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Blood urea nitrogen/creatinine as dehydration biomarker to predict prognosis of stroke patients: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION**Support** - No support.**Review Stage at time of this submission** - Data analysis.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202680013

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 3 August 2026 and was last updated on 3 August 2026.

INTRODUCTION

Review question / Objective The current study aimed to perform a systematic review and meta-analysis on the association between hydration status (defined by BUN/Cr) and prognosis in this patient population.

Condition being studied Condition being studied The research team comes from the Department of Critical Care Medicine of a tertiary hospital in China, and all the team members have perfect clinical experience in critical care and resuscitation. Moreover, our team members have published more than 50 meta-analyses, which can guarantee the successful completion of the current research.

METHODS

Participant or population Adults with AIS (patients aged 18 years or older).

Intervention BUN/Cr outcome measures defining dehydration.

Comparator Patient prognosis-specific data such as mortality and stroke prognostic scores.

Study designs to be included Prospective and retrospective cohort designs, case-control studies.

Eligibility criteria (1) Focused on adults with AIS (patients aged 18 years or older), (2) included BUN/Cr outcome measures defining dehydration, and (3) provided patient prognosis-specific data such as mortality and stroke prognostic scores (e.g., modified Rankin scale score [mRS] and National Institute of Health Stroke Scale [NIHSS]).

Information sources PubMed, Embase, Web of Science, and Cochrane Library.

Main outcome(s) BUN/Cr predicted adverse functional outcomes in stroke patients and BUN/Cr predicted stroke mortality.

Quality assessment / Risk of bias analysis The study quality was assessed using the Quality of Prognostic Studies (QUIPS) tool.

Strategy of data synthesis Meta-analysis.

Subgroup analysis (1) The functional outcome evaluation tool: mRS or NIHSS; (2) the cutoff value for BUN/Cr to define dehydration: >20 mg/dL or >15 mg/dL; and (3) variable type: adjusted or unadjusted.

Sensitivity analysis By excluding one study at a time to determine whether the results from individual studies influenced the overall outcomes.

Country(ies) involved China.

Keywords blood urea nitrogen/creatinine, dehydration, acute ischemic stroke, mortality, meta-analysis.

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