

Using Outcomes Information for Revalidation in Neurosurgery

December 2013

The Colleges and Surgical Specialty Associations believe that data on surgical outcomes is an important element of demonstrating that a surgeon meets the required standards of professionalism and practice. This framework provides guidance to surgeons working in neurosurgery to help them produce relevant outcomes data for appraisal and revalidation.

Any queries relating to this framework should be addressed to revalidation@rcseng.ac.uk.

Section 1: Introduction and Explanation

Background

Revalidation is the new approach to the regulation of doctors, it commenced in December 2012. The process is centred on local annual appraisal. All doctors will need to be revalidated every 5 years in order to retain their licence to practise.

The Surgical Specialty Associations and Surgical Royal Colleges have developed the standards for surgical revalidation and specified the supporting information that neurosurgeons will need to provide to their appraiser to facilitate a positive assurance of their fitness to practice and, at the end of the 5 year cycle, a recommendation for revalidation to the GMC. An important component of the supporting information required for revalidation is that relating to outcomes.

An important landmark in relation to transparency and openness in the NHS was achieved in 2013 with the publication of surgeon-level data from nine surgical audits. We see national clinical audit as the “gold standard” in relation to collection of data and measurement of outcome. We fully support the continuation and expansion of NHS England’s programme of data transparency.

The Society of British Neurological Surgeons has defined the following measures for surgeons working within the specialty. Surgeons will only need to demonstrate their outcomes in their area(s) of practice. There is no requirement for neurosurgeons to undertake common ‘index procedures’.

You should note the following points:

National Clinical Audit

- Where there are identified national clinical audit(s) that cover your area(s) of practice, it is essential that you participate. This will be mandatory for revalidation.
- If there is a national clinical audit that falls within NHS England’s programme of consultant-level outcomes publication, your results will be made available publically.
- Your employer will need to facilitate the submission of data to the audit(s).
- It will be your responsibility to gather the relevant information from the audit (eg. reports/downloads) to present at appraisal.

Routinely Collected Data (HES, PEDW, HIS, ISD)

- These data are already collected by your NHS organisation and brought together on a national basis.
- We have identified key procedures in each sub-specialty area which should cover the majority of surgeons' practice.
- We have identified what should be measured and how.
- We expect that analyses of these data will be provided by your employer.
- Wherever possible your individual outcomes should be presented alongside all other surgeons in the country performing that procedure(s) (eg. in a funnel plot).
- We have identified the process of further investigation if it appears from these analyses that your outcomes are outside accepted norms (see below).

Local Audit

- Where your area of practice is not appropriately covered by a national audit or where routinely collected data will not assist in measuring outcomes, we recommend some form of local audit.
- This may be conducted by you personally, or form part of a wider unit/region-based audit.
- It will be your responsibility to conduct/participate in the audit and present the results at appraisal.
- Where you are obliged to undertake local audit, you are advised to audit a practice or procedure that is representative of your practice both in the NHS and in the private sector. The subject should be something that you undertake on a routine basis.

Structured Peer Review (of outcomes)

- For some highly specialised/low volume areas of practice which cannot be appropriately measured using the above methods, it may be necessary to have some form of structured peer review. Where this is identified as necessary, we will work with the relevant specialties to identify the methodology required so that the peer review process is fit for purpose for revalidation.

Managing Outliers

- Analysis of your outcomes provides one piece of the supporting information required for revalidation.
- If it appears that your outcomes are outside of the accepted norm, this should trigger a local investigation that closely examines the data for anomalies, looks at the environment and structure of the team/unit and your case mix before considering you as an individual (see diagram 1).
- We will be able to assist in the early stages of such an investigation.

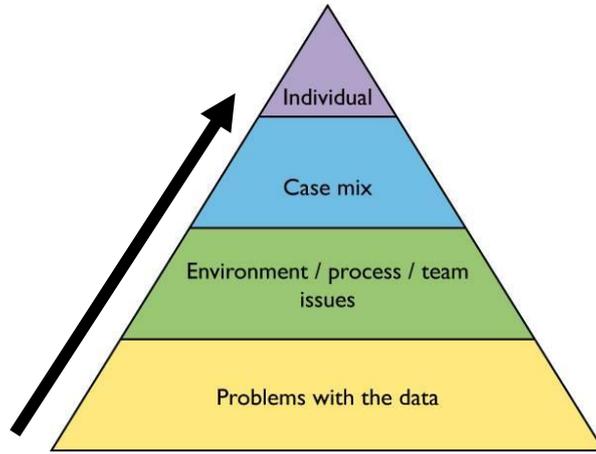


Diagram 1

Section 2: Measuring Outcomes

[2.1 General Neurosurgery](#)

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[2.2.1 Paediatric Neurosurgery](#)

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2.1 General Neurosurgery

All neurosurgeons will perform some operations in the categories given below. The procedures should be grouped together (ie. all cranial procedures and all spinal procedures). The resulting analyses should provide a broad picture of a surgeon's practice. At appraisal, the previous year's performance should be examined, however, to be meaningful, it will be necessary to view performance over a rolling three year period.

Key Procedures	OPCS Codes	Source of Measurement	Measurement Criteria	Method of Presentation at Appraisal
All Cranial operation (Includes all intrinsic lesions, intracranial pituitary and pineal, cranial nerve, meninges and sub/extra dural ops)	A01 - A10 A29 - A42 B01.4 B06	Routinely Collected Data (HES, PEDW, ISD, HIS)	<ul style="list-style-type: none"> • 30 day mortality • 28 day re-operation (unplanned) • 28 day readmission (unplanned) • Length of Stay • Discharge Destination [Separate analyses for method of admission (emergency/ elective)]	Comparison to all other surgeons in the country performing these procedures (eg. funnel plot)
All spinal ops	V22 - V47 A44 - A51			

1. Also select your top two (or three) most common procedures performed and have performance analysed using routinely collected data as indicated above (as with the above an analysis of the previous 12 months should be presented at appraisal alongside an analysis depicting the previous rolling three years);
2. In addition, submission of data to national audits such as the UK Shunt Registry and TARN will be mandatory for revalidation. Neurosurgeons will need to demonstrate their participation/outcomes at appraisal.

