cauda Equina**  
All pathways have been launched, the Audit Facilitators have audited against the Cauda Equina Pathway. The audit showed that the Pathway was not being followed appropriately by service users. The Pathway is being reviewed by IRG, and will be reissued following any amendments required, a further audit will be carried out in 6-12 months.  
The remaining pathways will be audited once the E-Referral System is fully implemented.
- **Inter-Regional Group**  
The IRG will continue to meet on a 3 monthly basis and take forward issues arising including the following over 2021-22;
  - **Voices groups**  
Work with the Audit Facilitators, Inter Regional Group and SANON to develop a national Voices group, looking at specific issues such as rehabilitation services.
  - **Review of Neurosurgery Standards**
  - **Review Cauda Equina Pathway**
  - **Management of patients with tracheostomies**

Neurosurgery Recovery Plan will be developed and presented to CfSD this will include 'Quick wins'.

## 7 Network Governance

The governance of the MSN for Neurosurgery sits under the oversight of the National Planning Board.

- The MSN will continue to be subject to the three yearly review process when it will be asked to demonstrate that the MSN model remains fit for purpose, are delivering good outcomes for patients across Scotland, and to share evidence that clinically effective services benchmark well against UK comparators. The next review is due in 2022.
- The annual MSN work plan will be shared widely, including with National Planning at the start of each financial year. Written updates on progress against plan to be a standing agenda item at MSN Board meetings.
- The MSN will produce an annual report that includes an assessment of how it has delivered the annual work plan. The annual report will be shared with National Planning Board for comment. The annual report and subsequent comments will then be shared with the Chief Medical Officer who will meet with MSN Chair, Clinical Lead and Network Manager annually to discuss performance thus allowing for professional clinical assessment of progress.

## Appendix 1 Board membership in 2019

Board membership is currently under review as per restructure of MSN

	Name	Title	Board
1	Mr Gary Jenkins	Chairman, MSN for Neurosurgery	
2	Miss Jennifer Brown	National Clinical Director	NHS GG&C
3	Miss Lynda McKie	National Network Manager, MSN	
4	Mr Jothy Kandasamy	Consultant Neurosurgeon, Clinical Lead	NHS Lothian
5	Mr Chris Barrett	Consultant Neurosurgeon, Clinical Lead	NHS GG&C
6	Mr Peter Bodkin	Consultant Neurosurgeon, Clinical Lead	NHS Grampian
7	Mr David Bennett	Consultant Neurosurgeon, Clinical Lead	NHS Tayside
8	CEO Representative	Craig Broadfoot	NHS GG&C
10	CEO Representative	Adam Duncan-Rusk	NHS Lothian
11	CEO Representative	Sean Berryman	NHS Grampian
12	CEO Representative	Wendy Croll	NHS Tayside
13	Ms Sarah Griffiths	Head of National Planning Team, Scottish Government Health Directorate	
14	Mr Patrick Statham	Chairman, Scottish Neuroscience Council	NHS Lothian
15	Ms Laura Daniell	Chair, Allied Health Professionals Reference Group	NHS Lothian
16	Mr Andy Wynd	Chief Executive Officer, Spina Bifida Hydrocephalus Scotland	Third Sector
17	Ms Tanith Muller	Parliamentary and Campaigns Manager, Parkinson's UK	Third Sector
18	Dr John Greene	Consultant, Neurology, National Representative	NHS GG&C
19	Dr David Gillespie	Consultant, Neuropsychology, National Representative	NHS Lothian
20	Mr Callan Mathieson	Scottish Training Programme Director	NHS GG&C
21	Miss Julie Woodfield	Trainee Representative	NHS Lothian
22	Mr Paul Bachoo	Medical Director, Acute Services	NHS Grampian
23	Mrs Wendy Croll	Clinical Care Group Manager, Specialist Services	NHS Tayside
24	Dr Caroline Whitworth	Medical Director, Acute Services	NHS Lothian
25	Dr Graham Foster	Director of Public Health & Strategic Planning	NHS Forth Valley

## Appendix 2 Finance

### MSN Budget for 2021/22

<b>Salaries and Wages</b>	£
Network Manager (based on current)	59,466
Clinical Co-ordinator (0.8 WTE)	40,196
Project Support Officer (1.0 WTE band 4)	30,888
Clinical Director EPA	13,900
NHS Grampian Audit Facilitator (0.5 WTE band 5)	16,224
NHS Tayside Audit Facilitator (0.5 WTE band 5)	20,280
NHS Lothian Audit Facilitator (1.0 WTE band 5)	32,100
NHS GG&C Audit Facilitator (0.67 WTE band 5)	27,456
Neurosurgery Educator (2 x 0.5 WTE Band 7, 8 months and 12 months)	29,094
<b>Salaries and EPA Sub-Total</b>	<b>269,604</b>
<b>Supplies and Services</b>	
Payment to External Organisations	19,800
Travel & Subsistence (mileage/expenses/trains/ hotels)	4,000
Training	2,500
Printing & Stationary (includes Lothian re-charge)	1,000
Postage Carriage and Phones	200
Miscellaneous (includes national meeting venues)	3,000
General Services (includes catering)	1,000
<b>Supplies and Services Sub-Total</b>	<b>31,500</b>
<b>Total</b>	<b>301,104</b>

