

European Stroke Organisation (ESO) guidelines on the management of space-occupying brain infarction.

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van der Worp HB, Hofmeijer J, Jüttler E, et al. European Stroke Organisation (ESO) guidelines on the management of space-occupying brain infarction. Eur Stroke J. 2021 Jun;6(2):XC-CX. [81 references] [PubMed](#)

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Overview

Guideline Objective

To assist physicians in the management of patients with space-occupying brain infarction

Patient Population

Adult patients aged 18 years and older with space-occupying brain infarction

Recommendations

Recommendation Statements

Population, Intervention, Comparator and Outcome (PICO) 1: In patients with space-occupying hemispheric infarction aged 18 up to and including 60 years, does surgical decompression initiated within 48 hours of stroke onset as compared to no surgical decompression reduce the risk of death or poor outcome?

- In adult patients aged 60 years or younger with space-occupying hemispheric infarction who can be treated within 48 hours of stroke onset, we recommend surgical decompression to reduce the risks of death or a poor outcome. Surgery should only be done after a shared decision process including a careful discussion with the patient or his/her representatives about the risk of survival with substantial disability. (**Quality of evidence: Moderate** ⊕⊕⊕; **Strength of recommendation: Strong** ↑↑)
- There is consensus among the group members that in patients with space-occupying hemispheric infarction the benefit of surgical decompression does not depend on the absence or presence of aphasia. (**Expert consensus statement**)
- Most group members agree that the benefit of surgical decompression does not depend on the presence of an infarct in the territory of the anterior or posterior cerebral artery in addition to that of the middle cerebral artery. (**Expert consensus statement**)
- There is consensus among the group members that additional space-occupying haemorrhagic transformation should not be regarded as a contraindication to surgery. (**Expert consensus statement**)
- There is consensus among the group members that in patients with space-occupying hemispheric infarction who will undergo decompressive surgery the diameter of the craniectomy should be at least 12 cm. (**Expert consensus statement**)

PICO 2: In patients with space-occupying hemispheric infarction aged 18 up to and including 60 years, does surgical decompression initiated later than 48 hours of stroke onset

as compared to no surgical decompression reduce the risk of death or poor outcome?

- In adult patients aged 60 years or younger with space-occupying hemispheric infarction who cannot be treated within 48 hours, there is continued uncertainty about the benefit and risks of the use of surgical decompression as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below. (**Quality of evidence: Low** ⊕⊕)
- There is consensus among the module working group members that surgical decompression should also be considered later than 48 hours after stroke onset if based on clinical grounds death due to herniation appears likely. (**Expert consensus statement**)

PICO 3: In patients with space-occupying hemispheric infarction aged 61 years or older, does surgical decompression initiated within 48 hours of stroke onset as compared to no surgical decompression reduce the risk of death or poor outcome?

In patients aged 61 years or older with space-occupying infarction who can be treated within 48 hours of stroke onset we suggest considering surgical decompression to reduce the risk of death. Surgery should only be done after a shared decision process including a careful discussion with the patient or his/her representatives about the risk of survival with substantial disability. (**Quality of evidence: Low** ⊕⊕; **Strength of recommendation: Weak** ↑?)

PICO 4: In patients with space-occupying cerebellar infarction, does surgical decompression as compared to no surgical decompression reduce the risk of death or a poor outcome?

- In patients with space-occupying cerebellar infarction, there is continued uncertainty about the benefit and risks of surgical decompression as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below. (**Quality of the evidence: Very low** ⊕)

- All group members suggest considering surgical decompression with or without CSF drainage in selected patients with space-occupying cerebellar infarction, such as in those with a reduced consciousness caused by brainstem compression. The precise selection of patients and the optimal timing of treatment remain uncertain. There is insufficient evidence to support its routine use. (**Expert consensus statement**)

PICO 5: In patients with space-occupying cerebellar infarction, does CSF drainage reduce mortality or improve functional outcome?

- In patients with space-occupying cerebellar infarction, there is continued uncertainty about the benefit and risks of CSF drainage as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below. (**Quality of the evidence: Very low** ⊕)
- All group members suggest considering CSF drainage alone or combined with surgical decompression in selected patients with space-occupying cerebellar infarction and signs of an obstructive hydrocephalus, such as in those with a reduced consciousness. The selection of patients and the optimal timing of treatment remain uncertain. There is insufficient evidence to support its routine use. (**Expert consensus statement**)

PICO 6: In patients with space-occupying hemispheric infarction, does monitoring of intracranial pressure (ICP) as compared with no monitoring of ICP reduce the risk of death or a poor outcome?

- In patients with space-occupying hemispheric infarction, there is continued uncertainty about the benefit and risks of ICP monitoring to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below. (**Quality of the evidence: Very low** ⊕)
- A majority of group members suggest against routine ICP monitoring as a means to reduce the risk of death or poor outcome in patients with space-occupying hemispheric infarction. (**Expert consensus statement**)

PICO 7: In patients with space-occupying hemispheric infarction, does admission to an intensive care unit (ICU; i.e., the possibility for mechanical ventilation) as compared with no ICU admission reduce the risk of death or a poor outcome?

- In patients with space-occupying hemispheric infarction, there is continued uncertainty about the benefit and risks of ICU admission as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below. **(Quality of the evidence: Very low ⊕)**
- A majority of group members suggest admission to an ICU for clinical and technical monitoring and intensive care treatment including mechanical ventilation, if required, irrespective of treatment with surgical decompression. **(Expert consensus statement)**

PICO 8: In patients with space-occupying hemispheric infarction, does sedation as compared to no sedation reduce the risk of death or poor outcome?

