

RBCs transfused in the last 7 days of their 42-day storage limit may be associated with adverse clinical outcomes in high-risk patients” Goel et al (2016).

Abstract:

BACKGROUND: Clinical trials have shown that longer red blood cell (RBC) storage duration does not worsen outcomes; however, these studies included few RBCs near the end of the 42-day storage limit. We tested the hypothesis that these “oldest” RBCs are associated with adverse outcomes.

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STUDY DESIGN AND METHODS: In a retrospective study, 28,247 transfused patients given 129,483 RBC units were assessed. Morbidity, mortality, and length of stay (LOS) were compared in patients transfused exclusively with RBCs stored not more than 21 days versus patients transfused exclusively with RBCs stored 28 days or more and patients transfused exclusively with RBCs stored 35 days or more.

RESULTS: After risk adjustment, ≥ 35 -day RBCs were associated with increased morbidity (adjusted odds ratio, 1.19; 95% confidence interval, 1.07-1.32; $p = 0.002$), but ≥ 28 -day RBCs were not (adjOR, 1.06; 95% CI, 0.97-1.15; $p = 0.2$). Neither ≥ 35 -day nor ≥ 28 -day RBCs were associated with increased mortality. In critically ill patients, ≥ 35 -day RBCs were associated with increased morbidity (adjOR, 1.25; 95% CI, 1.08-1.44; $p = 0.002$) and mortality (adjOR, 1.38; 95% CI, 1.08-1.74; $p = 0.009$), but ≥ 28 -day RBCs were associated with neither. In older patients, ≥ 35 -day RBCs were associated with increased morbidity (adjOR, 1.22; 95% CI, 1.04-1.42; $p = 0.01$), but not mortality (adjOR, 1.28; 95% CI, 0.96-1.71; $p = 0.1$), and ≥ 28 -day RBCs were associated with neither. LOS was increased for both ≥ 28 - and ≥ 35 -day RBCs for all patients and the critically ill and older subgroups.

CONCLUSIONS: RBCs transfused in the last 7 days of their 42-day storage limit may be associated with adverse clinical outcomes in high-risk patients.

Reference:

Goel, R., Johnson, D.J., Scott, A.V., Tobian, A.A.R., Ness, P.M., Nagababu, E. and Frank, S.M. (2016) Red blood cells stored 35 days or more are associated with adverse outcomes in high-risk patients. *Transfusion*. April 8th. .

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