### MSN Budget for 2020/21

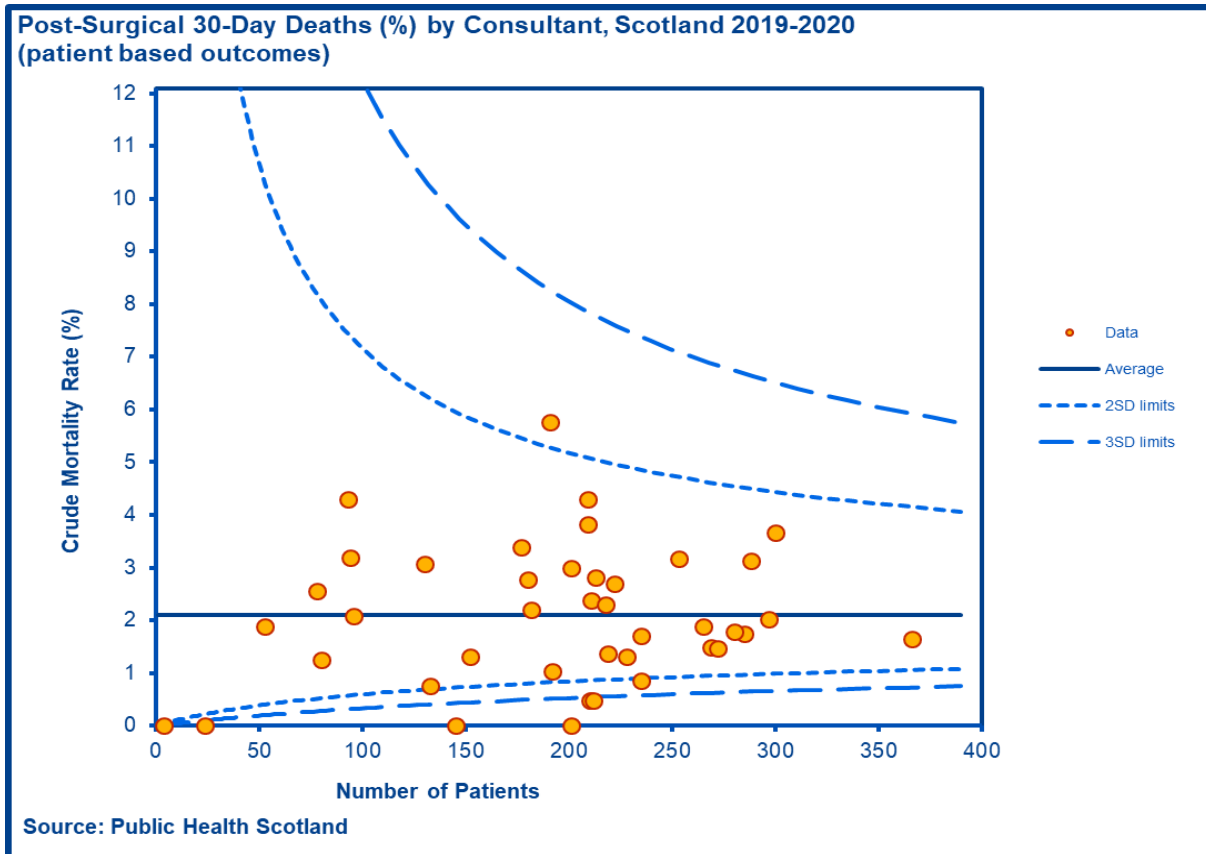
#### MSN Neurosurgery Month 12

	<b>Budget Received</b>	<b>Actuals</b>	<b>Variance</b>
<b>Pays</b>	86,177	86,179	-2
<b>Non Pays</b>	201,613	202,091	-478
<b>Total Spend</b>	<b>287,790</b>	<b>288,270</b>	<b>-480</b>

