

The effect of red blood cell transfusion on intermittent hypoxemia in ELBW infants.

Abu Jawdeh EG(1), Martin RJ(1), Dick TE(2), Walsh MC(1), Di Fiore JM(1).

Author information:

(1)Division of Neonatology, Department of Pediatrics, Rainbow Babies and Children's Hospital, Case Western Reserve University, Cleveland, OH, USA.

(2)Division of Pulmonary and Critical Care Medicine, Department of Medicine, Case Western Reserve University, Cleveland, OH, USA.

OBJECTIVE: To test the hypothesis that the effect of red blood cell (RBC) transfusion on intermittent hypoxemia (IH) in extremely low birth weight (ELBW) infants is dependent on postnatal age.

STUDY DESIGN: Oxygen saturation of 130 ELBW infants, who required transfusion, was monitored continuously for the first 8 weeks of life. We compared the characteristics of IH ($SpO_2 \leq 80\%$ for ≥ 4 s and ≤ 3 min), 24 h before and both 24 h and 24 to 48 h after each RBC transfusion at three distinct time periods: Epoch 1, 1 to 7 days; Epoch 2, 8 to 28 days; and Epoch 3, >28 days.

RESULT: In Epoch 1, the frequency and severity of IH events were not significantly different before and after transfusion. In both Epochs 2 and 3 there was a decrease in IH frequency and severity 24 h after RBC transfusion that persisted for 48 h. In addition, there was a decrease in the overall time spent with $SpO_2 \leq 80\%$ which persisted for 24 h after transfusion in Epochs 1 and 3, and for 48 h in Epoch 3.

CONCLUSION: The benefit of RBC transfusion on IH is age dependent as improvement in the frequency and severity of IH after transfusion only occurs beyond the first week of life. These observations will aid clinician's decision making by clarifying the benefit of RBC transfusions on patterns of oxygenation in preterm infants.