

The Prognostic Value of the CALLY Index in Sepsis:
A Systematic Review and Meta-Analysis

INPLASY2025120023
doi: 10.37766/inplasy2025.12.0023
Received: 7 December 2025
Published: 7 December 2025

Xie, CY; Sun, P; Zhang, M; Fan, H; Li ZZ; Tong, X.

Corresponding author:
Xiang Tong
tongxiang@scu.edu.cn

Author Affiliation:
West China Hospital, Sichuan
University.

ADMINISTRATIVE INFORMATION

Support - This study was supported by grants from Sichuan Science and Technology Program (2024YFFK0141), Tianfu QC Project (TJZ202454) and National Clinical Research Center for Geriatrics, West China Hospital, Sichuan University, China (Z2024LC005).

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2025120023

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 7 December 2025 and was last updated on 7 December 2025.

INTRODUCTION

Review question / Objective This meta-analysis seeks to clarify the relationship between the CALLY index and prognosis in septic patients.

Rationale The C-reactive protein-albumin-lymphocyte (CALLY) index is a composite biomarker of inflammation, nutrition, and immunity, yet its prognostic value in sepsis remains uncertain due to inconsistent evidence.

Condition being studied Sepsis and septic shock.

METHODS

Participant or population Adult or pediatric patients diagnosed with sepsis or septic shock (as defined by original studies, e.g., Sepsis-3 criteria).

Intervention The CALLY index, a composite biomarker calculated as:

$$\text{CALLY index} = (\text{CRP} \times \text{lymphocyte count}) / \text{albumin}$$
 (or similar formulations as reported in primary studies).

It is derived from routine blood tests and reflects inflammation (CRP), nutritional status (albumin), and immune response (lymphocyte count).

Comparator For prognostic outcomes: Comparison of CALLY index values between sepsis survivors vs. non-survivors.

For diagnostic accuracy: Comparison against mortality outcomes (e.g., sensitivity/specificity for predicting death).

For association studies: Unadjusted and adjusted effect sizes (e.g., HR, OR) for mortality risk.

Study designs to be included Cohort studies (prospective or retrospective) and case-control

studies that evaluate the CALLY index in sepsis patients.

Eligibility criteria Original studies involving sepsis patients.

Studies reporting the CALLY index and its association with outcomes (e.g., mortality, diagnostic performance).

Sufficient data to calculate effect sizes (SMD, HR, OR, sensitivity, specificity).

Information sources PubMed, Embase, Web of Science, and Google Scholar.

Main outcome(s) Difference in CALLY index values between sepsis survivors and non-survivors (using Standardized Mean Difference, SMD).

Association between CALLY index and mortality risk (Hazard Ratio, HR; Odds Ratio, OR).

Diagnostic accuracy of the CALLY index for predicting mortality (sensitivity, specificity, diagnostic odds ratio).

Quality assessment / Risk of bias analysis

Newcastle-Ottawa Scale (NOS) for cohort and case-control studies. Two independent reviewers assess studies based on selection, comparability, and outcome/exposure domains. Discrepancies are resolved by a third reviewer. NOS scores of 0–3 (low quality), 4–6 (moderate), 7–9 (high quality).

Strategy of data synthesis Random-effects model (to account for between-study heterogeneity).

SMD for continuous outcomes (CALLY index values).

Pooled HR/OR for categorical outcomes (mortality risk).

Sensitivity, specificity, and diagnostic odds ratio for diagnostic accuracy.

Subgroup analysis By ethnicity (e.g., Chinese vs. Turkish populations).

Sensitivity analysis Leave-one-out analysis (removing one study at a time to assess its impact on overall results).

Language restriction English.

Country(ies) involved China.

Keywords CALLY index, Sepsis, Prognosis, meta-analysis.

Contributions of each author

Author 1 - Chuangying Xie.

Email: 15984980891@163.com

Author 2 - Peng Sun.

Email: 449131675@qq.com

Author 3 - Min Zhang.

Email: 18894266493@163.com

Author 4 - Hong Fan.

Email: fanhong@scu.edu.cn

Author 5 - Zhenzhen Li.

Email: lizhenzhen@scu.edu.cn

Author 6 - Xiang Tong.

Email: tongxiang@scu.edu.cn