



Emergency transfusion

Uncross-matched or incompatible blood



Routine pre-transfusion testing includes ABO/RhD typing, antibody screening and cross matching. Additional testing may be required if there are typing discrepancies or if the antibody screen is positive. This extensive testing is required in order to ensure that no unexpected haemolytic transfusion reactions occur. Pre-transfusion testing does not prevent transfusion adverse events unrelated to red cell haemolysis.

In the majority of patients, sufficient time is available to complete the repertoire of tests. Routine testing may practically take 1-3 hours, depending on laboratory workload. This process is unsuitable when blood is required immediately or at short notice. In emergency situations, the procedure often has to be abbreviated or sometimes circumvented completely to ensure supply of blood in a timely fashion and to save the patient's life. Emergency blood may be released either as immediate uncross-matched safe 'O' or if time permits (usually about 10 minutes)

as ABO type-specific red cells.

The clinician responsible for the patient must assess how urgently the transfusion is required and communicate this to the medical-officer and technician at the blood bank. Good communication is vital and facilitates appropriate blood product provision for the patient in a timely manner.

A pre-transfusion sample must be obtained from the patient prior to commencing transfusion of uncross-matched blood. The blood bank will not be able to identify the patient's true ABO group or perform antibody screening if only a post-transfusion sample is obtained, as this sample will contain both patient and transfused blood.

Immediate release

Blood

- ⊕ Uncross-matched
- ⊕ O+ red cells (RC)

Procedure

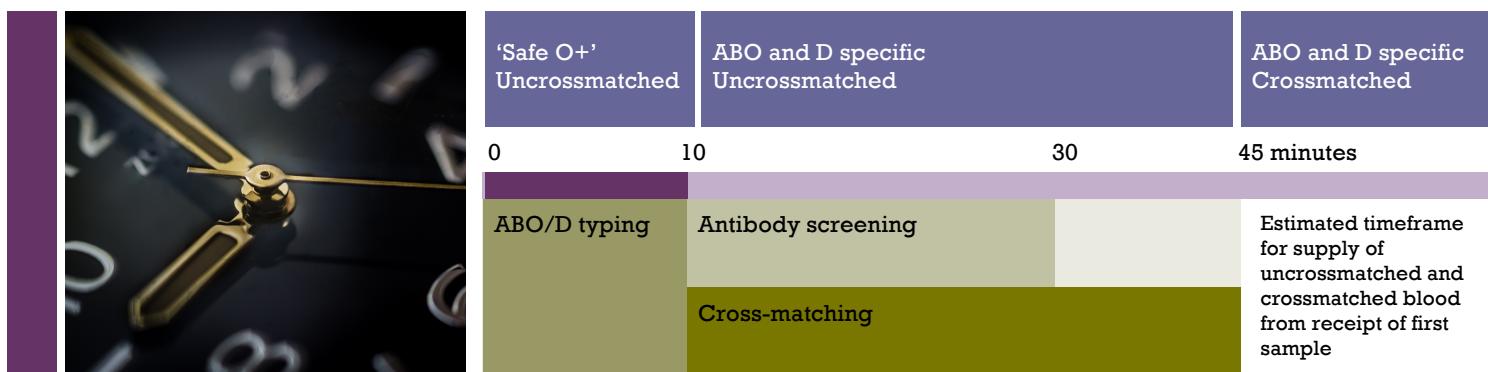
- ⊕ Obtain pre-transfusion blood sample (3 ml in EDTA tube) and send by-hand to TMD with request form
- ⊕ If A&E, transfuse the 2 units of O+ RC already available in A&E fridge
- ⊕ Further 2-4 units of O+ RC will be supplied by TMD on receipt of pre-transfusion sample and request
- ⊕ If MTP activated, MTP pack (containing 2-4 O+RC, 4 AB+ FFP and 4 A/B+ PC) will be released

Note

- ⊕ Maximum of 4 unit uncross-matched O+ RC will be issued pending confirmation of patient ABO group
- ⊕ All 'safe O' units issued in emergencies are RhD+, as RhD- blood is not common in Malaysia

Safety profile

- ⊕ Uncross-matched O+ RC is safe in terms of ABO compatibility
- ⊕ The risk of HTR due to non-ABO antibodies however cannot be excluded since antibody screening and cross-matching is not performed
- ⊕ RhD- women of child bearing age may be subjected to risk of HDN in future if they develop anti-D antibodies from transfusion of RhD+ blood



How safe is uncross-matched blood?

The immediate risk of transfusing uncross-matched red cell units arises from the possibility that the patient may have as yet unidentified circulating red cell antibodies that can cause a haemolytic transfusion reaction (HTR). Acute haemolysis from such antibodies is uncommon. Anti-A and anti-B are the most severe

which is prevented by provision of group O red cells until the ABO group has been determined. Examples of other antibodies capable of causing severe immediate HTR include antibodies against H, Jk, Vel, PP1P^k and Rh. The presence of these non-A/B antibodies only becomes apparent after antibody screening and cross-matching is performed. Nonetheless, in emergency non-elective situations, it

is agreed that transfusing uncross-matched blood is generally safe. Transfusing RhD+ blood to RhD- patients will result in 20-50% of patients developing anti-D, which poses the risk of haemolytic disease of newborn. In women of child-bearing potential who receive RhD+ emergency transfusions, red cell exchanges with RhD- blood and RhIg prophylaxis may be required after the patient has been stabilized.



Transfusing the cross-match incompatible patient

On occasions, it may sometimes become necessary to transfuse blood to patients despite the red cell units being cross-match incompatible. This may happen in emergency situations where the patient may have antibodies to high-incidence antigens (e.g. anti-H in Bombay phenotype) or they harbour multiple antibodies (e.g. AIHA) that make procuring of compatible antigen negative units within a short timeframe untenable. In this

circumstance, the decision to transfuse should be driven by the clinical picture of the patient, taking into account age, cardio-respiratory reserve, rate of blood loss or haemolysis and co-morbid conditions. Patients should be transfused before the possibility for irreversible damage due to hypoxia manifests itself. Close communication should always be established early between the clinician caring for the patient and the transfusion service, to ascertain the situation and ensure that appropriate blood can be supplied.