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# Novel Clinical Prediction Model: Integrating A2DS2score with 24-hour ASPECTS and Red Cell Distribution Width for Enhanced Prediction of Stroke-Associated Pneumonia following Intravenous Thrombolysis

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**We use this protocol and it's working**

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## Disclaimer

The authors declare no competing interests.

## Abstract

### Background:

Stroke-associated pneumonia (SAP) is a common leading cause of death during the acute phase. The  $A^2DS^2$  score has been widely used to predict the risk of SAP. However, 24-hour non-contrast computed tomography-Alberta Stroke Program Early CT Score (NCCT-ASPECTS) and red cell distribution width (RDW) were not included in this scale. The purpose of the present study was to investigate the prognostic added value of combining 24-hour NCCT-ASPECTS and RDW with the  $A^2DS^2$  score.

### Methods:

A retrospective study of thrombolized acute ischemic stroke (AIS) patients from January 2015 to July 2022. Data on  $A^2DS^2$  scores, 24-hour NCCT-ASPECTS, and RDW were collected. Three logistic regression models were created: Model A used only the traditional  $A^2DS^2$  score; Model B ( $A^2DS^2$ -c) calculated probabilities using a logistic equation; and Model C (combined  $A^2DS^2$ -MFP) used multivariable fractional polynomial logistic regression and incorporated the  $A^2DS^2$  score, 24-hour NCCT-ASPECTS, and RDW. Ischemic brain lesions in the middle cerebral artery area were assessed using 24-hour NCCT-ASPECTS after completing 24-hour intravenous thrombolysis.

### Results:

Among a cohort of 345 thrombolized AIS patients, 70 individuals (20.3%) experienced SAP. The area under the receiver operating characteristic (AuROC) of 24-hour NCCT-ASPECTS and RDW were 0.841 and 0.621, respectively. The combined  $A^2DS^2$ -MFP calculation was significantly superior to the traditional  $A^2DS^2$  score and  $A^2DS^2$ -c calculation (AuROC 0.917 vs. 0.880,  $P=0.026$ , and 0.917 vs. 0.888,  $P=0.024$ ).

**Conclusion:** This study found that the 24-hour NCCT-ASPECTS and RDW enhanced the predictive value of the  $A^2DS^2$  score for SAP after IV-tPA. The combined  $A^2DS^2$ -MFP model performed excellently in predictive performance, offering robust early SAP detection and potentially improving patient survival. Implementing this novel model in resource-constrained clinical settings could aid clinicians in effective monitoring, enabling risk stratification to guide clinical management.

## Attachments



[Protocol.pdf](#)

210KB

## Troubleshooting



- 1 Novel Clinical Prediction Model: Integrating A<sup>2</sup>DS<sup>2</sup> score with 24-hour ASPECTS and Red Cell Distribution Width for Enhanced Prediction of Stroke-Associated Pneumonia following Intravenous Thrombolysis

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