AGE OF BLOOD & TRAUMA MORTALITY

RESEARCH QUESTION

In adult trauma patients (age 16+) who are transfused with red blood cells (RBCs), what is the impact of the age of stored blood on in-hospital patient mortality?

SIGNIFICANCE

- During storage, RBCs undergo structural, biochemical, and immunological changes (i.e., storage lesion) that limit the benefits of RBC transfusions.
- The clincal significance of storage lesion in the trauma population is unknown.

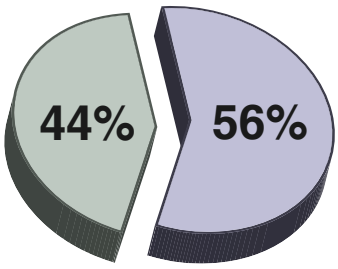
METHODS

- Systematic review of PubMed, Embase, Lilac, and Cochrane databases for studies comparing transfusion of fresh vs. older RBCs in adult trauma patients.
- Descriptive statistics were used to evaluate primary (mortality) and secondary (renal failure, ICU admission and length of stay, complications) outcomes.

RESULTS

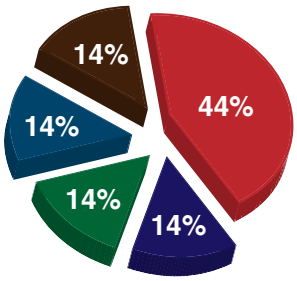
Articles Screened	Studies Included	Patients (Total)
3,936	7	6,780

USE OF OLDER BLOOD & MORTALITY



- Transfusion of older blood associated with increased mortality
- No increase in mortality with older versus newer blood

DEFINITIONS OF OLDER BLOOD



- ≥ 14 days
- > 14 days
- ≥ 28 days
- Average age of all units ≥ 21 days old
- Composite variable of blood age and number of units transfused

ASSOCIATION BETWEEN OLDER BLOOD AND 2˚ OUTCOMES

Complicated sepsis (OR 1.9, 95% CI 1.1-3.4)

Extended ICU stay (RR 1.15, 95% CI 1.11-1.20)

Pneumonia (OR 1.10, 95% CI 1.04-1.17)

Renal dysfunction (OR 1.18, 95% CI 1.07-1.29)

TAKE HOME MESSAGE

- **The impact of the age of transfused RBCs on mortality in trauma patients is INCONCLUSIVE at present.**
- **The scientific community needs to establish a clinically meaningful consensus definition for "older" RBCs.**

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Source: Sowers et al. Impact of the age of stored blood on trauma patient mortality: a systematic review. *Can J Surg*. 2015 Oct;58(5):335-42.