

# INPLASY PROTOCOL

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None declared.

## Network meta-analysis of curative efficacy of Chinese medicine injection on Acute heart failure

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**Review question / Objective:** To systematically evaluate the efficacy of Chinese medicine injections (CMIs) for treating Acute heart failure (AHF).

**Condition being studied:** Acute heart failure (AHF) is a group of complex clinical syndromes caused by abnormal changes in cardiac structure and function caused by multiple reasons, resulting in ventricular systolic and diastolic dysfunction, and is the main cause of death in patients. In recent years, Chinese medicine injections (CMIs) injections have been reported increasingly for AHF therapy, which can be used to improve symptoms and efficacy while reducing side effects or adverse reactions caused by Western medicine therapy. In this study, network meta-analysis was used to systematically evaluate and compare the efficacy indicators of commonly used clinical CMIs in the treatment of AHF, so as to provide more clinical evidence for TCM treatment of acute heart failure and to guide clinicians in precise drug use.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 30 June 2022 and was last updated on 30 June 2022 (registration number INPLASY202260114).

### INTRODUCTION

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## METHODS

**Participant or population:** The diagnostic criteria of Western medicine and Traditional Chinese medicine should meet the AHF diagnostic criteria recognized at the time of publication of the study.

**Intervention:** The treatment group was treated with CMI in addition to the control group. The treatment group was treated with CMI in addition to.

**Comparator:** Conventional western medicine treatment, including diet and life regulation, diuretics, digitalis preparations, angiotensin converting enzyme inhibitors, Angiotensin converting enzyme inhibitor (ACEI), Angiotensin ii receptor blocker (ARB),  $\beta$ -receptor blockers and nitrates, etc.

**Study designs to be included:** Two reviewers independently screened literature, extracted data and cross-checked. In case of disagreement, a third party was consulted for assistance in judgment. If lacking data, the author was contacted to supplement as much as possible. In literature screening, the title and abstract should be read first. After excluding obviously irrelevant literature, the full text should be further read to determine whether the final inclusion is made. Data extraction mainly includes: (1) The basic information of the included research, including research title, first author, journal of publication and t.

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**Information sources:** CNKI, WanFang Data, VIP, The Cochrane Library, PubMed and EMBase databases were electronically searched from inception to March 2022 to identify randomized controlled trials (RCTs) on CMI for treating AHF. In addition, references to the included literature were traced back to supplement the acquisition of relevant literature. Key words and free words are used in retrieval. English search words included: TCM injection, Shenfu injection, Shenmai Injection, Danhong injection, Gegensu injection, Xinmailong injection, Acute heart failure, etc.

**Main outcome(s):** A total of 81 studies were included including 7789 patients with AHF and 6 types of CMIs (Shenfu injection, Shenmai injection, Danhong injection, Gegensu injection, Xinmailong injection and mixed injection). The results of network meta-analysis showed that the efficacy of combined CMIs was superior to conventional Western medicine alone. For the main efficacy, CMIs had significant advantages in improving the total clinical effectiveness rate [MD=3.68, 95%CI(3.10, 4.37),  $P<0.001$ ] and LVEF [MD=5.55, 95%CI(5.36, 5.74),  $P<0.001$ ] in terms of main efficacy indicators. Likewise, CMIs

had significant advantages in reducing LVEDD [MD=-5.16, 95%CI(-5.45, -4.87), P<0.001] and Natriuretic peptide (NT pro-BNP [MD=-1.58, 95%CI(-1.67, -1.50), P<0.001] and BNP [MD=-8.93, 95%CI(-10.59, -7.28), P<0.001]) levels in terms of main efficacy indicators. For secondary indexes, Shenfu injection had the most comprehensive regulation and the most literatures were involve, then Shenmai injection, Xinmailong injection, Gegensu injection mixed injection and Danhong injection. The results all showed that the therapeutic effect of combined CMIs was superior to conventional treatment alone.

#### Quality assessment / Risk of bias analysis:

Two reviewers assessed the risk of bias in the included studies according to the Cochrane Manual's risk of bias assessment tool for RCTs. Projects include: randomization of assignment methods, assignment plan concealment, blinding of study subjects and protocol implementors, blinding of study outcome measures, integrity of outcome data, selective reporting of study results, and other sources of bias. Finally, the risk of literature bias was judged as "low", "high" and "uncertain". Two reviewers independently conducted, and then cross-checked, in case of disagreement, through discussion to resolve, disagreement with the third reviewer to discuss decisions, reached a consensus.

**Strategy of data synthesis:** Network meta-analysis was conducted based on Bayesian statistical method, statistical analysis was conducted using Stata 16.0 software and its network, meta program package to draw the network diagram for comparison between intervention measures and funnel diagram for evaluation of publication bias, etc. In this study, Relative risk (RR) and 95% confidence interval (CI) were used as statistics for binary data. Mean difference (MD) and its 95%CI were used as statistics for continuous data. X<sup>2</sup> test and I<sup>2</sup> value were used to evaluate the heterogeneity between studies. P50% indicated obvious heterogeneity, the source of heterogeneity was further analyzed by subgroup analysis

or sensitivity analysis; if heterogeneity was still large, random effect model or descriptive analysis was used.

**Subgroup analysis:** None.

**Sensitivity analysis:** None.

**Country(ies) involved:** China.

**Keywords:** Acute Heart failure, Chinese medicine injection, Clinical curative efficacy, Network meta-analysis, Randomized controlled trial. Acute Heart failure, Chinese medicine injection, Clinical.

#### Contributions of each author:

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