

SUPPLEMENTAL MATERIAL (TABLES)**Supplemental Table S1. Unit costs, for the 2018/19 financial year**

| Resource use | Unit cost (£) | Assumptions | | |
|--|----------------------|--|-------------|--------------------|
| <i>Neurosurgical costs</i> | | | | |
| Index craniotomy or DC (hourly rate) | 1,422 ¹ | Hourly rate applied to the duration of the operation, whether craniotomy or DC. Includes the time from entering pre-med until leaving theatre. | | |
| DC, not index procedure (hourly rate) | 1,422 ¹ | Hourly rate applied to two-thirds of the mean length recorded for index DC. This accounts for the presence of previous skin incision and bone cuts. | | |
| Cranioplasty (operation cost, index or revision) | 2,464 ^{1,2} | Based on hourly rate above and 104 min duration, with an additional cost for both any synthetic material (if applicable, see below) and an additional associated NSU length of stay of 4 days if post-discharge (see below rates). | | |
| Haematoma evacuation (all types) | 2,132 ¹ | Based on hourly rate above and 90 min duration (expert opinion) | | |
| Wound revision | 2,132 ¹ | Based on hourly rate above and 90 min duration (expert opinion) | | |
| 'Other' neurosurgical intervention | 2,132 ¹ | Based on hourly rate above and 90 min duration (expert opinion) | | |
| Shunt placement (index or revision) | 2,132 ¹ | Based on hourly rate above and 90 min duration (expert opinion) with an additional material cost (see below) and an associated NSU length of stay of 2 days if post-discharge | | |
| Synthetic material costs (design/parts) for cranioplasty | 2,500 | Estimated based on expert opinion (only added if the use of synthetic material was indicated on the relevant form). Not applicable for revisions. | | |
| Material costs for shunt | 500 | Estimated based on expert opinion. Not applicable for revisions. | | |
| <i>Over-night stay costs</i> | | | | |
| Cost per bed day in Neuro-rehabilitation unit | 504 ³ | | | |
| Cost per bed day in NSU | 365 ^{4,5} | | | |
| Cost per bed day in ICU | 1,691 ⁶ | Assumes neurosciences adult patient in critical care, 2 or more organs supported (ICU) | | |
| Cost per bed day (other ward type) | 354 ^{4,5} | Weighted average of elective and non-elective excess bed days | | |
| <i>Health professional visit costs</i> | <i>Community</i> | <i>Hospital</i> | <i>Home</i> | <i>Assumptions</i> |

| | | | | |
|--------------------------------|------------------------|------------------------|--------------------------|--|
| Hospital doctor | 33.00 ⁴ | 186.74 ⁶ | 59.40 ^{4,7} | Community: as hospital doctors do not work in the community, the unit cost for a community GP visit was applied. Home: as hospital doctors do not usually visit homes, the unit cost for a home GP visit was applied. |
| Nurse | 12.31 ^{4,7} | 69.51 ⁶ | 19.64 ^{4,7} | Home: costed as for community visit, plus 12 mins travel time |
| General Practitioner | 33.00 ⁴ | 186.74 ⁶ | 59.40 ^{4,7} | Hospital: as GPs do not work in hospitals, the unit cost for a hospital doctor visit was applied. Home: costed as for community visit, plus 12 mins travel time. |
| Physiotherapist | 62.90 ⁶ | 54.96 ⁶ | 69.67 ^{4,6,7} | Home: costed as for community visit, plus 12 mins travel time. |
| Occupational therapist | 83.17 ⁶ | 65.54 ⁶ | 89.94 ^{4,6,7} | Home: costed as for community visit, plus 12 mins travel time. |
| Speech therapist | 106.51 ⁶ | 100.06 ⁶ | 113.28 ^{4,6,7} | Home: costed as for community visit, plus 12 mins travel time |
| Social worker | 118.81 ^{4,8} | 118.81 ^{4,8} | 127.72 ^{4,7,8} | Home: costed as for community visit, plus 12 mins travel time. |
| Community care assistant | 19.87 ^{4,9} | 19.87 ^{4,9} | 24.64 ^{4,7,9} | Home: costed as for community visit, plus 12 mins travel time. |
| Emergency department | 166.05 ⁶ | 166.05 ⁶ | 166.05 ⁶ | Single rate costed for an emergency visit |
| Psychologist/neuropsychologist | 141.17 ^{4,10} | 146.67 ^{4,10} | 156.57 ^{4,7,10} | Home: costed as for community visit, plus 12 mins travel time. |
| Other | 33.00 ⁴ | 186.74 ⁶ | 69.67 ^{4,6,7} | The cost of the most commonly reported visits from each location are assigned. Community: GP, Hospital: hospital doctor, home: physiotherapist |

