

## NATIONAL STATEMENT FOR THE EMERGENCY USE OF GROUP O RED BLOOD CELLS

Group O RhD negative red blood cells (RBC) have traditionally been used for all emergency transfusions, despite providing no additional safety benefit to most emergency transfusion recipients. Whilst only 6.5%<sup>[1]</sup> of the Australian population are group O RhD negative, group O RhD negative RBC has represented as high as 17% of total RBC issued to Australian health providers.

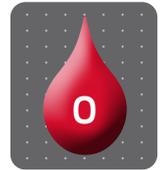
Closer management and rationalisation of group O RhD negative RBC inventory and use, including their use in emergency transfusion, provides significant benefit, easing pressure on group O RhD negative RBC donors and supplies.<sup>[2,3]</sup>

### Recommendations for the Emergency Use of Group O Uncrossmatched RBC

- ◆ Emergency uncrossmatched group O RBC are to be used only in an emergency to save a patient's life and when there is no current valid pretransfusion specimen, not as a time-saving measure.
- ◆ Where a patient's ABO RhD blood group is unknown or has not been confirmed by current pretransfusion testing then the following applies (**Figure 1**):
  - ◊ For females of childbearing potential ( $\leq 50$  years) and paediatric males  $\leq 18$  years<sup>[4]</sup> (or as per local paediatric policy) - issue group O RhD negative uncrossmatched RBC until the patient's ABO RhD blood group has been determined using a valid current specimen.
  - ◊ For females  $> 50$  years and all adult males  $> 18$  years<sup>[4]</sup> - issue group O RhD positive uncrossmatched RBC until the patient's ABO RhD blood group has been determined using a valid current specimen.

### Actions

- ◆ A pretransfusion specimen and completed matching request form must be obtained as soon as possible to permit urgent ABO RhD grouping to minimise the ongoing need for uncrossmatched group O RBC. Check if a valid group and antibody screen or crossmatch specimen is already available with the transfusion laboratory (**Figure 1**). Specimens and request forms must be labelled in accordance with local pretransfusion policy.
- ◆ Where four units of uncrossmatched group O RhD negative RBC have been issued to a patient of unknown RhD group then local policies should include the use of group O RhD positive RBC irrespective of age, gender or child-bearing potential (**Figure 1**).
- ◆ Transfusion with group specific or group compatible RBC with the patient's ABO RhD group should commence as soon as possible once a confirmed blood group is obtained - for those RhD negative patients who have received group O RhD positive blood in a critical bleeding situation, RhD positive RBC may be continued until that critical bleeding episode has resolved.<sup>[5]</sup>
- ◆ If the patient is known to have a history of anti-D allo-antibody and they do not have a current valid pretransfusion specimen, then group O RhD negative uncrossmatched RBC should be provided until their ABO RhD blood group has been confirmed. Once their ABO RhD group has been confirmed then ABO group specific or group compatible, RhD negative RBC should be provided.
  - ◊ If a patient with an anti-D allo-antibody has received RhD positive RBC they should be monitored for acute or delayed haemolysis (a haematologist consultation may be appropriate).
- ◆ All Australian health providers who manage or administer RBC should have in place hospital, clinical and transfusion laboratory emergency transfusion protocols and other supporting procedures to implement, maintain and audit the above recommendations.
- ◆ Based on risk assessment, detailed consideration should be given as to how these recommendations will be applied to sites where emergency group O uncrossmatched RBC are held remotely from the laboratory, and where patients of all ages are treated.
- ◆ For RhD negative females of childbearing potential who have received RhD positive RBC, local policy/ies must be in place regarding the risk of RhD alloimmunisation and possible impact on future pregnancies.<sup>[6]</sup> Discussion with the patient/carer of this event and the need for any additional monitoring. RhD-Ig prophylaxis<sup>[7]</sup> maybe applicable in RhD negative females of childbearing potential who have received RhD positive RBC and a haematologist consultation may be appropriate.



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## Supporting notes

- The risk of dying from traumatic haemorrhage should be prioritised over risk of RhD alloimmunisation.
- Both group O RhD positive and O RhD negative RBC provide the same safety benefit regarding the mitigation of risk of an acute haemolytic transfusion reaction due to ABO incompatibility.
- If local inventory does not permit supply or ongoing supply of group O RhD negative RBC (group O RhD negative RBC may not routinely be held as inventory or may be as few as 2 units), then it is reasonable and necessary to provide group O RhD positive RBC to sustain life.
- Where there is uncertainty of gender and age it is appropriate to use group O RhD negative RBC.
- Nationwide the median age (IQR) of trauma patients is 48 years (28 – 68 years) with a predominance of males (72%).<sup>[8]</sup>
- There is no difference in clinical outcomes, survival, complications, incidence of acute haemolytic transfusion reactions and length of hospital stay when using emergency group O RhD positive or O RhD negative uncrossmatched RBC in acute bleeding situations.<sup>[9]</sup>
- The risk of RhD alloimmunisation in RhD negative trauma patients receiving group O RhD positive RBC varies between 21–42%.<sup>[5, 10, 11, 12]</sup>
- The risk of RhD alloimmunisation in RhD negative non-trauma patients receiving group O RhD positive RBC varies between 6–84%.<sup>[10]</sup>

