Title	**Transfusion Versus Alternative Treatment Modalities in Acute Bleeding**
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Aim

- To study the role of transfusion in treating acute bleeding by assessing the evidence base for transfusion vs other options (treatment within 24 hours after onset).

- To gain an overview of the side effects associated with transfusion and the legal and ethical considerations related to hemotherapy.

Conclusions and results

Blood replacement. Albumin was not found to be more effective than colloids or crystalloids in fluid therapy for acute hemorrhage. No difference in effect was found between colloids and crystalloids.

Oxygen transport. Strong evidence shows that young, healthy individuals tolerate reduced hemoglobin concentration. At very low hemoglobin concentrations, reduced muscle power, fatigue and lightly reduced cognitive function can be observed, but this is normalized soon after retransfusion of one's own blood. No research has shown that blood-banked erythrocytes have the same effect whether used immediately or after hours of storage.

Good evidence supports restrictive use of erythrocytes in intensive care, but there are reservations in using erythrocyte concentrates containing leucocytes. Studies indicate the need for a higher threshold value of hemoglobin in treating patients with unstable angina pectoris/myocardial infarction, but evidence is inconsistent. No evidence was found for replacing transfusion of erythrocytes with artificial oxygen carriers.

Hemostasis. Good evidence shows that fibrinolytic agents reduce the need for transfusion during acute hemorrhage. There is low evidence that freshly frozen plasma/Octaplas® reduces the need for transfusions. The same applies to the use of specific coagulation factors. The future clinical use of recombinant factor VIIs is unclear. Since the results of published studies diverge, no firm conclusion about effect can be drawn. No relevant studies were found on transfusion of thrombocytes used in acute hemorrhage.

Conclusions. The evidence base for hemotherapy (except for fibrinolytic drugs that reduce the need for transfusion) is generally weak, and especially weak for the transfusion of erythrocytes and thrombocytes. The quality of transfusion products stored in blood banks is uncertain. The increasing mean age of the population and the increasing number of therapeutic options may indicate that the need for blood products will remain stable over time.

Methods

The review team systematically reviewed the published literature. Three pairs of reviewers evaluated the literature review. The assessment involved steps starting with 2438 abstracts and ending with 79 studies (81 references) approved as the evidence base. The Norwegian Board of Health provided information on legal aspects, and the report includes a statement by Jehovah's Witnesses.

The literature search included the MEDLINE, EMBASE, and Cochrane databases. No groups of patients should be excluded. The studies should include interventions to replace lost blood, ensure sufficient oxygen delivery to the tissues and drugs or other methods used to achieve good hemostasis. Outcomes were length of hospital stay, survival, complications, and use of blood products. The literature search was updated on January 13, 2005.

Further research/reviews required

It is considered a high priority for the Norwegian and international field of transfusion medicine to improve the evidence base for hemotherapy.

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