2.2 Subspecialty Neurosurgery

Neurosurgeons should also select two (or three) procedures to reflect their sub-specialty practice, either from any of the following sub-specialty areas or from the list of OPCS codes at the end of this document and then either:

- Participate in the relevant national clinical audit/registry and demonstrate this at appraisal; or
- If no national audit/registry is available, conduct a local audit into their practice [at least one over a 5 year revalidation cycle]

2.2.1 Paediatric Neurosurgery (Age <16yrs)

1. Neurosurgeons should select their most common procedures from this sub-specialty area. At appraisal, the previous year's performance should be examined, however, to be meaningful, it will be necessary to view performance over a rolling three year period

Key Procedures	OPCS Codes	Source of Measurement	Measurement Criteria	Method of Presentation at Appraisal
Hydrocephalus				
VP shunt creation	A12.4	Routinely Collected Data (HES, PEDW, ISD, HIS)	<ul style="list-style-type: none"> • 30 day mortality • 28 day re-operation (unplanned) • 28 day readmission (unplanned) • Length of Stay [Separate analyses for method of admission (emergency/ elective)]	Comparison to all other surgeons in the country performing these procedures (eg. funnel plot)
Revision	A13-14			
ETV	A17.8			
Tumours	A02 B06			
Functional				
Epilepsy	A01			
Pain /spasticity	A48.3 A54.3			
Craniofacial	V01.3 V04			
Spinal dysraphic	A49			

2. In addition, surgeons undertaking paediatric neurosurgery will need to participate in the Paediatric Activity Audit and the NCG Craniofacial Audit. This will be mandatory for revalidation. Neurosurgeons will need to demonstrate their participation/outcomes at appraisal.

2.2.2 Spine

1. Neurosurgeons should select their most common procedures from this sub-specialty area. At appraisal, the previous year's performance should be examined, however, to be meaningful, it will be necessary to view performance over a rolling three year period

Key Procedures	OPCS Codes	Source of Measurement	Measurement Criteria	Method of Presentation at Appraisal
Simple lumbar	V25 V33 (excl V33.3 - V33.6)	Routinely Collected Data (HES, PEDW, ISD, HIS)	<ul style="list-style-type: none"> • 30 day mortality • 28 day re-operation (unplanned) • 28 day readmission (unplanned) • Length of Stay • Discharge Destination [Separate analyses for method of admission (emergency/ elective)]	Comparison to all other surgeons in the country performing these procedures (eg. funnel plot)
Simple cervical	V22.3 V29.4 - V29.9			
Complex				
Prosthetic discs	V36			
Anterior lumbar Instrumented	V33.3 - V33.6 V37 - V46			
Intradural	A51 A44 A45 A48			

2. In addition, surgeons undertaking spinal surgery, should be participating in a national or international registry of activity and outcome such as Europe's Spine Tango

2.2.3 Neurovascular

1. Neurosurgeons should select their most common procedures from this sub-specialty area. Outcomes of both surgical and interventional treatment are necessary to reflect overall outcome of subarachnoid haemorrhage management. At appraisal, the previous year's performance should be examined, however, to be meaningful, it will be necessary to view performance over a rolling three year period

Key Procedures	OPCS Codes	Source of Measurement	Measurement Criteria	Method of Presentation at Appraisal
Primary intracerebral haematomas	A05	Routinely Collected Data (HES, PEDW, ISD, HIS)	<ul style="list-style-type: none"> • 30 day mortality • 28 day re-operation (unplanned) • 28 day readmission (unplanned) • Length of Stay • Discharge Destination 	Comparison to all other surgeons in the country performing these procedures (eg. funnel plot)
AVM	L75.1			
Transluminal procedures for AVM	L75.3 – L75.6			
Intracranial aneurysm (open)	L33			
Transluminal procedures for aneurysms (interventional)	L35			

2. Units undertaking neurovascular work should provide data from the UK Neuro-Interventional Group Audit of Embolisation of Aneurysms for discussion at appraisal. While this audit is primarily concerned with interventional radiology, it does provide some indication of the unit's performance in decision making.

2.2.4 Functional Neurosurgery

1. Neurosurgeons should select their most common procedures from this sub-specialty area. At appraisal, the previous year's performance should be examined, however, to be meaningful, it will be necessary to view performance over a rolling three year period

Key Procedures	OPCS Codes	Source of Measurement	Measurement Criteria	Method of Presentation at Appraisal
Epilepsy	A01	Routinely Collected Data (HES, PEDW, ISD, HIS)	<ul style="list-style-type: none"> • 30 day mortality • 28 day re-operation • 28 day readmission (unplanned) • Length of Stay • Discharge Destination [Separate analyses for method of admission (emergency/ elective)]	Comparison to all other surgeons in the country performing these procedures (eg. funnel plot)
DBS Ablation	A09 A03			
Neurovascular decompression	A32			
Insertion and maintenance of spinal cord stimulators	A48.3 - A48.7			

2. Surgeons undertaking deep brain stimulation procedures must demonstrate compliance with NCG guidance and audits for discussion at appraisal

2.2.5 Neuro-Oncology

1. Neurosurgeons should select their most common procedures from this sub-specialty area. At appraisal, the previous year's performance should be examined, however, to be meaningful, it will be necessary to view performance over a rolling three year period

Key Procedures	OPCS Codes	Source of Measurement	Measurement Criteria	Method of Presentation at Appraisal
Low grade intrinsic tumours (ICD10 codes?)	A02	Routinely Collected Data (HES, PEDW, ISD, HIS)	<ul style="list-style-type: none"> • 30 day mortality • 28 day re-operation • 28 day readmission (unplanned) • Length of Stay • Discharge Destination [Separate analyses for method of admission (emergency/ elective)]	Comparison to all other surgeons in the country performing these procedures (eg. funnel plot)
High-grade intrinsic tumours (ICD10 codes?)	A02			

2.2.6 Skull-Base

1. Neurosurgeons should select their most common procedures from this sub-specialty area. At appraisal, the previous year's performance should be examined, however, to be meaningful, it will be necessary to view performance over the previous 5 years

Key Procedures	OPCS Codes	Source of Measurement	Measurement Criteria	Method of Presentation at Appraisal
Meningiomas	A38 A42	Routinely Collected Data (HES, PEDW, ISD, HIS)	<ul style="list-style-type: none"> • 30 day mortality • 28 day re-operation • 28 day readmission (unplanned) • Length of Stay • Discharge Destination 	Comparison to all other surgeons in the country performing these procedures (eg. funnel plot)
Pituitary and sellar tumours	B01 B04			
Acoustic neuromas	A29.5			

Some procedures are often undertaken with surgeons from other specialties (known as 'dual operating'). Routinely collected data such as HES cannot code a procedure to more than one surgeon, thus affecting the accuracy of any national comparative analysis. This can be overcome locally by analysing the outcomes of all patients undergoing that procedure within the unit, examining the unit outcomes and using this as the basis of discussion at appraisal.

