Presentation of the problem: Current guidelines versus limited access to acute stroke interventional services

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☑ I do not have any potential conflict of interest
Most recent guidelines for acute ischemic stroke
# 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke

**A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association**

Reviewed for evidence-based integrity and endorsed by the American Association of Neurological Surgeons and Congress of Neurological Surgeons

Endorsed by the Society for Academic Emergency Medicine

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## 3.7. Mechanical Thrombectomy

<table>
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<tr>
<th>1. Patients eligible for IV alteplase should receive IV alteplase even if EVTs are being considered.</th>
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<th>LOE</th>
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<td>III: Harm</td>
<td>B-R</td>
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<th>2. In patients under consideration for mechanical thrombectomy, observation after IV alteplase to assess for clinical response should not be performed.</th>
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### 3.7. Mechanical Thrombectomy (Continued)

<table>
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<tr>
<th>3. Patients should receive mechanical thrombectomy with a stent retriever if they meet all the following criteria: (1) prestroke mRS score of 0 to 1; (2) causative occlusion of the internal carotid artery or MCA segment 1 (M1); (3) age ≥18 years; (4) NIHSS score of ≥6; (5) ASPECTS of ≥6; and (6) treatment can be initiated (groin puncture) within 6 hours of symptom onset.</th>
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<th>5. Although the benefits are uncertain, the use of mechanical thrombectomy with stent retrievers may be reasonable for carefully selected patients with AIS in whom treatment can be initiated (groin puncture) within 6 hours of symptom onset and who have causative occlusion of the anterior cerebral arteries, vertebral arteries, basilar artery, or posterior cerebral arteries.</th>
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<td>C-E0</td>
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<th>6. Although its benefits are uncertain, the use of mechanical thrombectomy with stent retrievers may be reasonable for patients with AIS in whom treatment can be initiated (groin puncture) within 6 hours of symptom onset and who have prestroke mRS score &gt;1, ASPECTS &lt;6, or NIHSS score &lt;6, and causative occlusion of the internal carotid artery (ICA) or proximal MCA (M1). Additional randomized trial data are needed.</th>
<th>COR</th>
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<td>IIb</td>
<td>B-R</td>
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### 3.7. Mechanical Thrombectomy (Continued)

<table>
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<th>7. In selected patients with AIS within 6 to 16 hours of last known normal who have LVO in the anterior circulation and meet other DAWN or DEFUSE 3 eligibility criteria, mechanical thrombectomy is recommended.</th>
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<th>8. In selected patients with AIS within 6 to 24 hours of last known normal who have LVO in the anterior circulation and meet other DAWN eligibility criteria, mechanical thrombectomy is reasonable.</th>
<th>COR</th>
<th>LOE</th>
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<td>B-R</td>
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</table>
• Mechanical thrombectomy (+ best medical therapy) in acute ischemic stroke with large artery occlusion presenting within 6 hours (class I.A)

• Including patients over age 80
• Including patients with contraindications for thrombolysis

• Mechanical thrombectomy in patients with low ASPECTS score and absence and extensive infarct core even when presenting between 6-24 hours.
EBNI recommendations for training in acute stroke interventions.
The applicant must be a specialist physician with a EU-recognised speciality.

Acute stroke interventions should only be performed in centres with a dedicated stroke team incl. neuroimaging and work in cooperation with a comprehensive endovascular neurointerventional centre.

Training in Acute Ischemic Stroke interventions can only be performed in Training Centres qualified in Endovascular Neurointerventions.

The education and training is 2 years (full time study in an AISI training program).

Depending on previous training, the training time may be reduced as credit is given for previous training and clinical skills. The assessment of previous training and clinical skills and evaluation of remaining training time is the responsibility of the Director of the program.

Thus training in AISI according to these EBNI guidelines is not possible in an institution involved in neurointervention limited to Acute Ischemic stroke.

