



GSH or GXM?

GSH: Group, screen and hold

GXM: Group and cross-match



Ensuring ABO blood group compatibility is of utmost importance when transfusing red cells. However, apart from the antigens of the ABO group, red cells also express numerous other blood group antigens (eg. Rh, MNS, Kidd, Duffy). Currently, there are over 300 different antigens from 35 blood group systems that are recognised on the red cell surface. Antibodies may develop to these antigens. When transfusing red cells, it is therefore important to ensure that in addition to ABO matching, the patient does not have any atypical antibodies i.e. not anti-A or -B, present in their plasma that may react with the transfused cells and cause haemolysis.

GSH is a laboratory procedure where the patient's ABO and RhD group is determined, followed by a screening test (hence the term group and screen) to identify if the patient's plasma has any atypical antibodies that may react with red cell antigens. A negative antibody screen means that there are no

identifiable clinically significant atypical antibodies present in the patient, and therefore the patient can be safely transfused any ABO-matched red cell. No testing of the patient's plasma against the donor red cell unit is required, provided ABO grouping of both patient and donor is correct. However, if the antibody screen is positive, further testing is performed to identify the red cell antigen that the antibody reacts with. Red cells negative for the antigen is then released for transfusion.

In contrast, in a cross-match (XM), the patient's plasma is tested against the donor red cell unit to simulate what would happen in-vitro. If there is a reaction, it is called an incompatible cross-match and the blood unit cannot be used for transfusion. The disadvantage of XM is that blood units have to be physically removed from storage, tested with the

GSH

Test performed

- ⊕ ABO & RhD typing
- ⊕ Antibody screening

Indication

Order if there is any chance that the patient may require blood, but the likelihood of the patient actually being transfused is low (e.g. LSCS, minor surgery)

Precautions

If a patient has been recently transfused or is pregnant, the antibody screen result is only valid for 72 hours as new antibodies may develop from the potential sensitizing event.

GXM

Test performed

- ⊕ ABO & RhD typing
- ⊕ Antibody screening
- ⊕ Cross matching

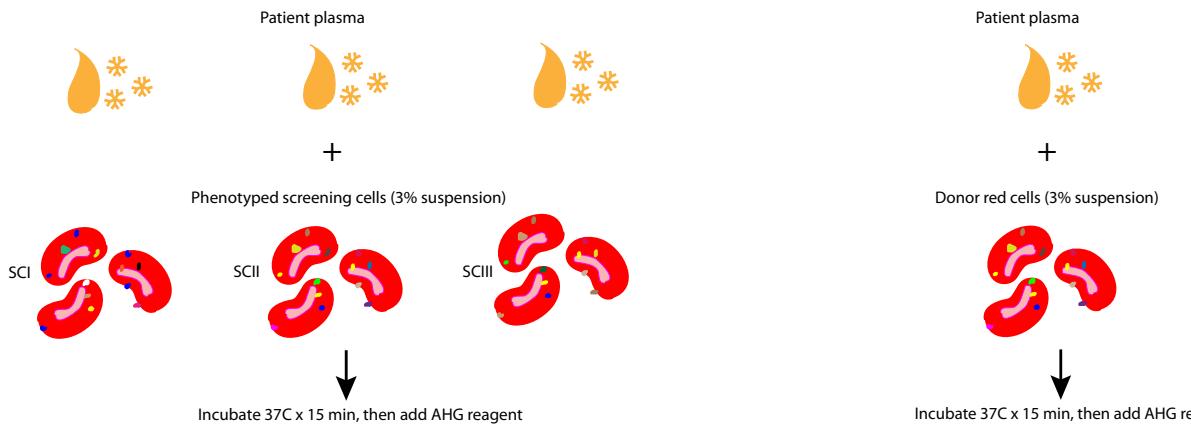
Indication

Order only if there is high likelihood of transfusion

Precautions

Cross-matched units are kept reserved for 24 hours only unless a request for extension is made

Maximum reservation time is 72 hours. Exceptions may apply to infants less than 4 months.



The purpose of antibody screening (ABS) is to identify if the patient may have any atypical antibodies to red cell antigens other than anti-A/B. Patient plasma is added to a series of specific group O screening cells, incubated and checked for agglutination after addition of anti-human globulin (AHG). A negative ABS indicates that the patient is unlikely (>99%) to have any atypical antibodies and transfusion with any ABO matched red cell is safe.

In a cross-match test, a sample from the donor red cell unit planned for transfusion is mixed with patient plasma, incubated and checked for agglutination after addition of AHG. The AHG cross-match offers an additional layer of safety and may identify antibodies that could have been missed with the ABS such as antibodies to low incidence antigens.

.... continued from 1

patient's sample and kept in reserve for the patient for a stipulated time. If the reserved unit is not used, the unit is cancelled and returned to storage. Excessive cross matching for patients where there is little likelihood of transfusion, causes wastage of time and money performing the cross-match as well as problems with red cell inventory management and product deterioration from frequent transfer between unmatched and matched inventories.

GXM should therefore be ordered only when there is high (i.e. more than 10%) chance of the cross-matched blood being transfused. For all other cases where although there is chance that the patient may require red cell transfusion, but the chance is low, GSH would suffice. GSH has been shown to be a clinically safe practice. The maximum surgical blood order schedule (MSBOS) provides a useful guideline when deciding between GSH and GXM for elective surgical procedures.