Relevant OPCS Codes

- A01.1 Major excision of tissue of brain, Hemispherectomy
- A01.2 Major excision of tissue of brain, Total lobectomy of brain
- A01.3 Major excision of tissue of brain, Partial lobectomy of brain
- A01.8 Major excision of tissue of brain, Other specified
- A01.9 Major excision of tissue of brain, Unspecified
- A02.1 Excision of lesion of tissue of brain, Excision of lesion of tissue of frontal lobe of brain
- A02.2 Excision of lesion of tissue of brain, Excision of lesion of tissue of temporal lobe of brain
- A02.3 Excision of lesion of tissue of brain, Excision of lesion of tissue of parietal lobe of brain
- A02.4 Excision of lesion of tissue of brain, Excision of lesion of tissue of occipital lobe of brain
- A02.5 Excision of lesion of tissue of brain, Excision of lesion of tissue of cerebellum
- A02.6 Excision of lesion of tissue of brain stem
- A02.8 Excision of lesion of tissue of brain, Other specified
- A02.9 Excision of lesion of tissue of brain, Unspecified
- A03.1 Stereotactic ablation of tissue of brain, Stereotactic leucotomy
- A03.2 Stereotactic ablation of tissue of brain, Stereotactic ablation of tissue of thalamus
- A03.3 Stereotactic ablation of tissue of brain, Stereotactic ablation of tissue of globus pallidus
- A03.4 Stereotactic ablation of tissue of brain, Stereotactic ablation of tissue of brain stem
- A03.8 Stereotactic ablation of tissue of brain, Other specified
- A03.9 Stereotactic ablation of tissue of brain, Unspecified
- A04.1 Open biopsy of lesion of tissue of brain, Open biopsy of lesion of tissue of frontal lobe of brain
- A04.2 Open biopsy of lesion of tissue of brain, Open biopsy of lesion of tissue of temporal lobe of brain
- A04.3 Open biopsy of lesion of tissue of brain, Open biopsy of lesion of tissue of parietal lobe of brain
- A04.4 Open biopsy of lesion of tissue of brain, Open biopsy of lesion of tissue of occipital lobe of brain
- A04.5 Open biopsy of lesion of tissue of brain, Open biopsy of lesion of tissue of cerebellum
- A04.6 Open biopsy of lesion of tissue of brain, Open biopsy of lesion of tissue of brain stem
- A04.8 Open biopsy of lesion of tissue of brain, Other specified
- A04.9 Open biopsy of lesion of tissue of brain, Unspecified
- A05.1 Drainage of lesion of tissue of brain, Drainage of abscess of tissue of brain
- A05.2 Drainage of lesion of tissue of brain, Evacuation of haematoma from temporal lobe of brain
- A05.3 Drainage of lesion of tissue of brain, Evacuation of haematoma from cerebellum
- A05.4 Drainage of lesion of tissue of brain, Evacuation of intracerebral haematoma nec
- A05.8 Drainage of lesion of tissue of brain, Other specified
- A05.9 Drainage of lesion of tissue of brain, Unspecified
- A07.1 Other open operations on tissue of brain, Open division of tissue of brain
- A07.2 Other open operations on tissue of brain, Removal of foreign body from tissue of brain
- A07.3 Other open operations on tissue of brain, Exploration of tissue of brain
- A07.4 Excision of abscess of tissue of brain
- A07.5 Multiple subpial transections
- A07.6 Complete callosotomy
- A07.7 Partial callosotomy
- A07.8 Other open operations on tissue of brain, Other specified
- A07.9 Other open operations on tissue of brain, Unspecified
- A08.1 Other biopsy of lesion of tissue of brain, Biopsy of lesion of tissue of frontal lobe of brain nec
- A08.2 Other biopsy of lesion of tissue of brain, Biopsy of lesion of tissue of temporal lobe of brain nec
- A08.3 Other biopsy of lesion of tissue of brain, Biopsy of lesion of tissue of parietal lobe of brain nec
- A08.4 Other biopsy of lesion of tissue of brain, Biopsy of lesion of tissue of occipital lobe of brain nec
- A08.5 Other biopsy of lesion of tissue of brain, Biopsy of lesion of tissue of cerebellum nec
- A08.6 Other biopsy of lesion of tissue of brain, Biopsy of lesion of tissue of brain stem nec
- A08.8 Other biopsy of lesion of tissue of brain, Other specified
- A08.9 Other biopsy of lesion of tissue of brain, Unspecified
- A09.1 Neurostimulation of brain, Implantation of neurostimulator into brain
- A09.2 Neurostimulation of brain, Maintenance of neurostimulator in brain
- A09.3 Neurostimulation of brain, Removal of neurostimulator from brain
- A09.4 Operation on neurostimulator in brain NEC
- A09.5 Insertion of neurostimulator electrodes into the brain

