

# The effect of whole blood transfusion compared to balanced 1:1:1 component therapy on survival in poly-trauma patients.

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Massive hemorrhage continues to be the number one cause of preventable death among trauma patients. Recent successful use of fresh whole blood for the management of poly-trauma in austere environments suggests this treatment modality could be a superior alternative to conventional blood component therapy.



## Whole blood

- One unit contains a balanced mixture of clotting factors, platelets, and oxygen carrying capabilities lost during massive hemorrhage.
- Both military and civilian retrospective data analysis suggest association between whole blood and improved survival rates of trauma patients.
- Implementation of routine use of two units of low-titer group O whole blood in male trauma patients found no increase in the number of transfusion reactions.

## 1:1:1 component therapy

- Balanced component therapy consists of one unit of packed red blood cells, one unit of fresh frozen plasma, and one unit of platelets.
- Individual components can be stored much longer than whole blood.
- Susceptible to storage lesion and decreased red blood cell effectiveness.
- Highly diluted estimated to be 29% hematocrit and to have 62% of coagulation factors found in whole blood.



## Discussion

Data suggests whole blood can be a promising alternative to component therapy in the management of massive hemorrhage. However, there is a lack of clinical trials that directly compare the outcomes of the two treatment modalities. If whole blood can offer an advantage on survival without increasing the occurrence of transfusion reactions, then it is an option worth testing in the clinical setting.