



This study was undertaken to compare the impact of temperature of blood warmers on the per cent haemolysis of packed red blood cells (RBCs) heated at different flow rates as well as non-flow conditions” Poder et al (2016).

Abstract:

**BACKGROUND AND OBJECTIVES:** Fluid warmers are routinely used to reduce the risk of hypothermia and cardiac complications associated with the infusion of cold blood products. However, warming blood products could generate haemolysis. This study was undertaken to compare the impact of temperature of blood warmers on the per cent haemolysis of packed red blood cells (RBCs) heated at different flow rates as well as non-flow conditions.

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**MATERIALS AND METHODS:** Infusion warmers used were calibrated at  $41.5^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$  and  $37.5^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ . Cold RBC units stored at  $4^{\circ}\text{C}$  in AS-3 (n = 30), aged 30-39 days old, were divided into half units before being allocated under two different scenarios (i.e. infusion pump or syringe).

**RESULTS:** Blood warmers were effective to warm cold RBCs to  $37.5^{\circ}\text{C}$  or  $41.5^{\circ}\text{C}$  when used in

conjunction with an infusion pump at flow rate up to 600 ml/h. However, when the warmed blood was held in a syringe for various periods of time, such as may occur in neonatal transfusions, the final temperature was below the expected requirements with measurement as low as 33.1°C. Increasing the flow with an infusion pump increased haemolysis in RBCs from 0.2% to up to 2.1% at a flow rate of 600 ml/h regardless of the warming device used ( $P < 0.05$ ). No relevant increase of haemolysis was observed using a syringe.

**CONCLUSIONS:** The use of a blood warmer adjusted to 41.5°C is probably the best choice for reducing the risk of hypothermia for the patient without generating haemolysis. However, we should be cautious with the use of an infusion pump for RBC transfusion, particularly at high flow rates.

Reference:

Poder, T.G., Pruneau, D., Dorval, J., Thibault, L., Fiset, J.F., Bédard, S.K., Jacques, A. and Beauregard, P. (2016) Effect of warming and flow rate conditions of blood warmers on red blood cell integrity. *Vox Sanguinis*. June 9th. .

doi: 10.1111/vox.12423.

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