

INPLASY PROTOCOL

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Empirical antibiotic treatment of community acquired pneumonia in adults a network meta-analysis

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Review Stage at time of this submission: Piloting of the study selection process.

Conflicts of interest:
No conflicts of interest.

Review question / Objective: In this network meta-analysis, we will investigate the empirical choice of antibiotics in community acquired pneumonia, the intervention measures will include all kinds of applicable antibiotics including beta-lactams macrolides fluoroquinolones, and tetracyclines. The comparator would be all kinds of placebo or antibiotics from another category. The outcomes will be the effectiveness and safety data of each antibiotic

Condition being studied: Community acquired pneumonia defined as pneumonia happened before hospitalization or within 48 hours after hospitalization, the pathogens include gram-positive and gram-negative bacteria, mycoplasma, fungi except virus.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 September 2020 and was last updated on 23 September 2020 (registration number INPLASY202090081).

INTRODUCTION

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METHODS

Participant or population: Participant or population the study population will be limited to individuals with confirmed community acquired pneumonia of 18 years of age and older. Randomized controlled trials evaluating effectiveness and safety of antibiotics in adults.

Intervention: The intervention of interest is a specific drug of a single class of antibiotic drug. This could include beta-lactams, cephalosporins, macrolide, fluoroquinolones and tetracyclines.

Comparator: Placebo or a drug belong to different class of antibiotics for example ceftriaxone vs levofloxacin.

Study designs to be included: The review will be limited to inclusion of Randomized Control Trials, and open-label controlled trials.

Eligibility criteria: Randomised controlled trials (RCTs) comparing antibiotics for CAP in adults. We considered only those studies using the case definition of pneumonia (as given by the WHO) or radiologically confirmed pneumonia in this review. Types of participants We included adults aged 18 years or older with CAP treated in a hospital or community setting. We excluded studies describing pneumonia post-hospitalisation in immunocompromised patients (for example, following surgical procedures) or patients with underlying illnesses like congenital heart disease, diabetes, or those in an immune deficient state. Types of interventions We compared any intervention with antibiotics (administered

by intravenous route, intramuscular route or orally) with another antibiotic for the treatment of CAP.

Information sources: We will search for pubmed embase, central, cinahl, cnki and wanfang data, scopus, scirus for the published data, and clinicaltrials.gov and other registries for more information; ISTP, ISI proceedings, OCLC Firstsearch proceedings, and CACP for conference papers. GraNet, DARE, SIGLE, GraLIT Network for grey literatures.

Main outcome(s): Clinical cure. The definition of clinical cure is symptomatic and involves clinical recovery by the end of treatment. Or Treatment failure rates. The definition of treatment failure is the presence of any of the following: development of chest in-drawing, convulsions, drowsiness or inability to drink at any time, respiratory rate above the age-specific cut-off point on completion of treatment, or oxygen saturation of less than 90% (measured by pulse oximetry) after completion of the treatment. Loss to follow-up or withdrawal from the study at any time after recruitment indicated failure in the analysis.

Quality assessment / Risk of bias analysis: Two authors will independently appraise methodological quality using Cochrane GRADE tool of bias and quality. We will assess it through six aspects. Any different conflicts will be settled by a third experienced author through consultation.

Strategy of data synthesis: RevMan V.5.3 software, winbugs 1.4, and R 4.0 would be employed to carry out statistical analysis. We will estimate outcome values as descriptive statistics and 95% confidence intervals. I^2 statistic will be utilized to check heterogeneity across eligible studies. $I^2 \leq 50\%$ implies homogeneity, and we will use a fixed-effects model. On the other hand, $I^2 > 50\%$ reveals discrete heterogeneity, and we will exert a random-effects model. We will estimate values of outcome data (e.g. sensitivity, specificity) using 2 x 2 tables. Additionally, we will estimate a descriptive forest plot and a summary receiver

operating characteristic plot. If there is homogeneity among included studies, we will perform a meta-analysis based on the similarity in characteristics of study and patient, and outcomes. If there is obvious heterogeneity, we will scrutinize its sources using a subgroup analysis and bivariate random-effects regression approach.

Subgroup analysis: Whenever necessary, we will investigate sources of apparent heterogeneity based on the differences in study characteristics, study quality and outcomes.

Sensibility analysis: Whenever necessary, we will examine the stability of study results by eliminating low quality studies.

Country(ies) involved: China.

Keywords: antibiotics community acquired pneumonia empirical treatment adult.

Contributions of each author:

Author 1 - Cong Hu - Dr Hu performed literature review, drafted the manuscript.

Author 2 - Guowei Li - Dr Li provided statistical expertise and checked the literature review.

Author 3 - Feng Gao - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.