

PROSPERO International prospective register of systematic reviews

Red cell transfusions for prevention of bleeding: a systematic review and meta-analysis of randomized controlled trials

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Citation

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Review question(s)

Does liberal transfusion of red cells reduce the risk of clinically significant bleeding, severe/life-threatening bleeding or fatal bleeding compared to restrictive red cell transfusion.

Searches

MEDLINE (Ovid) 1948 to present

EMBASE (Ovid) 1980 to present

CENTRAL, The Cochrane Library 2015, Issue 11

ISIWeb of Science: Science Citation Index Expanded (1970 to present)

ISIWeb of Science: Conference Proceedings Citation Index - Science (1990 to present).

Transfusion Evidence Library (www.transfusionevidencelibrary.com)

Types of study to be included

Randomised controlled trials

Condition or domain being studied

People receiving red blood cell transfusions

Participants/ population

Participants in red cell transfusion threshold randomised controlled trials

Intervention(s), exposure(s)

Liberal threshold for red blood cell transfusion

Comparator(s)/ control

Restrictive threshold for red blood cell transfusion

Context

Trials will only be included if they report bleeding outcomes

Outcome(s)

Primary outcomes

Number of bleeding episodes within 30 days from the start of the study

Secondary outcomes

Severity of bleeding (accepting that different grading systems may be reported)

Severe/life-threatening bleeding episodes within 30 days from the start of the study

Fatal bleeding within 30 days from the start of the study

Time to bleeding (if not a presenting feature)

Data extraction, (selection and coding)

Two review authors will conduct data extraction according to the guidelines proposed by the Cochrane Collaboration. Potential disagreements between the review authors will be resolved by consensus. The review authors will not be blinded to names of authors, institutions, journals, or the outcomes of the trials. The two authors will extract data independently for all the studies. The following data will be extracted:

General information

Review author's name, date of data extraction, study ID, reference manager number, first author of study, author's contact address (if available), citation of paper, objectives of the trial.

Trial details

Trial design, location, setting, sample size, power calculation, treatment allocation, randomisation, blinding, inclusion and exclusion criteria, reasons for exclusion, comparability of groups, length of follow up, stratification, stopping rules described, statistical analysis, results, conclusion, and funding.

Characteristics of participants

Age, gender, ethnicity, total number recruited, total number randomised, total number analysed, underlying disease, lost to follow-up numbers, drop outs (percentage in each arm) with reasons, protocol violations, previous treatments, current treatment, prognostic factors.

Interventions

Experimental and control interventions, timing of intervention, compliance to interventions, any differences between interventions.

Assessment of bias

Sequence generation, allocation concealment, blinding (participants, personnel, and outcome assessors), incomplete outcome data, selective outcome reporting, and other sources of bias.

Outcomes measured

Number of bleeding episodes, severe/life-threatening bleeding episodes, fatal bleeding (within 30 days from the start of the study) and time to first bleed (if not bleeding at study entry).

Both full-text versions and abstracts will be used to retrieve the data.

Publications reporting on more than one trial will be extracted using one data extraction form for each trial. Trials reported in more than one publication will be extracted on one form only. If these sources do not provide sufficient information, we will contact the authors, study groups or companies for additional details.

Data entry into software will be done by one review author and will be checked for accuracy by a second review author.

Risk of bias (quality) assessment

Two review authors will assess all newly-included studies for possible risk of bias (as described in the Cochrane

Handbook). The assessment will include information about the design, conduct and analysis of the trial. Each criterion will be evaluated on a three-point scale: low risk of bias, high risk of bias, or unclear.

To assess risk of bias, the following questions will be included in the risk of bias table for each included study:

- Was the allocation sequence adequately generated?
- Was allocation adequately concealed?
- Was knowledge of the allocated intervention adequately prevented during the study (including an assessment of blinding of participants, personnel, and outcome assessors)?
- Were incomplete outcome data adequately addressed (for every outcome separately)?
- Are reports of the study free of selective outcome reporting?
- Was the study apparently free of other problems that could put it at risk of bias?

Strategy for data synthesis

Analyses will be performed according to the recommendations of the Cochrane Collaboration. Aggregated data will be used for analysis. For statistical analysis, we will enter data into Review Manager Version 5.3.5.

Where meta-analysis is feasible, we will use the fixed-effect model for pooling the data. We will use the Mantel-Haenszel method for dichotomous outcomes, and the inverse variance method for continuous outcomes. The generic inverse variance method will be employed for time-to-event outcomes.

We will use the random-effects model for sensitivity analyses as part of the exploration of heterogeneity. If heterogeneity, as expressed by the I-squared, is found to be above 50%, both the fixed-effect and random-effects models will be reported. If heterogeneity is found to be above 80%, we will not perform a meta-analysis and results will be commented on as a narrative.

Analysis of subgroups or subsets

- Children/neonates and adults
- Underlying disorders (acute bleeding causes e.g. trauma/ surgery; semi-acute/medical causes of bleeding e.g. gastrointestinal; post-partum and cancer)

Dissemination plans

We intend to publish the results of the review in a peer-reviewed journal

Contact details for further information

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Organisational affiliation of the review

NHS Blood and Transplant

<http://www.ndcls.ox.ac.uk/oxford-clinical-research-in-transfusion-medicine-2>

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Anticipated or actual start date

22 February 2016

Anticipated completion date

30 December 2016

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Conflicts of interest

None known

Language

English

Country

England

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Erythrocyte Transfusion; Hemorrhage; Humans; Randomized Controlled Trials as Topic

Reference and/or URL for protocol

http://www.crd.york.ac.uk/PROSPEROFILES/35519_PROTOCOL_20160117.pdf

Stage of review

Ongoing

Date of registration in PROSPERO

18 February 2016

Date of publication of this revision

18 February 2016

Stage of review at time of this submission

	Started	Completed
Preliminary searches	No	No
Piloting of the study selection process	No	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

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