

Pre-hospital blood transfusion across Australia and Aotearoa-New Zealand

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Introduction

Haemorrhage is one of the leading causes of preventable death in trauma patients.^{1,2} The ideal strategy for pre-hospital blood transfusion (PHBT) remains unclear.³ Globally there has been an increase in the number of pre-hospital services using pre-hospital blood products as part of their clinical practice.⁴ This cross-sectional study looks to examine current practice for pre-hospital blood transfusion across Australia & Ao-New Zealand.

Methods

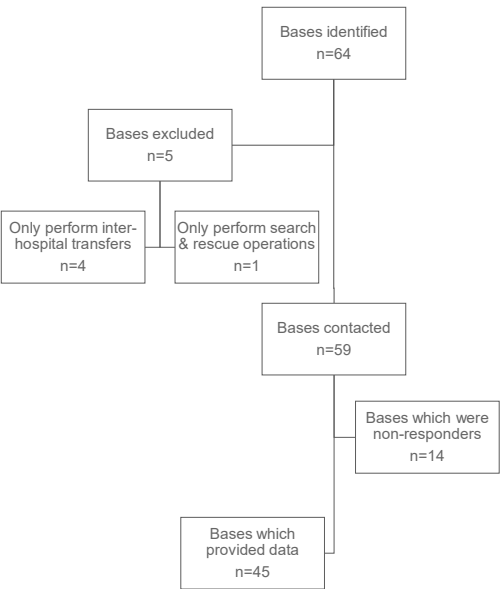
pre-hospital and retrieval medicine services across Australia and Aotearoa-New Zealand were sent a standardised questionnaire regarding their base characteristics and their current transfusion practice.

Bases that only performed inter-hospital transfers or search & rescue operations were excluded.

The STROBE guidelines for cross-sectional reporting were followed.

Ethical approval was granted by South Western Sydney Local Health District Human Research Ethics Committee (HREC) under the low or negligible risk pathway (2022/ETH1603).

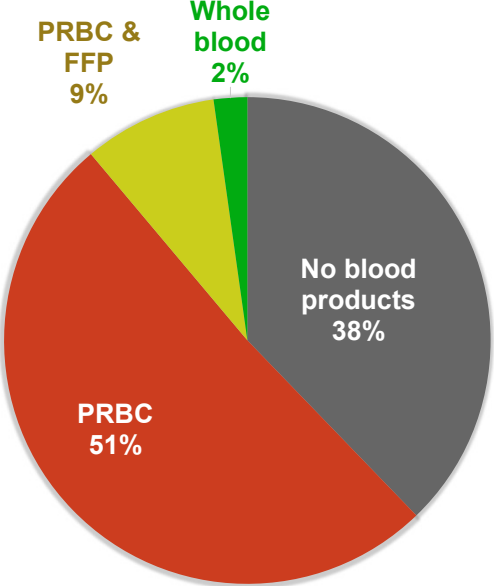
Data was securely stored in line with NSW ambulance protocol.



Results

76.2% of bases responded and were able to provide data

Types of blood carried



Combinations of blood products

Blood product combinations	Number of bases (n=28)
4 units PRBC	12
3 units PRBC	7
2 units PRBC	2
2 units PRBC + 2 units FFP	2
2 units PRBC + 2 units FFP or 3 units PRBC	1
2 units PRBC or 4 units PRBC	1
2 units PRBC + 3g Fibrinogen Concentrate	1
2 units PRBC + 1 unit FFP + 3g Fibrinogen Concentrate	1
2 units WB	1

Adjunctive medication

Tranexamic acid (TXA)	All bases
Calcium Gluconate / Chloride	All bases
Fibrinogen Concentrate	2 bases (4%)

Access Devices

Wide bore central access	18 bases (40%)
Rapid Infusion Catheters (RIC)	11 bases (24%)
Intraosseous devices (IO)	45 bases (100%)

Other equipment

Fluid warmer	36 bases (80%)
Ultrasound	41 bases (91%)

Vehicle platforms



Barriers to carrying blood

15 responding bases did not carry blood.
8 bases (53%) wished to carry blood in the future

Common barrier identified to carrying blood:

- Lack of authority for paramedics to administer blood
- Demand on further staff training
- Inadequate logistics for supply chain of blood
- Blood storage issues at base facility

Conclusion

There is a wide variation in the carriage of blood products across Australian & Aotearoa-New Zealand both in terms of the type and number of blood products carried by each base. Base characteristics vary significantly and this likely reflects the broad range of geographical areas serviced, and the somewhat organic development of many pre-hospital services.

Transfer times range significantly between services but are longer than in many European settings potentially limiting the generalisability of overseas research findings to this setting. Multiple barriers exist to the carriage of blood by all services, which has implications for service equity.

References

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