- In patients with space-occupying hemispheric infarction, there is continued uncertainty about the benefit and risks of sedation as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below. **(Quality of the evidence: Very low ⊕)**
- In patients with space-occupying hemispheric infarction, a majority of group members suggest against the use of sedation as a means to reduce the risk of death or a poor outcome if this is not otherwise indicated. Short-term sedation may be considered as a rescue procedure in patients with clinical signs of raised ICP or impending herniation. **(Expert consensus statement)**

PICO 9: In patients with space-occupying hemispheric infarction, does osmotic therapy as compared to no osmotic therapy reduce the risk of death or a poor outcome?

- In patients with space-occupying hemispheric infarction, there is continued uncertainty about the benefit and risks of osmotic therapy as a means to reduce the

risk of death or a poor outcome. We refer to the expert consensus statement below. **(Quality of the evidence: Very low ⊕)**

- All group members suggest against the routine use of osmotic therapy as a means to reduce the risk of death or a poor outcome. Short-term osmotic therapy (i.e., a single or a few doses) may be considered as a rescue procedure in case of signs of an increased intracranial pressure or impending herniation. For short-term osmotic therapy with mannitol, we suggest the use of bolus administration rather than continuous infusion. The choice of mannitol or hypertonic saline depends on local preferences and expertise. **(Expert consensus statement)**

PICO 10: In patients with space-occupying hemispheric infarction, do corticosteroids as compared to no corticosteroids reduce the risk of death or a poor functional outcome?

- In patients with space-occupying hemispheric infarction, there is continued uncertainty about the benefit and risks of the use of corticosteroids as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below. **(Quality of the evidence: Very low ⊕)**
- All group members suggest against the use of corticosteroids as a means to reduce the risk of death or a poor outcome. **(Expert consensus statement)**

PICO 11: In patients with space-occupying hemispheric infarction, does hyperventilation as compared to no hyperventilation reduce the risk of death or a poor outcome?

- In patients with space-occupying hemispheric infarction, there is continued uncertainty about the benefit and risks of the use of hyperventilation as a means to reduce the risk of death or a poor outcome. We refer to the expert consensus statement below. **(Quality of the evidence: Very low ⊕)**
- All group members suggest against the use of routine hyperventilation. Short-term hyperventilation may be considered as a rescue procedure in patients with clinical signs of brain herniation. **(Expert consensus statement)**

PICO 12: In patients with space-occupying hemispheric infarction, does hypothermia as compared to no hypothermia reduce the risk of death or a poor functional outcome?

In patients with space-occupying hemispheric infarction, we suggest against the use of hypothermia in routine clinical practice as a means to reduce the risk of death or a poor outcome. (**Quality of the evidence: Very low** ⊕; **Strength of the recommendation: Weak** ↓?)

PICO 13: In patients with space-occupying hemispheric infarction, does glyburide as compared to no glyburide reduce the risk of death or poor outcome?

In patients with space-occupying hemispheric infarction, we suggest against the use of glyburide in routine clinical practice as a means to reduce the risk of death or a poor outcome. (**Quality of the evidence: Very low** ⊕; **Strength of the recommendation: Weak** ↓?)

Evidence Rating Scheme

Definitions, Implications and Symbols of Grades of Quality of Evidence

Grade	Definition	Implication	Symbol
High	We are very confident that the true effect lies close to that of the estimate of the effect.	Further research is very unlikely to change our confidence in the estimate of effect.	⊕⊕⊕⊕
Moderate	We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.	⊕⊕⊕

Low	We have limited confidence in the effect estimate: the true effect may be substantially different from the estimate of the true effect.	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.	⊕⊕
Very low	We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect.	Any estimate of effect is very uncertain.	⊕

Recommendation Rating Scheme

Definitions and Symbols of Categories of Strength of Recommendation

Category	Definition	Symbol
Strong for an intervention	The desirable effects of an intervention outweigh its undesirable effects.	↑↑
Weak for an intervention	The desirable effects probably outweigh the undesirable effects but appreciable uncertainty exists.	↑?
Weak against an intervention	The undesirable effects probably outweigh the desirable effects but appreciable uncertainty exists.	↓?
Strong against an intervention	The undesirable effects of an intervention outweigh its desirable effects.	↓↓

Strong recommendations should be worded as "We recommend for / against..." and weak recommendations as "We suggest for / against..."

Expert Consensus Statements

An 'expert consensus statement' was added whenever the authors considered that not enough evidence was available to provide evidence-based recommendations for situations in which practical guidance is needed for the everyday clinical practice. An expert consensus statement should clearly state the direction as "suggest for" or "suggest against."

Related Content

Supporting Documents

- [Online Supplement](#); 2021.
- [European Stroke Organisation \(ESO\) Standard Operating Procedure for the Preparation and Publishing of Guidelines](#); 2021 Sep 24.

Implementation Tools

No implementation tools available.

Patient Education

No patient education materials available.

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TRUST Scorecard

Composition of Guideline Development Group (GDG)

Multidisciplinary GDG Members

Yes

Methodologist Involvement

Yes

Incorporation of Patient and Public Perspective



Systematic Review of Evidence

Literature Search



Study Selection



Evidence Synthesis



Foundations for Recommendations

Strength of Evidence Grade



Description of Benefits and Harms of Recommendations



Summary of Evidence Supporting Recommendations



Strength of Recommendations Rating



Clear Articulation of Recommendations



Funding Source

No

Disclosure and Management of Financial Conflicts of Interests



External Review



Updating