A09.8 Neurostimulation of brain, Other specified
A09.9 Neurostimulation of brain, Unspecified
A10.2 Other operations on tissue of brain, Aspiration of abscess of tissue of brain
A10.3 Other operations on tissue of brain, Aspiration of haematoma of tissue of brain
A10.4 Other operations on tissue of brain, Aspiration of lesion of tissue of brain nec
A10.5 Other operations on tissue of brain, Puncture of tissue of brain nec
A10.7 Stereotactic radiosurgery on tissue of brain
A10.8 Other operations on tissue of brain, Other specified
A10.9 Other operations on tissue of brain, Unspecified
A12.1 Creation of connection from ventricle of brain, Ventriculocisternostomy
A12.2 Creation of connection from ventricle of brain, Creation of ventriculovascular anastomosis
A12.3 Creation of connection from ventricle of brain, Creation of ventriculopleural shunt
A12.4 Creation of connection from ventricle of brain, Creation of ventriculoperitoneal shunt
A12.5 Creation of connection from ventricle of brain, Creation of subcutaneous cerebrospinal fluid reservoir
A12.8 Creation of connection from ventricle of brain, Other specified
A12.9 Creation of connection from ventricle of brain, Unspecified
A13.1 Attention to component of connection from ventricle of brain, Maintenance of proximal catheter of cerebroventricular shunt
A13.2 Attention to component of connection from ventricle of brain, Maintenance of distal catheter of cerebroventricular shunt
A13.3 Attention to component of connection from ventricle of brain, Insertion of antisyphon device into cerebroventricular shunt
A13.4 Attention to component of connection from ventricle of brain, Renewal of valve of cerebroventricular shunt
A13.8 Attention to component of connection from ventricle of brain, Other specified
A13.9 Attention to component of connection from ventricle of brain, Unspecified
A14.1 Other operation on connection from ventricle of brain, Renewal of cerebroventricular shunt
A14.2 Other operation on connection from ventricle of brain, Revision of cerebroventricular shunt nec
A14.3 Other operation on connection from ventricle of brain, Removal of cerebroventricular shunt
A14.4 Other operation on connection from ventricle of brain, Irrigation of cerebroventricular shunt
A14.5 Other operation on connection from ventricle of brain, Attention to cerebroventricular shunt nec
A14.8 Other operation on connection from ventricle of brain, Other specified
A14.9 Other operation on connection from ventricle of brain, Unspecified
A16.1 Other open operations on ventricle of brain, Open drainage of ventricle of brain nec
A16.8 Other open operations on ventricle of brain, Other specified
A16.9 Other open operations on ventricle of brain, Unspecified
A17.1 Therapeutic endoscopic operations on ventricle of brain, Endoscopic extirpation of lesion of ventricle of brain
A17.8 Therapeutic endoscopic operations on ventricle of brain, Other specified
A17.9 Therapeutic endoscopic operations on ventricle of brain, Unspecified
A18.1 Diagnostic endoscopic examination of ventricle of brain, Diagnostic endoscopic examination of ventricle of brain and biopsy of lesion of ventricle of
A18.8 Diagnostic endoscopic examination of ventricle of brain, Other specified
A18.9 Diagnostic endoscopic examination of ventricle of brain, Unspecified
A20.1 Other operations on ventricle of brain, Drainage of ventricle of brain nec
A20.2 Other operations on ventricle of brain, Ventriculography of brain
A20.3 Other operations on ventricle of brain, Monitoring of pressure in ventricle of brain
A20.8 Other operations on ventricle of brain, Other specified
A20.9 Other operations on ventricle of brain, Unspecified
A22.1 Operations on subarachnoid space of brain, Drainage of subarachnoid space of brain
A22.3 Operations on subarachnoid space of brain, Isotopic cisternography
A22.8 Operations on subarachnoid space of brain, Other specified
A22.9 Operations on subarachnoid space of brain, Unspecified
A24.1 Graft to cranial nerve, Primary microsurgical graft to facial nerve (vii)
A24.2 Graft to cranial nerve, Secondary microsurgical graft to facial nerve (vii)
A24.3 Graft to cranial nerve, Microsurgical graft to facial nerve (vii) nec
A24.4 Graft to cranial nerve, Primary microsurgical graft to cranial nerve nec
A24.8 Graft to cranial nerve, Other specified

A24.9 Graft to cranial nerve, Unspecified

A25.1 Intracranial transection of cranial nerve, Intracranial transection of optic nerve (ii)

A25.3 Intracranial transection of cranial nerve, Intracranial transection of trigeminal nerve (v)

A25.5 Intracranial transection of cranial nerve, Intracranial transection of acoustic nerve (viii)

A25.7 Intracranial transection of cranial nerve, Intracranial transection of vagus nerve (x)

A26.1 Other intracranial destruction of cranial nerve, Intracranial destruction of optic nerve (ii)

A26.2 Other intracranial destruction of cranial nerve, Intracranial destruction of oculomotor nerve (iii)

A26.3 Other intracranial destruction of cranial nerve, Intracranial destruction of trigeminal nerve (v)

A26.4 Other intracranial destruction of cranial nerve, Intracranial destruction of facial nerve (vii)

A26.5 Other intracranial destruction of cranial nerve, Intracranial destruction of acoustic nerve (viii)

A26.8 Other intracranial destruction of cranial nerve, Intracranial destruction of specified cranial nerve nec

A26.9 Other intracranial destruction of cranial nerve, Unspecified

A27.1 Extracranial extirpation of vagus nerve (x), Extracranial truncal vagotomy

A27.2 Extracranial extirpation of vagus nerve (x), Proximal gastric vagotomy

A27.9 Extracranial extirpation of vagus nerve (x), Unspecified

A28.1 Extracranial extirpation of other cranial nerve, Extracranial transection of trigeminal nerve (v) nec

A28.2 Extracranial extirpation of other cranial nerve, Extracranial transection of accessory nerve (xi) nec

A28.8 Extracranial extirpation of other cranial nerve, Other specified

A28.9 Extracranial extirpation of other cranial nerve, Unspecified

A29.1 Excision of lesion of cranial nerve, Excision of lesion of optic nerve (ii)

A29.3 Excision of lesion of cranial nerve, Excision of lesion of trigeminal nerve (v)

A29.4 Excision of lesion of cranial nerve, Excision of lesion of facial nerve (vii)

A29.5 Excision of lesion of cranial nerve, Excision of lesion of acoustic nerve (viii)

A29.6 Excision of lesion of cranial nerve, Excision of lesion of glossopharyngeal nerve (ix)

A29.7 Excision of lesion of cranial nerve, Excision of lesion of vagus nerve (x)

A29.8 Excision of lesion of cranial nerve, Excision of lesion of specified cranial nerve nec

A29.9 Excision of lesion of cranial nerve, Unspecified

A30.2 Repair of cranial nerve, Repair of oculomotor nerve (iii)

A30.3 Repair of cranial nerve, Repair of trigeminal nerve (v)

A30.4 Repair of cranial nerve, Repair of facial nerve (vii)

A30.8 Repair of cranial nerve, Repair of specified cranial nerve nec

A30.9 Repair of cranial nerve, Unspecified

A31.1 Intracranial stereotactic release of cranial nerve, Intracranial stereotactic neurolysis of optic nerve (ii)