| <i>Other costs</i> | <i>Assumptions</i> | | |
|--|--------------------|---------------------|---|
| MRI scan | | 120.83 ⁶ | |
| CT scan | | 77.95 ⁶ | |
| Unknown scan | | 77.95 ⁶ | Assumed the cost of a CT scan |
| Care home (cost per week in residence) | | 1,854 ¹¹ | As no cost for adults with these specific needs has been estimated, we have used a cost for adults with autism and complex needs. |
| Carer time | | 17.27 ¹² | Gross hourly rate. Used to value carer time whether paid or not |
| Work time | | 17.27 ¹² | Gross hourly rate. Used to value lost work time, assigned to estimated time worked since their brain injury |

DC, decompressive craniectomy; ICU, intensive care unit; NSU, neurosurgical care unit; MRI, magnetic resonance imaging; CT, computed tomography
Inflated to 2018/19 financial year prices, where necessary, using the NHSCII pay and prices.⁴

Supplemental Table S2. Proportion of Missing values (%) for key variables

| Variable | Craniotomy | DC | Total |
|--|----------------|----------------|-----------------|
| <i>Baseline variables</i> | | | |
| Treatment allocation | 0 | 0 | 0 |
| Age | 0 | 0 | 0 |
| Sex | 0 | 0 | 0 |
| EQ-5D-5L at baseline | 39/126 (31.0%) | 31/122 (25.4%) | 70/248 (28.2%) |
| GCS score | 6/126 (4.8%) | 3/122 (2.5%) | 9/248 (3.6%) |
| <i>Cost variables</i> | | | |
| Index admission costs (hospital-recorded data)* | 17/126 (13.5%) | 20/122 (16.4%) | 37/248 (14.9%) |
| Cranioplasty and shunt costs (hospital-recorded data)† | 2/126 (1.6%) | 4/122 (3.3%) | 6/248 (2.4%) |
| Post-discharge costs (patient self-report data) | 27/126 (21.4%) | 41/122 (33.6%) | 68/248 (27.4%) |
| <i>Outcome variables for health-related quality of life</i> | | | |
| EQ-5D at 6 months | 24/126 (19.1%) | 28/122 (23.0%) | 52/248 (21.0%) |
| EQ-5D at 12 months | 15/126 (11.9%) | 19/122 (15.6%) | 34/248 (13.7%) |
| <i>Outcome variables for GOSE</i> | | | |
| GOSE at 6 months | 13/126 (10.3%) | 16/122 (13.1%) | 29/248 (11.7%) |
| GOSE at 12 months | 5/126 (4.0%) | 7/122 (5.7%) | 12/248 (4.8%) |
| <i>Outcomes for cost-utility and cost-effectiveness analyses</i> | | | |
| Total costs | 40/126 (31.8%) | 55/122 (45.1%) | 95/248 (38.3%) |
| Total QALYS | 58/126 (46.0%) | 58/122 (47.5%) | 116/248 (46.8%) |
| Binary GOSE at 12 months | 5/126 (4.0%) | 7/122 (5.7%) | 12/248 (4.8%) |
| Binary GOSE dependent on GCS at 12 months | 11/126 (8.7%) | 10/122 (8.2%) | 21/248 (8.5%) |

*Includes index surgery, length of stay, neurosurgical interventions (excluding cranioplasties and shunts) during index admission.

†Includes cranioplasties and shunts (including revisions) during index admission and post-discharge.

References

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