

Modern infusion pumps widely used in hospitals in Quebec and elsewhere produce non-threatening levels of haemolysis during the transfusion of packed RBCs aged from 10 to 28 days” Poder et al (2017).

Abstract:

BACKGROUND: Although most studies have shown that little haemolysis is induced by infusion pumps, there are some notable exceptions. Only limited data are available on the actual infusion pumps that are most used in hospitals in Quebec and elsewhere, namely, the Infusomat® Space (peristaltic), Plum A+™ (piston) and Colleague® CXE (shuttle) pumps.

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METHODS: Haemolysis and potassium levels were compared before and after the use of the three different infusion pumps. Using 135 units of packed red blood cells (RBCs) aged from 10 to 28 days, 27 measurements were taken for each pump at various flow rates (30, 60, 150, 300 and 450 ml/h) and were compared with measurements taken before using the pumps. The range of flow rates was chosen to cover those of paediatric and adult transfusions.

RESULTS: The shuttle- and piston-type pumps resulted in low haemolysis levels. The peristaltic-type pump produced significantly more haemolysis, which worsened at low flow rates, but the absolute value of haemolysis remained within the range recommended by the regulatory agencies in North America and Europe. Approximately two-thirds of the haemolysis produced by the peristaltic-type pump seemed to be secondary to the use of an antisiphon valve (ASV) on the transfusion line recommended by the manufacturer. Potassium levels did not increase with the use of the pumps.

CONCLUSION: Modern infusion pumps widely used in hospitals in Quebec and elsewhere produce non-threatening levels of haemolysis during the transfusion of packed RBCs aged from 10 to 28 days. ASVs appear to induce additional haemolysis, and we do not recommend using them for blood transfusion.



Certain infusion pumps may produce non-threatening levels of haemolysis during transfusion | 2

Reference:

Poder, T.G., Boileau, J.C., Lafrenière, R., Thibault, L., Carrier, N., de Grandmont, M.J. and Beauregard, P. (2017) Quantitative assessment of haemolysis secondary to modern infusion pumps. Vox Sanguinis. February 15th. .

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