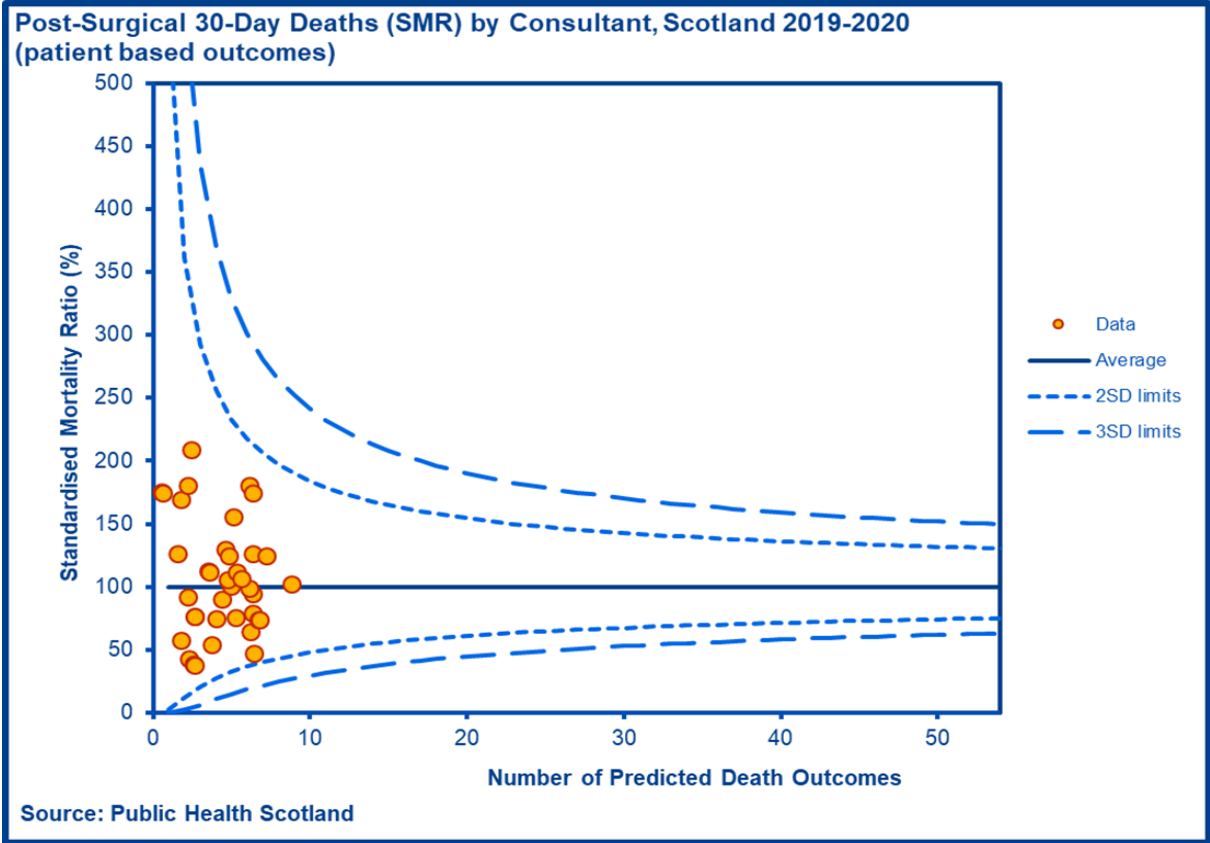
### Appendix 3 Consultant Mortality Data Deaths Within 30-days of Last Procedure (2019-2020)

The rolling audit of consultant mortality ARCO is now well established and continues to reassure that no individual consultant is an outlier. The audit programme was designed to examine each consultant's mortality against the mortality predicted by the case mix in their practice. The four units vary somewhat in case mix and geography and work to determine whether this data set can be aggregated to compare mortality at unit level is underway. In NHS England's National Neurosurgical Audit mortality is reported by consultant for elective cases and by unit for emergency work. We plan to benchmark against this data set so the question is of importance.

#### Crude Mortality Rate (%)



### Standardised Mortality Ratio (SMR) (2019-2020)



## Appendix 4 CAPNA Data, (Clinical Audit of Paediatric Neurosurgical Activity), All Centres 2018/20

Region	Year	# Surgeries	Category 1	Category 2	Category 3	Transfers Out	In Patient Deaths
Tayside	2018	5	3	3	0	14	0
	2019	10	6	4	0	3	0
	2020	4	3	1	0	11	0
Grampian	2018	18	8	10	0	15	0
	2019	16	14	2	0	9	0
	2020	6	6	0	0	0	0
Lothian	2018	212	9	46	157	1	3
	2019	172	67	32	73	0	0
	2020	188	1	13	174	0	0
GG&C	2018	298	59	24	215	0	2
	2019	306	69	29	208	0	0
	2020	276	25	21	230	0	0

### Categories of Surgery

#### Category 1

All four units should be able to provide care for paediatric patients requiring emergent neurosurgical intervention. This should be provided by any on-call neurosurgical consultant with or without an interest in paediatric neurosurgery and would include any case where there is significant life-threatening risk of deterioration such that transfer to a dedicated paediatric neurosurgical unit would be unsafe.