A31.3 Intracranial stereotactic release of cranial nerve, Intracranial stereotactic neurolysis of trigeminal nerve (v)

A31.5 Intracranial stereotactic release of cranial nerve, Intracranial stereotactic neurolysis of acoustic nerve (viii)

A31.8 Intracranial stereotactic release of cranial nerve, Intracranial stereotactic neurolysis of specified cranial nerve nec

A32.1 Other decompression of cranial nerve, Decompression of optic nerve (ii)

A32.2 Other decompression of cranial nerve, Decompression of oculomotor nerve (iii)

A32.3 Other decompression of cranial nerve, Decompression of trigeminal nerve (v)

A32.4 Other decompression of cranial nerve, Decompression of facial nerve (vii)

A32.5 Other decompression of cranial nerve, Decompression of acoustic nerve (viii)

A32.6 Other decompression of cranial nerve, Decompression of glossopharyngeal nerve (ix)

A32.8 Other decompression of cranial nerve, Decompression of specified cranial nerve nec

A32.9 Other decompression of cranial nerve, Unspecified

A33.1 Neurostimulation of cranial nerve, Introduction of neurostimulator into cranial nerve

A33.2 Neurostimulation of cranial nerve, Maintenance of neurostimulator in cranial nerve

A33.3 Neurostimulation of cranial nerve, Removal of neurostimulator from cranial nerve

A33.4 Insertion of neurostimulator electrodes into the cranial nerve

A33.8 Neurostimulation of cranial nerve, Other specified

A33.9 Neurostimulation of cranial nerve, Unspecified

A34.3 Exploration of cranial nerve, Exploration of trigeminal nerve (v)

A34.4 Exploration of cranial nerve, Exploration of facial nerve (vii)

A34.5 Exploration of cranial nerve, Exploration of acoustic nerve (viii)

A34.6 Exploration of cranial nerve, Exploration of glossopharyngeal nerve (ix)

A34.8 Exploration of cranial nerve, Exploration of specified cranial nerve nec

A36.1 Other operations on cranial nerve, Hypoglossofacial anastomosis
 A36.2 Other operations on cranial nerve, Anastomosis of cranial nerve nec
 A36.3 Other operations on cranial nerve, Biopsy of lesion of cranial nerve
 A36.8 Other operations on cranial nerve, Other specified
 A36.9 Other operations on cranial nerve, Unspecified
 A38.1 Extirpation of lesion of meninges of brain, Extirpation of lesion of meninges of cortex of brain
 A38.2 Extirpation of lesion of meninges of brain, Extirpation of lesion of meninges of sphenoidal ridge of cranium
 A38.3 Extirpation of lesion of meninges of brain, Extirpation of lesion of meninges of subfrontal region of brain
 A38.4 Extirpation of lesion of meninges of brain, Extirpation of lesion of meninges of parasagittal region of brain
 A38.5 Extirpation of lesion of meninges of brain, Extirpation of lesion of falx cerebri
 A38.6 Extirpation of lesion of meninges of brain, Extirpation of lesion of tentorium cerebelli
 A38.8 Extirpation of lesion of meninges of brain, Other specified
 A38.9 Extirpation of lesion of meninges of brain, Unspecified
 A39.1 Repair of dura, Repair of meningoencephalocele
 A39.2 Repair of dura, Repair of dura of anterior fossa of cranium
 A39.3 Repair of dura, Repair of dura of middle fossa of cranium
 A39.4 Repair of dura, Repair of dura of posterior fossa of cranium
 A39.5 Repair of dura, Repair of dura of vault of cranium
 A39.8 Repair of dura, Other specified
 A39.9 Repair of dura, Unspecified
 A40.1 Drainage of extradural space, Evacuation of extradural haematoma
 A40.8 Drainage of extradural space, Other specified
 A40.9 Drainage of extradural space, Unspecified
 A41.1 Drainage of subdural space, Evacuation of subdural haematoma
 A41.2 Drainage of subdural space, Drainage of abscess of subdural space
 A41.8 Drainage of subdural space, Other specified
 A41.9 Drainage of subdural space, Unspecified
 A42.2 Other operations on meninges of brain, Biopsy of lesion of meninges of brain
 A42.8 Other operations on meninges of brain, Other specified
 A44.1 Partial extirpation of spinal cord, Chordectomy of spinal cord
 A44.2 Partial extirpation of spinal cord, Extirpation of lesion of spinal cord
 A44.3 Excision of lesion of intramedullary spinal cord
 A44.4 Excision of lesion of extradural spinal cord
 A44.8 Partial extirpation of spinal cord, Other specified
 A44.9 Partial extirpation of spinal cord, Unspecified
 A45.1 Other open operations on spinal cord, Stereotactic chordotomy of spinal cord
 A45.2 Other open operations on spinal cord, Open chordotomy of spinal cord nec
 A45.3 Other open operations on spinal cord, Myelotomy of spinal cord
 A45.4 Other open operations on spinal cord, Open biopsy of lesion of spinal cord
 A45.5 Other open operations on spinal cord, Removal of foreign body from spinal cord
 A45.6 Open aspiration of lesion of spinal cord
 A45.8 Other open operations on spinal cord, Other specified
 A45.9 Other open operations on spinal cord, Unspecified
 A47.1 Other destruction of spinal cord, Needle destruction of substantia gelatinosa of cervical spinal cord
 A47.2 Other destruction of spinal cord, Radiofrequency controlled thermal destruction of spinothalamic tract
 A47.3 Other destruction of spinal cord, Percutaneous chordotomy of spinal cord
 A47.8 Other destruction of spinal cord, Other specified
 A48.1 Other operations on spinal cord, Biopsy of lesion of spinal cord nec
 A48.2 Other operations on spinal cord, Aspiration of lesion of spinal cord
 A48.3 Other operations on spinal cord, Insertion of neurostimulator adjacent to spinal cord
 A48.4 Other operations on spinal cord, Attention to neurostimulator adjacent to spinal cord
 A48.5 Reprogramming of neurostimulator adjacent to spinal cord
 A48.6 Removal of neurostimulator adjacent to spinal cord
 A48.7 Insertion of neurostimulator electrodes into the spinal cord
 A48.8 Other operations on spinal cord, Other specified
 A48.9 Other operations on spinal cord, Unspecified

