Reducing the amount of blood transfused: a systematic review of behavioral interventions to change physicians' transfusion practices


CRD summary
The review evaluated the effectiveness of behavioural interventions to change transfusion practices of physicians. The authors concluded that such interventions appeared appropriate in changing practice and reducing blood utilisation, although further studies are needed to determine the relative effectiveness of different types of interventions. The suitably cautious conclusion is appropriate and reflects limitations in the review process and included studies.

Authors' objectives
To determine the effectiveness of behavioural interventions to reduce blood product utilisation.

Searching
MEDLINE and EMBASE were searched from January 1966 to May 2003 for English language articles; the search terms were reported. Reference lists and personal files were also searched and experts were contacted for additional studies.

Study selection
Study designs of evaluations included in the review
Studies that compared an intervention group with a control group were eligible for inclusion. The included studies were classified as before-and-after studies, controlled before-and-after studies or controlled cohort studies.

Specific interventions included in the review
Studies of interventions aimed at changing the transfusion practices of physicians were eligible for inclusion. The included studies evaluated guidelines, audit with feedback or approval, the introduction of new transfusion forms or reminder forms, and group or individual education. Studies that mandated adherence to transfusion triggers or protocols were excluded.

Participants included in the review
Studies of physicians involved in the practice of blood transfusions were eligible for inclusion. The included studies targeted all physicians, surgeons and/or anaesthesiologists, or obstetricians and gynaecologists. Blood products transfused in the included studies were fresh frozen plasma (FFP), red blood cells (RBCs), platelets, cryoprecipitate, or albumin. Some studies evaluated more than one blood product.

Outcomes assessed in the review
Studies that reported on the number of units transfused, or the proportion of patients receiving transfusions, were eligible for inclusion.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed the eligibility of the included studies and any disagreements were resolved by consensus.

Assessment of study quality
Validity was assessed according to the following study characteristics: baseline assessment, documentation of secular changes, blinding of the outcome assessor, contamination, reliability of the outcome measure, method (prospective or retrospective) and completeness of data collection, and length of follow-up. The authors did not state how many reviewers performed the validity assessment.
Data extraction
Two reviewers independently extracted the data using a standardised form. Data were extracted on the number of units transfused or the number of patients receiving a transfusion, and were used to derive the absolute and relative reduction in the individual studies.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative. The ranges of the relative reductions for the type of blood product and the interventions were presented.

How were differences between studies investigated?
The synthesis was grouped by outcomes. Differences between the studies were explored in the text with particular focus on type of blood product.

Results of the review
Nineteen studies were included in the review.

Number of units transfused (15 studies).
Fourteen studies found a reduction in the number of units transfused per patient. The range of relative reductions across studies was 9 to 77%. The reductions were similar for RBCs (12 to 65%) and FFP (9 to 77%), but lower for platelets (14 to 23%). One study found a reduction in the number of inappropriate transfusions.

Proportion of patients receiving transfusions (5 studies).
Five studies found a reduction in the proportion of patients who received transfusions. The range of relative reductions across studies was 17 to 79%. For RBC the relative reduction ranged from 17 to 77%, and for FFP it was 21%.

Effectiveness of the type of intervention.
No type of intervention, or combination of interventions, was found to be associated with a greater reduction in blood product utilisation.

Authors’ conclusions
Behavioural interventions appear to be effective in reducing the blood utilisation practices of physicians. Well-conducted clinical trials are required to determine the relative effectiveness of different types of interventions.

CRD commentary
The review addressed a clear research question with inclusion criteria that appear appropriate. The search was limited to two electronic databases and to English language articles only; it is therefore possible that some studies might not have been identified. Furthermore, all of the included studies found a reduction in blood product utilisation, which may be suggestive of publication bias. Methods were used to minimise bias and error in the study selection and data abstraction processes, but it was unclear if such methods were used for the assessment of validity. A quality assessment was undertaken using appropriate criteria, although the details of the results were not reported. This is of particular importance as the designs of the included studies are particularly prone to bias. Adequate details were presented on each included study and the presentation of results was appropriate. The authors accounted for the limitations in the design of the included studies and acknowledged limitations in the review process. Consequently, their suitably cautious conclusion and recommendations for research are appropriate.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.
Research: The authors stated that randomised controlled trials, non-randomised cluster controlled trials, or controlled before- and-after studies are needed to compare the relative efficacy of different strategies to improve transfusion practices. Such studies should also consider the appropriateness of transfusion, undertransfusion and cost.

**Funding**
Canadian Institutes of Health Research, grant number 89246.

**Bibliographic details**

**PubMedID**
15851633

**DOI**
10.1001/archinte.165.8.845

**Original Paper URL**
http://archinte.ama-assn.org

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Behavior; Blood Transfusion /statistics & numerical data /trends /utilization; Humans; Physician's Role; Physicians /standards; Practice Patterns, Physicians' /trends; Retrospective Studies

**AccessionNumber**
12005008220

**Date bibliographic record published**
30/11/2005

**Date abstract record published**
30/11/2005

**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.