The national or regional medical authority is the responsible body for any official recognition and certification of qualification in each country.
List of minimum numbers of AISI procedures the trainee has to have participated in as secondary operator during the full training period of 1 year:

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Absolute numbers</th>
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<tr>
<td>Diagnostic angiography*</td>
<td>100</td>
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<tr>
<td>Aneurysm</td>
<td>30</td>
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<tr>
<td>Intracerebral AVM</td>
<td>15</td>
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<tr>
<td>Dural AV fistula</td>
<td>10</td>
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<tr>
<td>Interventional stroke therapy</td>
<td>100</td>
</tr>
<tr>
<td>Stentplacement</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><em><em>100</em>/170</em>*</td>
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* Diagnostic angiography is generally included in each interventional procedure.
List of **minimum** numbers of AISI procedures as **principle operator**:

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Absolute numbers</th>
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<tbody>
<tr>
<td>Diagnostic angiography</td>
<td>50</td>
</tr>
<tr>
<td>Interventional stroke therapy</td>
<td>30</td>
</tr>
<tr>
<td>Stent placement</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><em><em>50</em>/35</em>*</td>
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Acute Ischemic Stroke Intervention should ideally take place in interventional neuroradiology centers. However if a centre fullfilling these conditions is not a available, a center treating only ischemic stroke in adults can be established under the following conditions:

· there is no full endovascular neurointerventional center available within reasonable distance (<100 km) or time (<1hr transportation time)
· the centre treating only AIS must have a minimum workload of 150 stroke treatments (incl. thrombolysis) a year

The center treating ischemic stroke should work in cooperation with a comprehensive endovascular neurointerventional centre.

Facilities that must be available on site 24/7 include:

· Inpatient hospital beds.
· Intensive Care Unit.
· Radiology service with competence in neuroimaging (CT & MR and angiography)
· A team of trained Acute Stroke Neuro-interventionists
· A dedicated “Stroke unit” and a “Stroke team”
· Ideally a department of Neurosurgery, or if that is not possible a written agreement with a department of  neurosurgery in a nearby hospital (<30 min transportation time).

Minimal requirements for angiographic suite: single plane HR flat panel DSA with road mapping.
Limited access to acute stroke interventions
Revised data to be published soon in the European Stroke Journal
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Number of endovascular treatments (EVT) per year / 1 Mio inhabitants

1. Czech Republic: 111.5
2. Germany: 100.8
3. Lithuania: 83
4. Portugal: 81.6
5. Estonia: 76.1
6. Austria: 74
7. Slovakia: 71.3
8. Italy: 71
9. France: 70.6
10. Sweden: 69.2
11. Finland: 69.2
12. Denmark: 63.8
13. Belgium: 63.8
14. Netherlands: 63.3
15. Slovenia: 62.5
16. Malta: 62.5
17. Switzerland: 58.2
18. Belgium: 58.2
19. Austria: 57.9
20. Norway: 57.4
21. France: 57.4
22. Sweden: 57.4
23. Italy: 57.4
24. Spain: 57.4
25. United Kingdom: 57.4
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120. Turkey: 57.4

Revised data to be published soon in the European Stroke Journal.
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ESO ESMINT EAN SAFE survey on stroke care in Europe

Results

Reasons not to perform EVT

- Personnel not available
  ✓ 34 countries
- Technical facilities not available
  ✓ 22 countries
- Costs
  ✓ 16 countries

Revised data to be published soon in the European Stroke Journal
Acute stroke thrombectomies in Europe vs. estimated needs.


Inequalities in stroke care
ESO ESMINT EAN SAFE survey 2016 (ESO Congress Prague, 2017)

Thrombectomies per million population in 2015

Without immediate sharp increase this gap may disappear in 2040-2050
Summary

The solution should be fast, otherwise thousands of stroke patients will remain disabled due to no access to existing modern treatment.

Short training of experienced interventional cardiologists certainly is the fastest solution.