A49.1 Repair of spina bifida, Freeing of spinal tether
 A49.2 Repair of spina bifida, Closure of spinal myelomeningocele
 A49.3 Repair of spina bifida, Closure of spinal meningocele
 A49.4 Complex freeing of spinal tether
 A49.8 Repair of spina bifida, Other specified
 A49.9 Repair of spina bifida, Unspecified
 A51.1 Other operations on meninges of spinal cord, Extirpation of lesion of meninges of spinal cord
 A51.2 Other operations on meninges of spinal cord, Freeing of adhesions of meninges of spinal cord
 A51.3 Other operations on meninges of spinal cord, Biopsy of lesion of meninges of spinal cord
 A51.8 Other operations on meninges of spinal cord, Other specified
 A51.9 Other operations on meninges of spinal cord, Unspecified
 A52.1 Therapeutic epidural injection, Therapeutic lumbar epidural injection
 A52.2 Therapeutic epidural injection, Therapeutic sacral epidural injection
 A52.8 Therapeutic epidural injection, Other specified
 A52.9 Therapeutic epidural injection, Unspecified
 A53.1 Drainage of spinal canal, Cerebrospinal syringostomy
 A53.2 Drainage of spinal canal, Creation of thecoperitoneal shunt
 A53.3 Drainage of spinal canal, Creation of syringoperitoneal shunt
 A53.4 Drainage of spinal canal, Creation of lumboperitoneal shunt
 A53.5 Drainage of spinal canal, Drainage of cerebrospinal fluid nec
 A53.6 Creation of lumbar subcutaneous shunt
 A53.8 Drainage of spinal canal, Other specified
 A53.9 Drainage of spinal canal, Unspecified
 A54.1 Therapeutic spinal puncture, Injection of destructive substance into cerebrospinal fluid
 A54.2 Therapeutic spinal puncture, Injection of therapeutic substance into cerebrospinal fluid
 A54.3 Implantation of intrathecal drug delivery device adjacent to spinal cord
 A54.4 Attention to intrathecal drug delivery device adjacent to spinal cord
 A54.5 Removal of intrathecal drug delivery device adjacent to spinal cord

B01.1 Excision of pituitary gland, Transethmoidal hypophysectomy
 B01.2 Excision of pituitary gland, Transphenoidal hypophysectomy
 B01.3 Excision of pituitary gland, Transseptal hypophysectomy
 B01.4 Excision of pituitary gland, Transcranial hypophysectomy
 B01.8 Excision of pituitary gland, Other specified
 B01.9 Excision of pituitary gland, Unspecified
 B02.2 Destruction of pituitary gland, Implantation of radioactive substance into pituitary gland
 B04.1 Other operations on pituitary gland, Excision of lesion of pituitary gland
 B04.2 Other operations on pituitary gland, Biopsy of lesion of pituitary gland
 B04.3 Other operations on pituitary gland, Decompression of pituitary gland
 B04.4 Other operations on pituitary gland, Exploration of pituitary gland
 B04.5 Other operations on pituitary gland, Operations on pituitary stalk
 B04.8 Other operations on pituitary gland, Other specified
 B04.9 Other operations on pituitary gland, Unspecified
 B06.1 Operations on the pineal gland, Excision of pineal gland
 B06.8 Operations on the pineal gland, Other specified

L33.1 Operations on aneurysm of cerebral artery, Excision of aneurysm of cerebral artery
 L33.2 Operations on aneurysm of cerebral artery, Clipping of aneurysm of cerebral artery
 L33.3 Operations on aneurysm of cerebral artery, Ligation of aneurysm of cerebral artery nec
 L33.4 Operations on aneurysm of cerebral artery, Obliteration of aneurysm of cerebral artery nec
 L33.8 Operations on aneurysm of cerebral artery, Other specified
 L33.9 Operations on aneurysm of cerebral artery, Unspecified
 L75.1 Other arteriovenous operations, Excision of congenital arteriovenous malformation
 L75.3 Other arteriovenous operations, Embolisation of arteriovenous abnormality
 L75.4 Percutaneous transluminal embolisation of arteriovenous malformation NEC
 L75.5 Percutaneous transluminal venous embolisation of arteriovenous malformation

L75.6 Percutaneous transluminal arterial and venous embolisation of arteriovenous malformation

