INPLASY PROTOCOL

To cite: Liu et al. Lung ultrasound-guided treatment in chronic heart failure: a protocol for systematic review and meta-analysis. Inplasy protocol 202230117. doi: 10.37766/inplasy2022.3.0117

Received: 22 March 2022

Published: 22 March 2022

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Support: **HMRP-HUTCM-2018.**

Review Stage at time of this submission: **The review has not yet started.**

Conflicts of interest:
None declared.

Lung ultrasound-guided treatment in chronic heart failure: a protocol for systematic review and meta-analysis

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Review question / Objective: **Lung ultrasound (LUS) is a convenient and reliable imaging technique for the detection of pulmonary congestion in heart failure, however, the clinical value of LUS in the treatment of chronic heart failure (CHF) remains unclear. Therefore, in the current study, we perform this systematic review and meta-analysis to evaluate the clinical value of LUS-guided treatment in CHF by integrating the existing evidences.**
Condition being studied: **Chronic heart failure.**
Eligibility criteria: **(1) The inclusion criteria are as follows: (a) Participants: Patients with CHF; (b) Intervention: LUS-guided treatment for CHF; (c) Comparison: Physical examination (PE) - guided treatment for CHF; (d) Outcomes: All cause-mortality, urgent care visits, acute kidney injury, and CHF hospitalization; (f) Study design: randomized clinical trials (RCTs).(2) The exclusion criteria include acute heart failure, animal experiments, insufficient data, duplicated patients, conference reports, case reports, comments, reviews, and editorials.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 March 2022 and was last updated on 22 March 2022 (registration number INPLASY202230117).

INTRODUCTION

Review question / Objective: **Lung ultrasound (LUS) is a convenient and reliable imaging technique for the detection of pulmonary congestion in heart failure, however, the clinical value of LUS in the treatment of chronic heart failure (CHF) remains unclear. Therefore, in the current study, we perform this systematic review and meta-analysis to evaluate the clinical**

value of LUS-guided treatment in CHF by integrating the existing evidences.

Condition being studied: Chronic heart failure.

METHODS

Search strategy: ("ultrasound") AND ("lung" OR "pulmonary") AND ("heart failure" OR "ventricular dysfunction").

Participant or population: Patients with CHF.

Intervention: LUS-guided treatment for CHF.

Comparator: Physical examination (PE) - guided treatment for CHF.

Study designs to be included: Randomized clinical trials (RCTs).

Eligibility criteria: (1) The inclusion criteria are as follows: (a) Participants: Patients with CHF; (b) Intervention: LUS-guided treatment for CHF; (c) Comparison: Physical examination (PE) - guided treatment for CHF; (d) Outcomes: All cause-mortality, urgent care visits, acute kidney injury, and CHF hospitalization; (f) Study design: randomized clinical trials (RCTs).(2) The exclusion criteria include acute heart failure, animal experiments, insufficient data, duplicated patients, conference reports, case reports, comments, reviews, and editorials.

Information sources: PubMed, Cochrane Library, Embase, Web of Science, CNKI database, as well as Wanfang Database are searched to look for relevant studies.

Main outcome(s): All cause-mortality, urgent care visits, acute kidney injury, and CHF hospitalization.

Quality assessment / Risk of bias analysis: The "risk of bias assessment" tool in Cochrane System Assessment Manual 5.0 will be used to assess the risk of bias of included RCTs. For each included study, the quality will be evaluated from following seven parts: stochastic method, allocation concealment, adopt blinding to volunteers and researchers, adopt blinding to evaluator, the completeness of research data, selective reporting study outcomes, and other bias. All included RCTs will be classified into three levels according to the quality assessment: high, unclear, or low risk of bias. The quality assessment is conducted by two authors independently, and a group discussion will be organized for the discrepancy.

Strategy of data synthesis: The comparisons of the risk for all cause-mortality, urgent care visits, acute kidney injury, or CHF hospitalization will be conducted using the risk ratio (RR) with corresponding 95% confidence interval (CI).

Subgroup analysis: The subgroup analysis will be conducted to explore the source of heterogeneity if there is an obvious heterogeneity across included studies. The subgroup analyses may be performed based on different classification standards, such as country, quality of studies, follow-up time, and so on.

Sensitivity analysis: The sensitivity analysis is used to determine whether one included study has the decisive effect on the overall results by removing one included study one time.

Country(ies) involved: China.

Keywords: chronic heart failure, lung ultrasound, pulmonary congestion, treatment, systematic review, meta-analysis.

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Author 3 - Kai Liu.
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