Consensus statement on use and allocation of Kell negative red cells

Background

The Kell blood group system is complex and contains antigens that are highly immunogenic. Kell system antibodies should be considered clinically significant and are known to cause both transfusion reactions and haemolytic disease of the newborn.

The K antigen is expressed in approximately 10% of Caucasians and 2% of African-Americans but is more common in those of Arab descent.

Anti-K is described as being the next most prevalent antibody after those in the ABO and Rh systems. Anti-K is commonly IgG and non-complement binding. Transfusion reactions due to extravascular haemolysis may be severe. Anaemia resulting in hydrops fetalis may arise from intra-uterine immunological suppression of erythroid precursors in a Kell positive fetus of an immunised female. The fetus may be compromised early in development, and antibody titres are not often reflective of disease severity. For these reasons alloimmunisation is best avoided.

There is currently inequity in the distribution of K negative red cell units between Approved Health Providers due to laboratories preferentially requesting K negative red cell units for stock. This practice is unjustified and unfairly burdens some laboratories with an excess inventory of K positive units thereby increasing the likelihood of wastage and the need for further individual patient orders.

Red cell phenotyping for common red cell antigens is a basic laboratory technique. This should therefore be within the capability and testing repertoire of laboratories that hold red cell inventory especially those where there is a possibility or intention to allocate units to women of child bearing age.

Recommendations

Clinical scenarios where K negative units are indicated (listed in priority order) include:

1. Any patient with (or a history of producing) anti-K
2. Elective transfusion of pregnant females or females of child bearing potential **who have a K negative phenotype** (~90% of women)
3. Transfusion of pregnant females or females of child bearing potential who are unable to be phenotyped prior to transfusion, where possible. The clinical urgency of transfusion should be considered and emergency transfusion should not be delayed by attempts to source K negative units.

K negative units may be clinically indicated in the following scenario:

- Patients commenced on, or likely to be commenced on, a recurrent transfusion program who are shown to have a K negative phenotype (~90% of patients). Laboratories may choose to phenotype but may elect to retain the option of transfusing K negative units only if the patient subsequently develops anti-K.

The Australian and New Zealand Society of Blood Transfusion (ANZSBT), supported by the National Blood Transfusion Committee (NBTC), believe a mixed inventory of K positive and negative units, reflecting the local population distribution of the antigen, can be managed effectively without unnecessary red cell wastage if appropriate patient selection and K phenotyping is employed. The ANZSBT and NBTC support the Blood Service issuing red cells without regard to their K type unless fulfilling a patient specific order where K negative red cells are requested.