

TRANSFUSIONS OF RED BLOOD CELLS

Supporting information

This guideline has been prepared with reference to the following:

Jasani B, Rao S, Patole S. Withholding Feeds and Transfusion-Associated Necrotizing Enterocolitis in Preterm Infants: A Systematic Review. *Adv Nutr.* 2017;8:764-9

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5593105/>

New HV, Berryman J, Bolton-Maggs PH et al. Guidelines on transfusion for fetuses, neonates and older children. *Br J Haematol.* 2016;175:784-828

<http://onlinelibrary.wiley.com/doi/10.1111/bjh.14233/full>

Norfolk D. 10.2: Neonatal transfusion in *Handbook of Transfusion Medicine* 5th ed. 2014. TSO

<http://www.transfusionguidelines.org.uk/transfusion-handbook/10-effective-transfusion-in-paediatric-practice/10-2-neonatal-transfusion>

Blood should be administered at the rate of 5 mL/kg/hr?

This is the recommendation given in the British Society of Haematology's consensus guidelines (see reference above).

In a study of 78 care givers of packed red blood cell (RBC) transfusions (Kasat, 2011), 18 patients (23%) were transfused based on guidelines, 36 (46%) based on care givers' perception and 24 (31%) based on both. Neonates transfused based on guidelines alone were more likely to have received the transfusion in the first week of life, had a higher pre-transfusion haematocrit, were less symptomatic and had a higher trend to require mechanical ventilation. Neonates transfused based on caregivers' perception were more likely to be on non-invasive ventilatory support and were more symptomatic. Neonates who improved after a transfusion had a lower pre-transfusion haematocrit ($p=0.02$), were more symptomatic ($p=0.01$) and were more likely to be on non-invasive ventilatory support ($p=0.002$) when compared to the group without a clinical improvement. The group without improvement had an increase in oxygen requirement ($+2.8\pm 6.4$) after the transfusion ($p=0.0004$). Tachycardia was the most sensitive predictor of a benefit from packed RBC transfusion (OR 6.48: $p=0.005$). The authors concluded that guidelines on when to transfuse stable growing neonates with packed RBC should be re-evaluated to include more care giver judgement and perhaps be more restrictive for critically ill neonates.

A systematic review (Venkatesh 2012) reported on two small scale RCTs which compared neonates receiving transfusions at a high volume (20 ml/kg) vs. standard volume (10 ml/kg) reported no differences in mesenteric blood flow in babies. One of review trials reported on mortality and described no differences between the two arms.

Kasat K, Hendricks-Munoz KD, Mally PV. Neonatal red blood cell transfusions: searching for better guidelines. *Blood Transfusion* 2011;9:86-94

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3021402/>

Venkatesh V, Khan R, Curley A et al. The safety and efficacy of red cell transfusions in neonates: a systematic review of randomized controlled trials. *Br. J Haematol.* 158:370-85

<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2141.2012.09180.x/full>

Evidence Level: V

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