Patients requiring paediatric intensive care following emergency surgery will be referred to the neurosurgical and critical care teams in either NHS Lothian or NHS GG&C.

Interventions would include:

- Immediate surgical management of life-threatening acutely raised ICP from an expanding haematoma or acute hydrocephalus from shunt malfunction

#### Category 2

The units in NHS Grampian and NHS Tayside should provide elective or urgent surgery by a neurosurgeon with a paediatric interest which is an extension of established adult practice.

The conditions treated and surgery itself cannot rely on the availability of 24/7 paediatric neurosurgery or ventilation in PICU but may involve observation in the local HDU.

In all situations, consideration should be given to option of pre-operative transfer to NHS Lothian or NHS GG&C if required

Interventions could include:

- management of myelomeningocele (consideration should be given to option of pre-operative transfer to NHS Lothian or NHS GG&C particularly in-view of the specialised discussion regarding in-utero closure and parent choice)
- baclofen pumps in teenagers (NHS Tayside)

- Chiari malformation in teenage patients without syrinx, scoliosis, spinal dysraphism, hydrocephalus or other associated pathology
- vagal nerve stimulation (VNS) in teenagers (NHS Tayside)
- de novo Ventriculoperitoneal shunt insertion in non-complex hydrocephalus (consideration should be given to option of pre-operative transfer to NHS Lothian or NHS GG&C if required)
- repair of depressed skull fracture in a stable teenage patient
- endoscopic third ventriculostomy in teenage non-complex hydrocephalus (consideration should be given to option of pre-operative transfer to NHS Lothian or NHS GG&C if required)

### **Category 3**

There are cases that should always be referred to specialist services in NHS GG&C or NHS Lothian.

Interventions would include:

- neonatal intraventricular haemorrhage (IVH) management
- neuro-oncology cranial and spinal cases up to the age of 16
- vascular cases
- craniofacial and craniosynostosis surgery including growing skull fracture
- intervention for congenital malformations
- epilepsy surgery
- selective dorsal rhizotomy
- complex dysraphic syndromes with tethering
- rare complex patients such as Morquio syndrome, NF2, etc.
- the complex hydrocephalus patients (may flit between categories 1, 2 and 3 depending on their presentation)
- complex anomalies at the craniocervical junction
- spinal trauma cases requiring operative consideration
- lumbar disc herniation in patients aged under 16

## Appendix 5 Work Plan Summary 2021/22

	Objective	Status (RAG)	Actions	Timeline
1	E-Referral		<ul style="list-style-type: none"> <li>• System implemented in QEUH being rolled out across NHS GG&amp;C</li> <li>• In NHS GG&amp;C other specialties are adopting the system</li> <li>• NHS Lothian, rolling out</li> <li>• NHS Grampian and Tayside in discussion with ED</li> <li>• Interest from Trauma Networks in rolling out system across all Boards.</li> </ul>	Complete by April 2022
2	Promote Research Collaborative		<ul style="list-style-type: none"> <li>• To be relaunched at IRG meeting Nov 2021</li> </ul>	No completion date, as continuously ongoing
3	Establish VOICES Group		<ul style="list-style-type: none"> <li>• Volunteers with interest in VOICES asked to establish working group to take forward.</li> <li>• Link with SABIN</li> <li>• Look at virtual meetings</li> </ul>	First meeting by April 2022
4	Develop standards for Rehabilitation		<ul style="list-style-type: none"> <li>• Working Group to be set up</li> </ul>	June 2022
5	CAPNA		<ul style="list-style-type: none"> <li>• Format agreed</li> </ul>	No completion date, as continuously ongoing

Objective		Status (RAG)	Actions	Timeline
6	Shunt Registry		<ul style="list-style-type: none"> <li>To be completed by PAG</li> </ul>	Complete by April 2022
7	Review Neurosurgery Standards		<ul style="list-style-type: none"> <li>GIRFT standards have been reviewed to assess appropriateness to Neurosurgery in Scotland</li> <li>SLWG to be established to review and agree standards for Neurosurgery in Scotland</li> <li>Audits to be established to measure each standard</li> <li>3 yearly audit cycle to be established</li> <li>Review at end of 3 years</li> </ul>	Complete by June 2022
8	Develop Staff Networks		<ul style="list-style-type: none"> <li>Nurses and AHP networks established</li> <li>IRG established, subgroups will be developed on an ad hoc basis</li> </ul>	No completion date as continuously ongoing
9	Develop further pathways		Pathways for development will be identified through the IRG.	Ongoing