INPLASY PROTOCOL

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Conflicts of interest:
None.

Mortality in Acutely Ill Adults with Conservative versus Liberal Oxygen Therapy: A Systematic Review and Meta-analysis

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Review question / Objective: **Is mortality rate different in acutely ill patients with liberal oxygen therapy compared to conservative oxygen therapy?**
Condition being studied: **The oxygen administration strategies in acutely ill adults are contradictory and inconsistent. Moreover, there is a lack of high-quality evidence and updated meta-analysis of the mortality in different way of oxygen administration in acutely ill adults. The main outcome of our study is the mortality in acutely ill adults administrating liberal versus conservative oxygen therapy.**
Information sources: **We will search the following datasets: Cochrane Central Register of Controlled Trials (The Cochrane Library), MEDLINE (Ovid), Embase (Ovid), from inception to Oct. 31, 2020 without language restrictions. We will include these terms relating to or describing the intervention we are interested in. The keywords will be adapted to Medical Subject Headings (MeSH terms) and combination with database-specific filters with Boolean connectors for randomized controlled trials.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 November 2020 and was last updated on 25 November 2020 (registration number INPLASY2020110107).

INTRODUCTION

Review question / Objective: **Is mortality rate different in acutely ill patients with liberal oxygen therapy compared to conservative oxygen therapy?**

Condition being studied: **The oxygen administration strategies in acutely ill adults are contradictory and inconsistent. Moreover, there is a lack of high-quality evidence and updated meta-analysis of the mortality in different way of oxygen administration in acutely ill adults. The main outcome of our study is the mortality**

in acutely ill adults administrating liberal versus conservative oxygen therapy.

METHODS

Search strategy: We will search the following datasets: Cochrane Central Register of Controlled Trials (The Cochrane Library), MEDLINE (Ovid), Embase (Ovid), from inception to Oct. 31, 2020 without language restrictions. We will include these terms relating to or describing the intervention we are interested in. The keywords will be adapted to Medical Subject Headings (MeSH terms) and combination with database-specific filters with Boolean connectors for randomized controlled trials.

Participant or population: Acutely ill adults (Age≧18 years old).

Intervention: Conservative oxygen therapy.

Comparator: Liberal oxygen therapy.

Study designs to be included: We will only include RCTs in our research.

Eligibility criteria: We will only include RCTs focusing on acutely ill adults with conservative or liberal oxygen therapy.

Information sources: We will search the following datasets: Cochrane Central Register of Controlled Trials (The Cochrane Library), MEDLINE (Ovid), Embase (Ovid), from inception to Oct. 31, 2020 without language restrictions. We will include these terms relating to or describing the intervention we are interested in. The keywords will be adapted to Medical Subject Headings (MeSH terms) and combination with database-specific filters with Boolean connectors for randomized controlled trials.

Main outcome(s): The primary outcome is the longest follow-up mortality.

Data management: Two review authors will perform literature search and screen the title and abstract independently. Both reviewers will retrieve literature by using the search strategy and identify studies with inclusion criteria, and identify and record reasons for the exclusion studies. Any disagreement will be resolved by discussion with the third author if necessary. We will collect the data from each included trial with a standardized extraction form and include authors, year of publication, study design, characteristics of population, types of the intervention and the outcomes. The risk of mortality will be measured as relative risk and we will use random-effect model for our analysis.

Quality assessment / Risk of bias analysis: Two review authors will independently evaluate the risk of bias by using the Cochrane risk of bias tool for these included studies. For each domain, risk of bias will be categorized as "low", "unclear" or "high". Any disagreement will be resolved by discussion with the third author if necessary.

Strategy of data synthesis: We will utilize the Review Manager Software (RevMan 5.3) and synthesize the results of each trial with the random-effects models for all of the outcomes. We will calculate the relative risk with 95% confidence intervals for dichotomous outcomes. We will also assess the heterogeneity of these trials by using $\chi 2$ test and the I^2 statistic; and the I^2 value greater than 50%, it will be considered as existing substantial heterogeneity. We will evaluate the publication bias with funnel plot as well.

Subgroup analysis: We will perform subgroup analysis of the mortality based on level of evidence in each study.

Sensibility analysis: We will perform trial sequential analysis to explore whether cumulative data are adequately powered to evaluate outcomes. We will also conduct the sensitivity analysis by excluding those trials with high risk of bias and using fixed-effect models to test the robustness of our findings.

Language: No language restrictions.

Country(ies) involved: Taiwan.

Keywords: Conservative oxygen therapy; Liberal oxygen therapy; Acutely ill adult.

Contributions of each author:
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