- V22.1 Primary decompression operations on cervical spine, Primary anterior decompression of cervical spinal cord and fusion of joint of cervical spine
- V22.2 Primary decompression operations on cervical spine, Primary anterior decompression of cervical spinal cord nec
- V22.3 Primary decompression operations on cervical spine, Primary foraminotomy of cervical spine
- V22.4 Primary anterior corpectomy of cervical spinal cord with reconstruction HFQ
- V22.5 Primary decompression of posterior fossa and upper cervical spinal cord and Instrumentation
- V22.6 Primary decompression of posterior fossa and upper cervical spinal cord NEC
- V22.8 Primary decompression operations on cervical spine, Other specified
- V22.9 Primary decompression operations on cervical spine, Unspecified
- V23.1 Revisional decompression operations on cervical spine, Revisional anterior decompression of cervical spinal cord and fusion of joint of cervical
- V23.2 Revisional decompression operations on cervical spine, Revisional anterior decompression of cervical spinal cord nec
- V23.3 Revisional decompression operations on cervical spine, Revisional foraminotomy of cervical spine
- V23.4 Revisional anterior corpectomy of cervical spinal cord with reconstruction HFQ
- V23.5 Revisional decompression of posterior fossa and upper cervical spinal cord and instrumentation
- V23.6 Revisional decompression of posterior fossa and upper cervical spinal cord NEC
- V23.8 Revisional decompression operations on cervical spine, Other specified
- V23.9 Revisional decompression operations on cervical spine, Unspecified
- V24.1 Decompression operations on thoracic spine, Primary decompression of thoracic spinal cord and fusion of joint of thoracic spine
- V24.2 Decompression operations on thoracic spine, Primary decompression of thoracic spinal cord nec
- V24.3 Decompression operations on thoracic spine, Revisional decompression of thoracic spinal cord
- V24.4 Primary anterior corpectomy of thoracic spinal cord and reconstruction HFQ
- V24.5 Revisional anterior corpectomy of thoracic spinal cord and reconstruction HFQ
- V24.8 Decompression operations on thoracic spine, Other specified
- V24.9 Decompression operations on thoracic spine, Unspecified
- V25.1 Primary decompression operations on lumbar spine, Primary extended decompression of lumbar spinal cord and intertransverse fusion of joint of
- V25.2 Primary decompression operations on lumbar spine, Primary extended decompression of lumbar spinal cord nec
- V25.3 Primary decompression operations on lumbar spine, Primary posterior decompression of lumbar spinal cord and intertransverse fusion of joint of
- V25.4 Primary decompression operations on lumbar spine, Primary posterior laminectomy decompression of lumbar spinal cord
- V25.5 Primary decompression operations on lumbar spine, Primary posterior decompression of lumbar spinal cord nec
- V25.6 Primary decompression operations on lumbar spine, Primary lateral foraminotomy of lumbar spine
- V25.8 Primary decompression operations on lumbar spine, Other specified
- V25.9 Primary decompression operations on lumbar spine, Unspecified
- V26.1 Revisional decompression operations on lumbar spine, Revisional extended decompression of lumbar spinal cord and intertransverse fusion of joint
- V26.2 Revisional decompression operations on lumbar spine, Revisional extended decompression of lumbar spinal cord nec
- V26.3 Revisional decompression operations on lumbar spine, Revisional posterior decompression of lumbar spinal cord and intertransverse fusion of joint
- V26.4 Revisional decompression operations on lumbar spine, Revisional posterior laminectomy decompression of lumbar spinal cord
- V26.5 Revisional decompression operations on lumbar spine, Revisional posterior decompression of lumbar spinal cord nec
- V26.6 Revisional decompression operations on lumbar spine, Revisional lateral foraminotomy of lumbar spine
- V26.8 Revisional decompression operations on lumbar spine, Other specified
- V26.9 Revisional decompression operations on lumbar spine, Unspecified
- V27.1 Decompression operations on unspecified spine, Primary decompression of spinal cord and fusion of joint of

spine nec

- V27.2 Decompression operations on unspecified spine, Primary decompression of spinal cord nec
- V27.3 Decompression operations on unspecified spine, Revisional decompression of spinal cord nec
- V27.8 Decompression operations on unspecified spine, Other specified
- V27.9 Decompression operations on unspecified spine, Unspecified
- V28.1 Primary insertion of lumbar interspinous process spacer
- V28.2 Revisional insertion of lumbar interspinous process spacer
- V28.8 Other specified insertion of lumbar interspinous process spacer
- V29.1 Primary excision of cervical intervertebral disc, Primary laminectomy excision of cervical intervertebral disc
- V29.2 Primary excision of cervical intervertebral disc, Primary hemilaminectomy excision of cervical intervertebral disc
- V29.3 Primary excision of cervical intervertebral disc, Primary fenestration excision of cervical intervertebral disc
- V29.4 Primary excision of cervical intervertebral disc, Primary anterior excision of cervical intervertebral disc and interbody fusion of joint of
- V29.5 Primary excision of cervical intervertebral disc, Primary anterior excision of cervical intervertebral disc nec
- V29.6 Primary excision of cervical intervertebral disc, Primary microdiscectomy of cervical intervertebral disc
- V29.8 Primary excision of cervical intervertebral disc, Other specified
- V29.9 Primary excision of cervical intervertebral disc, Unspecified
- V30.1 Revisional excision of cervical intervertebral disc, Revisional laminectomy excision of cervical intervertebral disc
- V30.2 Revisional excision of cervical intervertebral disc, Revisional hemilaminectomy excision of cervical intervertebral disc
- V30.4 Revisional excision of cervical intervertebral disc, Revisional anterior excision of cervical intervertebral disc and interbody fusion of joint of
- V30.5 Revisional excision of cervical intervertebral disc, Revisional anterior excision of cervical intervertebral disc nec
- V30.6 Revisional excision of cervical intervertebral disc, Revisional microdiscectomy of cervical intervertebral disc
- V30.8 Revisional excision of cervical intervertebral disc, Other specified
- V30.9 Revisional excision of cervical intervertebral disc, Unspecified
- V31.1 Primary excision of thoracic intervertebral disc, Primary anterolateral excision of thoracic intervertebral disc and graft hfq
- V31.2 Primary excision of thoracic intervertebral disc, Primary anterolateral excision of thoracic intervertebral disc nec
- V31.3 Primary excision of thoracic intervertebral disc, Primary costotransversectomy of thoracic intervertebral disc
- V31.8 Primary excision of thoracic intervertebral disc, Other specified
- V31.9 Primary excision of thoracic intervertebral disc, Unspecified
- V32.2 Revisional excision of thoracic intervertebral disc, Revisional anterolateral excision of thoracic intervertebral disc nec
- V32.8 Revisional excision of thoracic intervertebral disc, Other specified
- V32.9 Revisional excision of thoracic intervertebral disc, Unspecified
- V33.1 Primary excision of lumbar intervertebral disc, Primary laminectomy excision of lumbar intervertebral disc
- V33.2 Primary excision of lumbar intervertebral disc, Primary fenestration excision of lumbar intervertebral disc
- V33.3 Primary excision of lumbar intervertebral disc, Primary anterior excision of lumbar intervertebral disc and interbody fusion of joint of
- V33.4 Primary excision of lumbar intervertebral disc, Primary anterior excision of lumbar intervertebral disc nec
- V33.5 Primary excision of lumbar intervertebral disc, Primary anterior excision of lumbar intervertebral disc and posterior graft fusion of joint of
- V33.6 Primary excision of lumbar intervertebral disc, Primary anterior excision of lumbar intervertebral disc and posterior instrumentation of
- V33.7 Primary excision of lumbar intervertebral disc, Primary microdiscectomy of lumbar intervertebral disc
- V33.8 Primary excision of lumbar intervertebral disc, Other specified
- V33.9 Primary excision of lumbar intervertebral disc, Unspecified
- V34.1 Revisional excision of lumbar intervertebral disc, Revisional laminectomy excision of lumbar intervertebral disc
- V34.2 Revisional excision of lumbar intervertebral disc, Revisional fenestration excision of lumbar intervertebral disc
- V34.3 Revisional excision of lumbar intervertebral disc, Revisional anterior excision of lumbar intervertebral disc

