e-ASPECTS in clinical practice

e-ASPECTS is designed to support clinicians in the early assessment of ischemic stroke damage on plain CT scans. It provides a fast, consistent calculation of an ASPECTS score, helping to reduce inter-reader variability.

Following diagnosis, ischemic stroke patients need to be assessed rapidly to receive thrombolysis, endovascular treatment or for severe cases, decompressive craniectomy. Decision-making time is critical to achieve the best possible outcome for the patient.

e-ASPECTS helps circumvent delays caused by the manual interpretation and scoring of ASPECTS by automating the process. It provides clinicians with rapid access to the images they need, anywhere, in less than two minutes. Results can be accessed via PACS, the e-ASPECTS web viewer, or sent via email to a smartphone or tablet.

e-ASPECTS complements expert eyes, with machine learning classifier able to detect subtle image features, while experts can screen for contraindications and verify results are in line with clinical symptoms.

Key Benefits of e-ASPECTS

- standardize the assessment of early ischemic signs on brain CT scans
- speed up the decision-making process improving patient outcomes
- reduce hospitalization costs by limiting length of stay
- increase the uptake of stroke treatments.

You are invited to see a demonstration of e-ASPECTS.

Find out more and give feedback at www.brainomix.com
e-ASPECTS

Worldwide, the lack of timely, available expertise for brain CT scan interpretation delays stroke patients from accessing lifesaving treatments.

Brainomix’s ground-breaking technology, ASPECTS, is a clinical decision support tool that automatically implements the Alberta Stroke Program Early CT Score (ASPECTS) scoring methodology, to assist clinicians in timely identification of acute ischemic stroke patients eligible for life-saving treatment.

e-ASPECTS software standardizes and supports the interpretation of early ischemic brain damage on CT scans.

e-ASPECTS software

ASPECTS score

The ASPECTS scoring system is an established and clinically validated method for support treating decisions in readily available regions of the brain CT scan. The ASPECTS score enables a quantitative evaluation of the middle cerebral artery (MCA) territory into 10 regions of interest (the ASPECTS regions). These regions are weighted according to clinical importance with equal weighting given to smaller structures as to larger cortical regions. For each damaged region a single point is subtracted.

Clinical validation of the ASPECTS score

The ASPECTS score is an established and clinically validated method to assess signs of ischemic damage on brain CT scans. It is recommended by the American Society of Neuroradiology, European Society for Radiology, and the European Society for Stroke Organization.

ASPECTS is a valuable and important determinant of functional outcomes and symptomatic intracranial hemorrhage (sICH) following thrombolytic treatment (Hill et al., 2003; Hirano et al., 2011).

Clinical studies demonstrated that ASPECTS outperforms trainee physicians in detecting fresh ischemic damage on brain CT scans. Independent studies conducted by the University of Heidelberg and Anglia Ruskin University Clinical Trials Unit have demonstrated that e-ASPECTS on average has equivalent performance to expert neuroradiologists and significantly outperforms trainee physicians in detecting fresh ischemic damage.

Validation of an e-ASPECTS software

e-ASPECTS software has been validated with MRI images and follow-up CT scans. Independent studies conducted by the University of Heidelberg and Anglia Ruskin University Clinical Trials Unit have demonstrated that e-ASPECTS software outperforms trainee physicians in detecting fresh ischemic damage.

Visible signs of ischemia on CT scans mostly reflect irreversibly damaged tissue and are directly linked to the pathophysiology of stroke. The ASPECTS score is an established and clinically validated method to assess signs of ischemic damage (Herweh et al., IJS 2016; Nagel et al., IJS 2016).

ASPECTS regions

ASPECTS regions include:

- The M1 M2 M5 region
- The M3 M6 region
- The I1 region
- The L1 L2 region
- The C1 C2 region
- The IC region

ASPECTS regions are weighted according to clinical importance with equal weighting given to smaller structures as to larger cortical regions. For each damaged region a single point is subtracted.

An ASPECTS score of 10 indicates pronounced ischemic damage. A reduced CT scan box as an ASPECTS score of 10.

ASPECTS regions represent key brain structures involved in the pathophysiology of stroke.

- The M1 M2 M5 region
- The M3 M6 region
- The I1 region
- The L1 L2 region
- The C1 C2 region
- The IC region

ASPECTS regions are weighted according to clinical importance with equal weighting given to smaller structures as to larger cortical regions. For each damaged region a single point is subtracted.

An ASPECTS score of 10 indicates pronounced ischemic damage. A reduced CT scan box as an ASPECTS score of 10.

Baseline ASPECTS score

Baseline ASPECTS score is used to determine patient eligibility for endovascular treatment (e.g. Goyal et al., 2011).

Baseline ASPECTS score of less than 5 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and even worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of 3-5 and 7-9 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of 6-7 was unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of 8-10 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of 5-7 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of 9-10 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of 10 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of more than 5 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of more than 6 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of more than 7 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of more than 8 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of more than 9 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of more than 10 was more likely to benefit from endovascular treatment, while those scoring less than 5 were unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of less than 5 was unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of less than 6 was unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of less than 7 was unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of less than 8 was unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of less than 9 was unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).

Baseline ASPECTS score of less than 10 was unlikely to have any improved outcome and worse for those scoring less than 5 with sICH following thrombolytic treatment (Okazaki et al., 2008; Doshi et al., 2009).