## References

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9. McCoy, C. *et al.* Can RH+ whole blood be safely used as an alternative to RH- product? An analysis of efforts to improve the sustainability of a hospital's low titer group O whole blood program. *J Trauma Care Surg.* 2021; 91: 627-633
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12. Yazer, M *et al.* Rate of RhD-alloimmunization after the transfusion of multiple RhD-positive primary red blood cell-containing products. *Transfusion* 2021;61:S150-S158



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### Critical Bleeding Situation - Emergency Blood Required

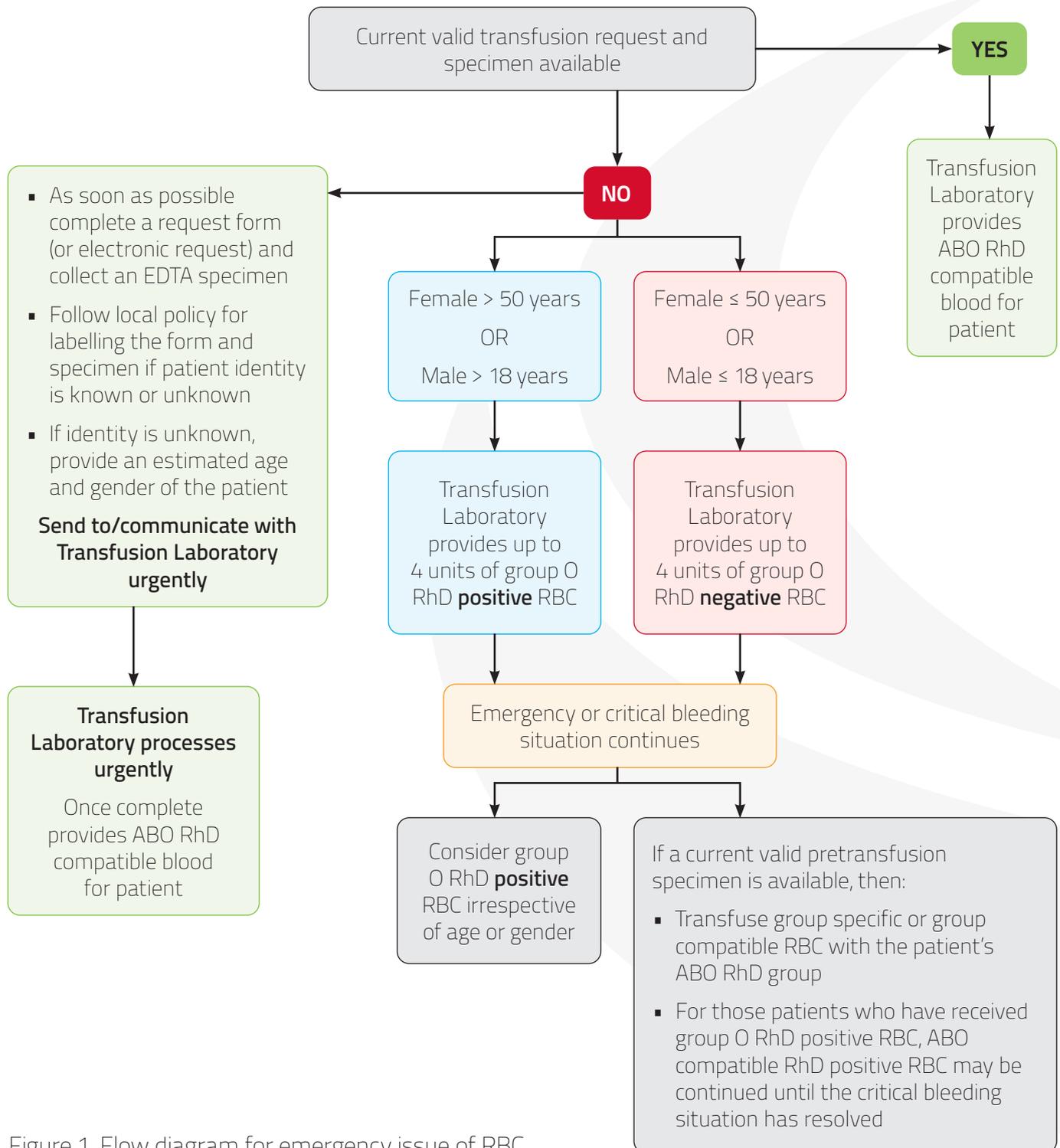


Figure 1. Flow diagram for emergency issue of RBC