Neurosurgical National Audit Programme Outcomes Publication Manual

Contents:

1. Summary

This manual describes methodological aspects of the HES-based data analysis and presentation employed in the annual NNAP report. It covers the use of specialty coding, neurosurgical case-mix categorisation (including subspecialty activity and key procedures), and case-mix adjustment.

2. Audit Year

The annual online publication is based on neurosurgical Finished Consultant Episode (FCE), including both those with and without a procedure, with a discharge date that took place between in the latest 12-month period and the latest 36-month period. The financial year (FY) is used. The mortality analysis is based on the latest five years of data.

3. Consultant Specialty Coding

The NNAP assesses the quality of care provided by neurosurgical units and neurosurgical consultants. All activity is captured using the consultant code within the episode, where that consultant has a specialty of neurosurgery. Activity that has not been attributed to a consultant neurosurgeon in the HES return is not included in the online publication or the trust report.

- If a neurosurgeon operates jointly on a patient admitted under a colleague from another specialty, the activity will not be recorded in the figures.
- If a colleague treats a patient admitted under the care of a neurosurgeon, the activity and the patient outcome will be attributed to the neurosurgeon.

4. Adult and Paediatric Neurosurgical Services

The online publication includes separate reports for adult and paediatric services provided by Trusts. Patients will be defined as an adult if on the day of admission of the spell they have attained their 18th birthday.

Please note that:

- The allocation of a patient's FCE to the paediatric or adult audits is dependent on their age and not the hospital setting in which the FCE took place.
- A patient admitted on more than one occasion before and after their 18th birthday in the audit year will be recorded as having FCEs in both the paediatric and adult audits.

5. Day Cases

The total number of day cases undertaken by each neurosurgical unit is recorded, but no separate analysis of day care activity has been performed in the latest audit. All day case activity is included in the overall elective and emergency analysis included in the Trust reports. Day case activity is not included in the online publication.

6. Data and Report Hierarchy

The NNAP employs a data and reporting hierarchy ranging from the total annual number of FCEs to specific key procedures and procedural groups. The hierarchy provides a comprehensive overview of the clinical activity and outcomes of neurosurgical units, specialist MDTs and consultants as follows:

- Total FCEs.
- Elective vs non-elective FCEs.
- Procedural vs non-procedural FCEs.
- Cranial vs spinal procedural FCEs.
- Sub-specialty activity.
- Key procedures.
- Adult vs Paediatric FCEs.

7. Procedural and Non-procedural FCE

The NNAP recognises two basic types of FCE: 'procedural' and 'non-procedural'.

- A procedural FCE is recorded when one or more invasive neurosurgical or neuro-diagnostic procedures are performed under the care of a consultant neurosurgeon during the spell.
- Non-procedural FCEs are recorded for patients admitted for observation, re-assessment, non-invasive imaging, or pending transfer of care.

The procedural FCE rate for a neurosurgical unit is typically between 70-80%.

All elective procedural activity is included in hospital-level mortality outcomes. Non-elective procedures are excluded.

8. Procedural Coding

For the purposes of the HES-based national audit the NNAP Governance Committee has reviewed all OPCS4 codes associated with a neurosurgical admission and classified them as cranial, spinal, other miscellaneous neurosurgical procedures, and other non-neurosurgical procedures. These major classifications have been sub-divided to reflect neurosurgical sub-specialty practice. The NNAP OPCS4 coding classification may be viewed as a spreadsheet on the SBNS-NNAP website. The NNAP welcomes feedback on the coding classification.

- **Cranial activity**
- General and Trauma
- Neuro-oncology
- Functional
- Vascular
- Skull base
- CSF disorders
- Other
- Percutaneous Procedure
- Scoliosis
- Trauma

- **Spinal Activity**
- Lumbar Spine
- Cervical Spine
- Intradural Spine
- Dysraphism
- Cranio-Cervical
- Thoracic Spinal
- Functional

- **Other**
- Radiosurgery
- Peripheral
- Diagnostic (invasive)

The OPCS4 coding allocations are set out in the NNAP OPCS4 Coding Spread-sheet. This may be downloaded from the SBNS NNAP website – https://www.nnap.org.uk/

9. Mortality Rates

The NNAP will publish case-mix adjusted 30-day mortality rates for the total activity of for elective care only. The case-mix adjustment algorithm considers the following factors:

- Age at time of admission
- 3-character ICD10 diagnostic code
- High risk disease severity OPCS4 coded procedure
- Admission source
- IMD04
- IMD04HD
- 8 principal components representing > 50% of the variance from among 245 2-character truncated categorical diagnosis codes (8 numeric variables).

Please be aware that:

- The 30-day mortality rate is calculated from the date of the final procedure within the spell. Deaths occurring in other hospitals or discharge locations will be included.
- Deaths are attributed to the HES-registered consultant responsible for the care of the patient during their last FCE.
- Neurosurgical units may be concerned that deaths have been wrongly attributed due to coding errors. The NNAP will undertake validation and, when appropriate, re-attribution of deaths.
- Please note that where attribution of death follows a Trust's standard practice, e.g. registration of multiple trauma patients with head injury to a consultant neurosurgeon, or reflects prevailing national practice e.g. registration of aneurysmal SAH patients to consultant neurosurgeons, re-attribution will not be possible.

Full details of the neurosurgical case-mix adjustment may be downloaded from the SBNS NNAP website – https://www.nnap.org.uk/

10. Data Validation and Accuracy

The NNAP has taken steps to ensure that this report is as accurate as possible. However, the NNAP is not responsible for the validity and correct attribution of the HES data submitted by Trusts on which the report is based. The final responsibility for the accuracy of the report rests with Unit Heads. The NNAP will work with Unit Heads to resolve any concerns and to undertake any appropriate additional analyses before issuing a final report.

11. Consultants Working in Multiple Trusts

The activity of consultants who work at multiple Trusts is captured and recorded against their GMC number within the HES dataset. The reports for these surgeons will be accessible on the SBNS NNAP website under the Unit Profile of all of the hospitals at which they have activity recorded.

12. Retired Consultants

The unit activity of consultants who have retired since in the latest reporting period will be included in the annual Outcome Publication.

13. Newly Appointed and Absent Consultants

Newly appointed consultants and consultants who may have been absent due to sickness or other change in circumstances, may have performed relatively few procedures within the audit year. The NNAP will not publish a report for consultants who do not meet the minimum criteria. The NNAP will adopt the NHS Digital policy concerning the publication of small numbers and will not publish surgeon or trust level activity where fewer than five procedures have been undertaken.

14. Management of Potential Outlier Performance

The SBNS-NNAP policy for the Management of Potential Outlying Performance recognises three levels of outlying performance: potential concern; confirmed concern; and serious concern. The identification of potential outliers will be based on case-mix adjusted indicators. The SBNS outlier policy is available either from the SBNS website or from the NNAP website. The risk adjustment methodology can also be downloaded from the NNAP website https://www.nnap.org.uk/.