

Stroke: decompressive hemicraniectomy surgery

Patient decision aid: user guide and data sources

Background

Recommendations 1.9.5 and 1.9.6 of the NICE guideline on [stroke and transient ischaemic attack in over 16s](#) provides options for managing acute stroke. They state:

1.9.5. Consider decompressive hemicraniectomy (which should be performed within 48 hours of symptom onset) for people with acute stroke who meet all of the following criteria:

- clinical deficits that suggest infarction in the territory of the middle cerebral artery, with a score above 15 on the National Institutes of Health Stroke Scale (NIHSS)
- decreased level of consciousness, with a score of 1 or more on item 1a of the NIHSS
- signs on CT of an infarct of at least 50% of the middle cerebral artery territory:
 - with or without additional infarction in the territory of the anterior or posterior cerebral artery on the same side, or
 - with infarct volume greater than 145 cm³, as shown on diffusion-weighted MRI scan.

1.9.6. Discuss the risks and benefits of decompressive hemicraniectomy with people or their family members or carers (as appropriate), taking into account their functional status before the stroke, and their wishes and preferences.

Decisions about having decompressive hemicraniectomy are highly preference-sensitive. They involve a trade-off between reducing the risk of death and the increased risk of living with severe disability.

The NICE decision aids for decompressive hemicraniectomy in people under 60 and decompressive hemicraniectomy in people over 60 can help healthcare

professionals explain and discuss these trade-offs. They describe the possible benefits and harms of decompressive hemicraniectomy, with icon arrays (diagrams) to illustrate the numerical data. The patient (where they are able to) and their family members or carers (as appropriate) can review the information to help them make a decision about the surgery. Both decision aids have the same first page, the second page (the icon arrays) reflect the different evidence for people aged under or over 60.

Developing and updating the decision aids

These patient decision aids were developed by the NICE Medicines and Technologies Programme and a project group drawn from the guideline committee including health professionals and lay members, according to the [NICE process guide](#). Stakeholders who responded to the guideline consultation commented on drafts of the patient decision aids.

NICE decision aids are reviewed as part of the surveillance process for the guidance to which they relate. If the guidance and the relevant recommendations are modified, the decision aid will also be updated.

Sources of data

The decision aids are based on the evidence review on [decompressive hemicraniectomy](#) carried out for the NICE guideline on stroke and transient ischaemic attack in over 16s. All quantitative data on the likely effectiveness of decompressive hemicraniectomy and the risk of complications are taken from GRADE tables 11 and 12 and associated forest plots, supplemented by data from the original studies. Other information in the decision aids is based on the project group's expertise.

The definitions of 'moderate' or 'severe disability' used in the decision aids were agreed by the project group to reflect the range of modified Rankin Scale (mRS, table 1) reported in the included studies. In those studies, no survivors aged over 60 had an mRS disability 0 to 2 at 1 year, and no survivors aged under 60 had an mRS disability of 0 or 1 at 1 year.

Effects of decompressive hemicraniectomy versus standard treatment in people over 60

Mortality

These data are taken from 3 randomised control trials (RCTs) included in the evidence review on decompressive hemicraniectomy for the NICE stroke guideline. The studies included 162 people over 60 years who had had a severe stroke.

There was a statistically significant reduction in mortality after 1 year with decompressive hemicraniectomy compared with standard treatment (risk ratio [RR] 0.52, 95% confidence interval [CI] 0.39 to 0.70). The risk ratio was applied to the pooled mortality rate in the standard treatment group to calculate the mean absolute effect of decompressive hemicraniectomy.

Disability

These data are taken from 3 RCTs included in the evidence review on decompressive hemicraniectomy for the NICE stroke guideline. The studies included 165 people over 60 years who had had a severe stroke.

In the people who survived, decompressive hemicraniectomy led to a statistically significant increase in the number of people with a score of 3 or less on the mRS, rather than a higher score, at 1 year compared with standard treatment (RR 3.18, 95% CI 1.03 to 9.83). The risk ratio was applied to the pooled rate in the standard treatment group to calculate the mean absolute effect of decompressive hemicraniectomy.

Effects of decompressive hemicraniectomy versus standard treatment in people under 60

Mortality

These data are taken from 3 RCTs included in the evidence review on decompressive hemicraniectomy for the NICE stroke guideline. The trials included 134 people under 60 years who had had a severe stroke.

There was a statistically significant reduction in mortality after 1 year with decompressive hemicraniectomy compared with standard treatment (RR 0.34, 95% CI 0.21 to 0.56). The risk ratio was applied to the pooled mortality rate in the

standard treatment group to calculate the mean absolute effect of decompressive hemicraniectomy

Disability

These data are taken from 3 RCTs included in the evidence review on decompressive hemicraniectomy for the NICE stroke guideline. The trials included 134 people under 60 years who had had a severe stroke.

In the people who survived, decompressive hemicraniectomy led to an observed increase in the number of people with a score of 3 or less on the mRS, rather than a higher score, at 1 year compared with standard treatment (RR 1.52, 95% CI 0.90 to 2.57, not statistically significant). The risk ratio was applied to the pooled rate in the standard treatment group to estimate the mean absolute effect of decompressive hemicraniectomy.

Table 1 Modified Rankin scale (adapted from Farrell et al. 1991)

Score	Description
0	No symptoms at all
1	No significant disability and able to carry out all duties
2	Slight disability. Unable to carry out some previous activities, but able to look after own affairs without assistance
3	Moderate disability. Requiring some help, but able to walk without assistance
4	Moderately severe disability. Unable to walk without assistance and unable to attend to bodily needs without assistance
5	Severe disability. Confined to bed, incontinent and requiring constant nursing care and attention
6	Dead

Reference

Farrell B, Godwin J, Richards S et al. (1991) [The United Kingdom transient ischaemic attack \(UK-TIA\) aspirin trial: final results](#). *Journal of Neurology, Neurosurgery & Psychiatry* 54:1044–54