Blood administration – steps to reduce errors

Serious Transfusion Incident Reporting (STIR): Bulletin No. 9

OFFICIAL

Introduction

Since 2006 the STIR program has collected data on transfusion-related reactions and incidents. These reactions and incidents are at times inherent to the product being transfused; at other times may be due to human error. It has been noted that the blood transfusion administration process continues to be a source of serious errors and near misses. In several incidents, errors occurred early in the transfusion chain before the blood reached the patient side, without the crucial final checks at the patient side identifying the errors.

Two-person independent checking immediately prior to administration at the bedside is critical to safer transfusion practise.

The risk of an inappropriate product being transfused, or worse, an ABO incompatible transfusion occurring is greater when the patient/product checks are not performed correctly.

Case studies

The following case studies provide examples of where blood administration can go wrong.

No. 1. A unit of red cells, RhD positive crossmatched, dispensed and administered to an RhD negative patient.

The laboratory scientist selected a unit of red cells for a patient with AB negative blood group for an electronic crossmatch. The scientist had mistakenly chosen an A positive unit, instead of the intended A negative unit. During the electronic crossmatch, the computer highlighted the discrepancy in both ABO and RhD group in one single alert. As the scientist was expecting to see an alert due to the ABO discrepancy (group A to group AB patient), the alert was cleared without thorough checking and the RhD group incompatibility was missed. The unit was issued by a second scientist who also did not note the discrepancy in RhD group.

On the ward the nurses were distracted by concerns about the suitability of timing of the transfusion. The RhD discrepancy between the allocated unit of RBC and the patient blood group was either not identified or not acted on and the blood was administered.

At the time of the report to STIR the patient had not developed an anti-D antibody.

There were multiple opportunities to discover the error and prevent this event, however distractions for the staff and incomplete checks, both in the laboratory and at the patient bedside, allowed this unit to be transfused.

In the laboratory, all alerts should be concise and clear and cover one item per alert, in this case the fact that the scientist was expecting to see an alert (ABO compatibility) meant they did not pay full attention to the second issue (RhD discrepancy) flagged in the same alert.

On the ward the reason for transfusion and any considerations around the patient and timing of transfusion should be managed prior to requesting the blood product from the laboratory. Thus, allowing full attention on the checking process to ensure all checks are performed correctly and potential errors found. The laboratory should be contacted if any discrepancies are noted, without assuming they are acceptable.

No. 2. Administration of red cell units crossmatched for another patient

A woman requiring advanced resuscitation for ante-partum haemorrhage in the operating theatre received an urgent red cell transfusion.

The units were taken from a satellite blood fridge, **assuming** they were the emergency O negative RBC units. While the units were O negative, they had been crossmatched for another patient and labelled for that patient.

The checking process at both collection from the satellite fridge and pre-administration did not identify the unit was crossmatched for a different patient. A staff member, unfamiliar with the collection process for blood products, did not complete checks required at the blood fridge according to policy. As the unit was group O negative, the nurses performing bedside checks assumed it to be correct. However, they did not notice or appreciate the fact another patient's name was attached to the bag. There was fortunately no actual harm to the patient, as the unit was compatible. The impact of the delay in transfusion on the patient for whom the product was intended must also be considered.

All staff who may be responsible for collecting blood products for transfusion should be familiar with the requirements of this important activity, which includes completion and signing of the blood fridge register. **There should never be an assumption that previous steps in the transfusion chain have occurred correctly.** The pre-transfusion patient identification and product checks at the patient side are the last chance to pick up errors in the chain. All steps need to be completed, even (and especially) in the event of urgent transfusion. It is important that all documentation attached to the blood product is checked so that incorrect blood products are not administered.

No. 3. Administration of red cells intended for another patient and ABO incompatible

A patient attending a day area required a MET call for a cardiac arrythmia. He was transferred to the emergency department and placed in isolation due to COVID precautions. The patient was prescribed both platelets and red cells. The laboratory issued the platelets to the area via a pneumatic tube system (PTS) which were collected and administered. Due to a known red cell antibody the patient required a manual crossmatch, resulting in a delay in the availability of the red cells.

