INPLASY PROTOCOL

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The authors declared that they had no competing interests.

Liberal versus restrictive transfusion strategy in patients after traumatic brain injury

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Review question / Objective: **P: patients with traumatic brain injury old than 18 years; I: liberal transfution strategy; C: restrictive transfusion strategy; O: mortality, poor prognosis, infections, length of hospital stays and length of ICU stays; S: randomized controlled trails.**
Condition being studied: **Anemia is frequent among patients with traumatic brain injury (TBI) and is associated with an increased risk of poor outcome. The optimal hemoglobin concentration to trigger red blood cell (RBC) transfusion in patients with TBI is not clearly defined.**
Information sources: **PubMed, EMBASE and CENTRAL (Cochrane Central Register of Controlled Trials) were searched with no restrictions.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 May 2020 and was last updated on 10 May 2020 (registration number INPLASY202050010).

INTRODUCTION

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trigger red blood cell (RBC) transfusion in patients with TBI is not clearly defined.

METHODS

Participant or population: Patients after traumatic brain injury with liberal or restrictive transfusion strategy.

Intervention: Liberal transfusion strategy.

Comparator: Restrictive transfusion strategy.

Study designs to be included: Randomized controlled trails.

Eligibility criteria: Patients with traumatic brain injury old than 18 years. Liberal transfusion strategy were hemoglobin transfusion threshold of 10g/dl and restrictive transfusion strategy were 7g/dl.

Information sources: PubMed, EMBASE and CENTRAL (Cochrane Central Register of Controlled Trials) were searched with no restrictions.

Main outcome(s): Mortality.

Additional outcome(s): Poor prognosis, infections, length of hospital stays, length of ICU stays.

Quality assessment / Risk of bias analysis: Differences were expressed as relative risk (RR) with 95% confidence interval (CI). Meta-analyses were performed using a random-effects model accounting for heterogeneity. The statistical heterogeneity of different trials was evaluated by I2 statistic. Study with I2 values over 50% was considered to have high heterogeneity. $P < 0.05$ was considered statistically significant. All statistical analyses were performed using Revman 5.3 (Nordic Cochrane Center).

Strategy of data synthesis: The data were extracted from each study as follow: first author, year of publication, country, intervention characteristics (number of patients, age, transfusion threshold), comparison characteristics (number of patients, age, transfusion threshold), and data on primary and secondary outcomes. When we found duplicate reports of the same trial, we retained only the most complete study. Disagreements were solved by discussion with another reviewer. The Cochrane risk of bias tool was adopted by two independent reviews to assess the risk of bias for each RCT.

Subgroup analysis: For the outcome of hospital stays, subgroup analysis was conducted according to length of ICU stays and length of hospital stays.

Sensibility analysis: The I 2 statistic was used to indicate the percentage of variation between the studies due to heterogeneity (20). Subgroup analyses were carried out to explain the identified heterogeneity.

Country(ies) involved: China.

Keywords: Liberal; restrictive; transfusion; brain.

Contributions of each author:
Author 1 - Chaonan Du - Author 1 drafted the manuscript.
Author 2 - Jing Li - The author provided statistical expertise.
Author 3 - Zhanying Ju - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.
Author 4 - Mingfei Yang - The author read, provided feedback and approved the final manuscript.