and interbody fusion of joint of

- V34.4 Revisional excision of lumbar intervertebral disc, Revisional anterior excision of lumbar intervertebral disc nec
- V34.5 Revisional excision of lumbar intervertebral disc, Revisional anterior excision of lumbar intervertebral disc and posterior graft fusion of joint
- V34.6 Revisional excision of lumbar intervertebral disc, Revisional anterior excision of lumbar intervertebral disc and posterior instrumentation of
- V34.7 Revisional excision of lumbar intervertebral disc, Revisional microdiscectomy of lumbar intervertebral disc
- V34.8 Revisional excision of lumbar intervertebral disc, Other specified
- V34.9 Revisional excision of lumbar intervertebral disc, Unspecified
- V35.1 Excision of unspecified intervertebral disc, Primary excision of intervertebral disc nec
- V35.2 Excision of unspecified intervertebral disc, Revisional excision of intervertebral disc nec
- V35.8 Excision of unspecified intervertebral disc, Other specified
- V35.9 Excision of unspecified intervertebral disc, Unspecified
- V36.1 Prosthetic replacement of cervical intervertebral disc
- V36.2 Prosthetic replacement of thoracic intervertebral disc
- V36.3 Prosthetic replacement of lumbar intervertebral disc
- V36.8 Other specified prosthetic replacement of intervertebral disc
- V36.9 Unspecified prosthetic replacement of intervertebral disc
- V37.1 Primary fusion of joint of cervical spine, Posterior fusion of atlantoaxial joint
- V37.2 Primary fusion of joint of cervical spine, Posterior fusion of joint of cervical spine nec
- V37.3 Primary fusion of joint of cervical spine, Transoral fusion of atlantoaxial joint
- V37.4 Primary fusion of joint of cervical spine, Fusion of atlantooccipital joint
- V37.8 Primary fusion of joint of cervical spine, Other specified
- V37.9 Primary fusion of joint of cervical spine, Unspecified
- V38.1 Primary fusion of other joint of spine, Primary fusion of joint of thoracic spine
- V38.2 Primary fusion of other joint of spine, Primary posterior interlaminar fusion of joint of lumbar spine
- V38.3 Primary fusion of other joint of spine, Primary posterior fusion of joint of lumbar spine nec
- V38.4 Primary fusion of other joint of spine, Primary intertransverse fusion of joint of lumbar spine nec
- V38.5 Primary posterior interbody fusion of joint of lumbar spine
- V38.6 Primary transforaminal interbody fusion of joint of lumbar spine
- V38.8 Primary fusion of other joint of spine, Other specified
- V38.9 Primary fusion of other joint of spine, Unspecified
- V39.1 Revisional fusion of joint of spine, Revisional fusion of joint of cervical spine
- V39.2 Revisional fusion of joint of spine, Revisional fusion of joint of thoracic spine
- V39.3 Revisional fusion of joint of spine, Revisional posterior interlaminar fusion of joint of lumbar spine
- V39.4 Revisional fusion of joint of spine, Revisional posterior fusion of joint of lumbar spine nec
- V39.5 Revisional fusion of joint of spine, Revisional intertransverse fusion of joint of lumbar spine nec
- V39.6 Revisional posterior interbody fusion of joint of lumbar spine
- V39.7 Revisional transforaminal interbody fusion of joint of lumbar spine
- V39.8 Revisional fusion of joint of spine, Other specified
- V39.9 Revisional fusion of joint of spine, Unspecified
- V40.1 Non-rigid stabilisation of spine
- V40.8 Other specified stabilisation of spine
- V40.9 Unspecified stabilisation of spine
- V41.1 Instrumental correction of deformity of spine, Posterior attachment of correctional instrument to spine
- V41.2 Instrumental correction of deformity of spine, Anterior attachment of correctional instrument to spine
- V41.3 Instrumental correction of deformity of spine, Removal of correctional instrument from spine
- V41.8 Instrumental correction of deformity of spine, Other specified
- V41.9 Instrumental correction of deformity of spine, Unspecified
- V42.1 Other correction of deformity of spine, Excision of rib hump
- V42.2 Other correction of deformity of spine, Epiphysiodesis of spinal apophyseal joint for correction of deformity
- V42.3 Other correction of deformity of spine, Anterolateral release of spine for correction of deformity and graft hfq
- V42.4 Anterior and posterior epiphysiodesis of spine for correction of deformity
- V42.5 Anterior epiphysiodesis of spine for correction of deformity

V42.6 Posterior epiphysiodesis of spine for correction of deformity
V42.8 Other correction of deformity of spine, Other specified
V42.9 Other correction of deformity of spine, Unspecified
V43.1 Extirpation of lesion of spine, Excision of lesion of cervical vertebra
V43.2 Extirpation of lesion of spine, Excision of lesion of thoracic vertebra
V43.3 Extirpation of lesion of spine, Excision of lesion of lumbar vertebra
V43.8 Extirpation of lesion of spine, Other specified
V43.9 Extirpation of lesion of spine, Unspecified
V44.1 Decompression of fracture of spine, Complex decompression of fracture of spine
V44.2 Decompression of fracture of spine, Anterior decompression of fracture of spine
V44.3 Decompression of fracture of spine, Posterior decompression of fracture of spine
V44.4 Vertebroplasty of fracture of spine
V44.8 Decompression of fracture of spine, Other specified
V44.9 Decompression of fracture of spine, Unspecified
V45.1 Other reduction of fracture of spine, Open reduction of fracture of spine and excision of facet of spine
V45.2 Other reduction of fracture of spine, Open reduction of fracture of spine nec
V45.3 Other reduction of fracture of spine, Manipulative reduction of fracture of spine
V45.8 Other reduction of fracture of spine, Other specified
V45.9 Other reduction of fracture of spine, Unspecified
V46.1 Fixation of fracture of spine, Fixation of fracture of spine using plate
V46.2 Fixation of fracture of spine, Fixation of fracture of spine using Harrington rod
V46.3 Fixation of fracture of spine, Fixation of fracture of spine using wire
V46.4 Fixation of fracture of spine, Fixation of fracture of spine and skull traction hfq
V46.8 Fixation of fracture of spine, Other specified
V46.9 Fixation of fracture of spine, Unspecified