A second patient in the ED also required a red cell transfusion. This patient had no antibodies and an electronic crossmatch enabled the blood to be provided quickly. The blood was sent to the ED via the PTS, arriving prior to the RBC for the first patient. In the ED a staff member collected the blood from the PTS and placed it outside the wrong patient's room.

The nursing staff who administered the blood performed the checks outside the patient room, contrary to health service policy. During the checks there were at least four interruptions to the process, with questions from other staff members. Only one of the two nurses entered the room to commence the transfusion and the direct final patient identity check was NOT undertaken.

Approximately 30 minutes after the start of the transfusion the patient was found to have rigors and feeling unwell, with wheeze, tachycardia, anxiety, and confusion. The transfusion was stopped due to the suspected transfusion reaction and clerical checks undertaken at this time recognised the unit was not labelled for this patient and was ABO incompatible. The patient had signs of acute haemolysis associated with the transfusion, he was admitted for supportive care and further monitoring. The patient's condition has since improved.

Recommendations

The transfusion process, from sample collection to blood administration, is a complex process due to the multiple steps and numerous people involved and can result in serious errors. **The final patient/blood product checks prior to transfusion must be completed correctly to be an effective key element of patient safety.** For most health services this remains a manual process that relies on busy staff understanding and completing all required checks and being focussed on the task they are undertaking. **Distractions can prove fatal.**

Checklists: it is recommended staff use a checklist that ensures each step of the patient/blood product identification takes place and is correctly completed. This includes a separate checklist for administration of emergency components where patient details and/or blood group may not be available. Checks of any documentation attached to the blood product must always occur at the patient's side, prior to administration.

Independent checks: each staff member must perform the check in its entirety. Performing only part of the check, while the other person looks at other information, allows steps and information to be missed. Blood Matters provides information and posters on what the two-person independent checking process looks like. Two-person independent checking for safe transfusion poster (health.vic.gov.au)

Positive patient identification needs to be understood and completed at the time of administration. That is, the patient needs to be part of the checking process by being asked to state their name and date of birth at a minimum, whenever possible. Health services should have a policy which outlines what to do when the patient is unable to participate in self-identification.

Mindfulness: staff performing patient/product identification checks need to be focussed on the task at hand. Anything that causes distraction from the checking process should be dealt with prior to starting the pre-transfusion patient/blood product check. If an unavoidable interruption to the process occurs, the checks are to be recommenced from the start to ensure nothing is missed. Other staff should be discouraged from interrupting staff in the process of performing these checks, unless an emergency.

Education: all staff involved in blood administration need to be aware of the risks of transfusion and understand how they can reduce these risks, including patient/blood product checks prior to administration. Health services should have regular education available to all staff and consider competency assessments for blood administration.

Electronic blood administration systems: As health services move to electronic medical records consideration should be given to the use of electronic systems for assisting staff to step through the checks required for blood administration. Any system used should be assessed for safety and to ensure it will not adversely affect safety by adding complexity to the checking process. Electronic systems should be intuitive and safe; they should not rely on ongoing education of staff to understand and follow the correct process.

ANZSBT guideline for the implementation and use of electronic medical records for transfusion is available to assist health services. https://anzsbt.org.au/wp-content/uploads/2021/07/FINAL-Guidelines_For_The_Implementation_And_Use_Of_Electronic_Medical_Records_For_Transfusion_-July-2021-1.pdf

Blood Matters' survey on the implementation and the use of an Electronic Medical Record (EMR) specific to blood management and transfusion practice report may also be of value. Reports, journal articles and government policy on blood and blood products (health.vic.gov.au)

Resources

BloodSafe eLearning BloodSafe eLearning Australia (bloodsafelearning.org.au) provides educational tools for staff who prescribe and administer blood products.

Blood Matters

- Competency guide and template for EN education
- Two-person independent checking for safe transfusion poster Two-person independent checking for safe transfusion poster (health.vic.gov.au)

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