

# INPLASY PROTOCOL

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submission:** Completed but  
not published.

**Conflicts of interest:**  
None declared.

## INTRODUCTION

**Review question / Objective:** Compare the efficacy and safety of various antibiotics including polymyxins monotherapy,  $\beta$ -lactam monotherapy, glycyclines monotherapy, fluoroquinolone

## Antibiotics treatments for Ventilator-associated pneumonia: a systematic review and a network meta-analysis

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**Review question / Objective:** Compare the efficacy and safety of various antibiotics including polymyxins monotherapy,  $\beta$ -lactam monotherapy, glycyclines monotherapy, fluoroquinolone monotherapy and combination therapy in hospitalized patients with Ventilator-associated pneumonia.

**Eligibility criteria:** The inclusion criteria: 1) Patients (aged  $\geq 18$  years) in a study population that were mechanically ventilated and diagnosed with VAP or suspected VAP; 2) Intervention which compared at least two different kinds of intravenous or inhaled antibiotics; 3) At least one of the following outcomes was reported: clinical cure, microbiological eradication, mortality. The exclusion criteria: 1) Narrative reviews, systematic reviews and meta-analysis, animal studies, single-arm trials; 2) Studies which antibiotics were not the primary focus of the intervention, or lacking of comparisons between different kinds of antibiotics.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 December 2022 and was last updated on 04 December 2022 (registration number INPLASY2022120015).

monotherapy and combination therapy in hospitalized patients with Ventilator-associated pneumonia.

**Condition being studied:** Ventilator-associated pneumonia.

## METHODS

**Participant or population:** Patients (aged  $\geq$  18 years) that were mechanically ventilated and diagnosed with VAP or suspected VAP.

**Intervention:** Intravenous or inhaled antibiotics.

**Comparator:** Intravenous or inhaled antibiotics.

**Study designs to be included:** Randomized controlled trials and observational studies.

**Eligibility criteria:** The inclusion criteria: 1) Patients (aged  $\geq$  18 years) in a study population that were mechanically ventilated and diagnosed with VAP or suspected VAP; 2) Intervention which compared at least two different kinds of intravenous or inhaled antibiotics; 3) At least one of the following outcomes was reported: clinical cure, microbiological eradication, mortality. The exclusion criteria: 1) Narrative reviews, systematic reviews and meta-analysis, animal studies, single-arm trials; 2) Studies which antibiotics were not the primary focus of the intervention, or lacking of comparisons between different kinds of antibiotics.

**Information sources:** We searched PubMed, Embase, The Cochrane Library, Web of Science from their inception to October 2022. ClinicalTrials.gov (<http://ClinicalTrials.gov>) was screened as well. Moreover, meeting abstracts, reference lists of relevant articles and reviews were inspected to identify additional eligible studies. The search strategy was composed of these items: (Ventilator-Associated Pneumonia OR VAP OR nosocomial pneumonia OR ventilat OR intubated OR lung infect) AND (Anti Bacterial Agents OR Bacteriocidal Agents OR Anti-Mycobacterial Agent OR Antibiotics OR antiviral OR Antifungal) AND (Randomized Controlled Trials OR trial OR placebo OR groups OR control OR Random\*). Considering the low number of randomized controlled trials (RCTs) on this subject, we imposed no restrictions on

language, publication date, study design or study quality.

**Main outcome(s):** The primary outcome was clinical cure, and secondary outcomes included microbiological eradication and all-cause mortality.

**Quality assessment / Risk of bias analysis:** Two review authors independently assessed the quality of included RCTs using the Cochrane Collaboration's risk of bias assessment tool. Studies were graded as "low risk", "unclear risk", or "high risk" according to seven domains: randomization; allocation concealment; blinding of participants and personnel; blinding of outcome assessment; incomplete outcome data; selective reporting; or other bias. And the Newcastle-Ottawa Scale was used to appraise the risk of bias for cohort and case-control studies from three parameters: selection, comparability, and outcome. Discrepancies were resolved by consensus with a third senior reviewer.

**Strategy of data synthesis:** The differences were calculated as the relative risk (RR) and 95% confidence interval (CI) for dichotomous outcomes. Heterogeneity was assessed, a P value  $<$  0.05 indicated significant heterogeneity. We used surface under the cumulative ranking curve (SUCRA) to evaluate the rank probabilities of antibiotic therapy. Publication bias was determined by the funnel plot. All analyses were performed by STATA 14.0 (Stata Corporation, College Station, Texas, USA).

**Subgroup analysis:** None.

**Sensitivity analysis:** None.

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

**Keywords:** Ventilator-associated pneumonia; Antibiotics treatments; Safety; Efficiency.

**Contributions of each author:**

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Author 2 - Qingyuan Wu.

Author 3 - Chenghua Lu.