

The safety and feasibility of freeze-dried plasma in prehospital emergency medicine - a retrospective observational study

Burton T, Major R, Barnard EBG

Research, Audit, Innovation & Development (RAID), East Anglian Air Ambulance, Helimed House, Gambling Close, Norwich Airport, Norwich, UK



Introduction

Freeze-dried plasma (FDP) has significant logistical, cost, and regulatory advantages over thawed plasma and red cells, making it an attractive prehospital option. However, there is a risk that patients resuscitated with FDP alone arrive at hospital with significant anaemia. Recent European trauma guidelines target a haemoglobin (Hb) of 70-90 g/L.

The primary aim of this study was to report Hb at hospital arrival in patients receiving FDP alone.

Methods

A consecutive sample of adult trauma patients attended by East Anglian Air Ambulance (EAAA) May 2020 to July 2021 and transported to the regional major trauma centre (MTC) who received prehospital FDP. Those who received red cells were excluded.

Patients were identified from the EAAA electronic medical record, and cross-referenced to MTC data. Data included: demographics, number of prehospital FDP units, and hospital arrival Hb.

The primary outcome was mean Hb at hospital arrival. Data are reported as number (percentage), and mean (\pm standard deviation); correlation was assessed with Pearson's r . Analyses were in Prism 9 for macOS.

Results

$N=17$ patients were included. The mean age was 39.2 (± 15.3) years, and 13 (76.5%) were male.

The mean prehospital FDP volume was 2.4 (± 1.1) units (range: 1-4 units).

The mean Hb at hospital arrival was 118.8 (± 27.1) g/L; one (5.6%) patient, who received four units of FDP, had a hospital arrival Hb <70 g/L.

There was no significant correlation between number of FDP units and Hb: R^2 0.18, $p=0.086$. No other adverse events were identified.

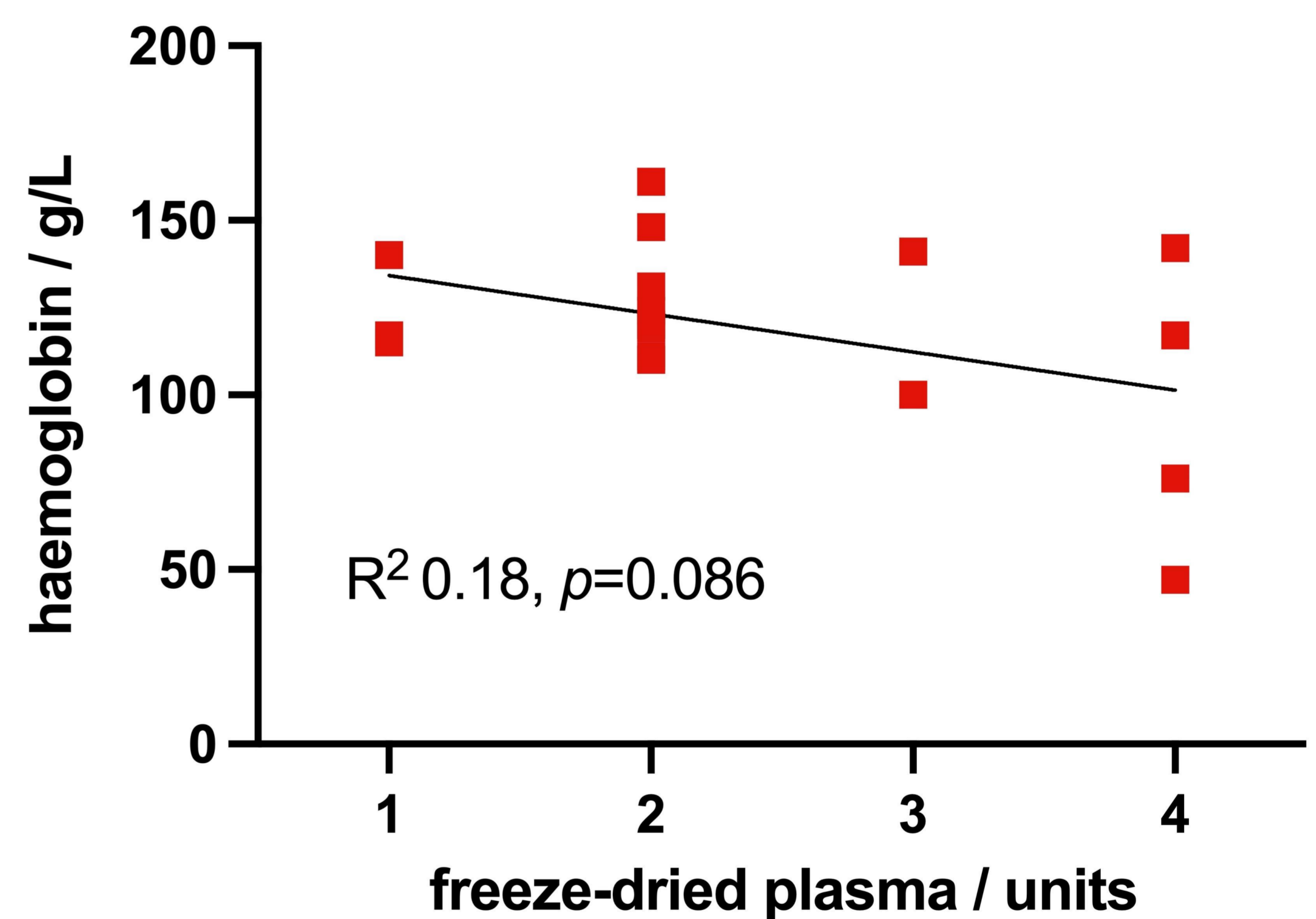


Figure 1: Hospital arrival haemoglobin concentration against number of prehospital units of freeze-dried plasma

Conclusion

These data demonstrate the safety and feasibility of prehospital FDP transfusion in trauma. There was no correlation between units of FDP and Hb in this small sample.

However, this might be a type-2 error; we would advise caution in administering more than three units of FDP prehospital without concurrent red cell transfusion.

