Safe administration of blood components

In this article...

- The hazards around transfusing blood and blood components
- How to avoid preventable errors
- Observations that should be carried out before, during and after a transfusion

Author: Katy Hurrell is patient blood management practitioner at NHS Blood and Transplant, South West Region.

Abstract: Hurrell K (2014) Blood transfusion 3: Safe administration of blood components. Nursing Times; 110: 38, 16-19. The transfusion process has many stages, each involving different members of staff in different locations. This gives rise to a significant potential for errors. Nurses are involved in many of these stages and therefore require knowledge, skills and competence in the process to ensure the safety of patients.

This third article in our five-part series on blood transfusion discusses the safe administration of blood components and the key principles to which nurses must adhere.

Transfusion has many potential hazards, some of which are preventable. These include patient misidentification, which can lead to patients receiving the wrong blood and cause serious harm or even death.

Haemovigilance is the “systematic surveillance of adverse reactions and adverse events related to transfusion” (Norfolk, 2013). This aims to improve transfusion safety and adverse event reporting, which is mandatory in the UK; any serious adverse event or reaction that may lead to death or life-threatening/disabling conditions in patients, lengthens their stay in hospital or increases morbidity must be reported to the Medicines and Healthcare products Regulatory Agency (tinyurl.com/ MHRA-blood-safety). There is also a UK-wide professionally led, independent haemovigilance reporting scheme called Serious Hazards of Transfusion (SHOT). Launched in 1996, it was the first of its kind in the world. Participation is voluntary but it is widely used; in 2012, 99.5% of NHS trusts and health boards reported incidents to SHOT (Bolton-Maggs et al, 2013). SHOT aims to educate practitioners on the risks of transfusion and improve practice standards.

Since 1996, SHOT has shown that episodes of the incorrect blood component being transfused – when the wrong blood was given to a patient – are frequently reported. In 2012, 252 such incidents were reported to SHOT; of these, 151 were down to errors that originated in the clinical area and 101 to errors in the laboratory. There were 10 incidents of patients receiving ABO-incompatible blood components (Fig 1) (Bolton-Maggs et al, 2013); three of these patients went on to experience “severe harm as a result of the inadvertent transfusion of ABO incompatible blood components”. These are considered “never events” by NHS England (2013).

In total, 62.3% of serious transfusion incidents were caused by human error; often due to misidentification of the patient at sampling or at the time of transfusion (Bolton-Maggs et al, 2013). Many of these cases involved multiple errors during the transfusion process.

**Transfusion process**

The British Committee for Standards in Haematology (2009) has produced national guidance for hospitals on the clear evidence of the fate of every blood component issued is required by law.
administration of blood components. This states that every stage of the transfusion process should be underpinned by three principles:
- Positive patient identification;
- Documentation;
- Communication.

Positive patient identification
Positive patient identification (PPI) is the act of positively identifying the correct patient by checking with the patient – it is the cornerstone of good care. Before any therapy is administered, practitioners must be sure they are treating the right patient. The key recommendation in the SHOT Report 2011 was for a “back-to-basics” approach to transfusion, highlighting in particular the importance of “right patient, right blood” (Bolton-Maggs and Cohen, 2012). SHOT also stated that:

“Confirmation of identity at every stage of the transfusion process and good communication are essential to prevent errors” (Bolton-Maggs and Cohen, 2012).

Many of the serious events reported to SHOT are due to basic PPI errors. It is the nurse’s responsibility to ensure scrupulous attention is paid to the correct identification of both the blood component and the patient at every stage of the transfusion process. BCSH guidelines (2009) also state:

“A patient identification band (or risk-assessed equivalent) must be worn by all patients receiving a blood transfusion.”

The minimum identifiers should be: last name, first name, date of birth and unique patient identification number. In Wales, the first line of the patient’s address is also required, and gender must be stipulated in Scotland. The patient identification number should be the NHS number in England and Wales, the Community Health Index number in Scotland and the Health and Social Care number in Northern Ireland. The name and date of birth should be checked with the patient verbally wherever possible and the identification band should also be used to positively identify the patient before every part of the transfusion procedure.

Documentation
In line with the Blood Safety and Quality Regulations 2005 (tinyurl.com/BloodSafetyRegulations), for traceability purposes, hospitals, blood management practitioners and nurses are required by law to have unambiguous evidence of the final fate of every blood component issued.

Nurses play a vital role in ensuring full documentation of the administration or other final fate of every unit, which provides an audit trail.

Individual trusts and health boards have local policies detailing how to achieve and demonstrate traceability of each unit. Hospital transfusion laboratories are required to maintain records that ensure full traceability from donation to the point of delivery for not less than 30 years (tinyurl.com/BloodSafetyRegulations).

Communication
As the transfusion process includes several steps involving various personnel in different departments, there is the potential for confusion and errors to occur.

Written or electronic communication should be used whenever possible; copying details from one document to another should be avoided where possible because of the potential for transcription errors leading to misunderstandings and errors.

Urgent written requests should be supplemented by telephone discussion between clinician and laboratory staff to clarify exactly what is required.

Local policies should be in place to minimise the risk of misinterpretation or errors relating to transfusion.

Prescribing blood components
Whole human blood and blood components are excluded from the legal definition of a medicine. According to the Blood Safety and Quality Regulations 2005, they cannot, therefore, be prescribed.

Although, traditionally, authorisation of blood components has been the responsibility of medical practitioners, there is no requirement for them to be authorised by a registered medical practitioner. There is no legal barrier to a nurse or midwife doing this, providing it is within their scope of practice. Authorisation can also be extended to other appropriately trained, competent healthcare practitioners working within locally agreed guidelines (Pirie and Green, 2010).

Blood components should only be authorised using an approved prescription sheet for intravenous fluids or on a special transfusion documentation chart (BCSH, 2009).

Preparing patients for a transfusion
Before collecting a blood component, the nurse should make sure the patient is prepared for the transfusion, a patent IV cannula is in place and a written and signed authorisation/prescription is available.

The patient should understand the reason for the blood transfusion and be aware of the risks and benefits. There should be clear documentation in the medical notes to show the patient’s consent has been obtained after discussing the reason for transfusion and, ideally, considering alternatives if appropriate (Whitmore et al, 2014).

Baseline observations of pulse, blood pressure, temperature and respirations should be checked and recorded on the observation chart before the blood component is collected. These should not be recorded more than 60 minutes before the
start of the transfusion and should be checked before each blood component is transfused.

It is important to ensure all of these pre-transfusion checks have been completed before collecting the blood component.

**Requesting and collecting the blood component**

Written evidence of the patient’s identity must be taken by the person collecting the component from the transfusion laboratory/fridge and checked against the blood component before collection.

All necessary paperwork must be signed at the time of collection to maintain the traceability trail of the blood component. If a trust or health board uses electronic systems, nurses should refer to their local trust policy and manufacturers’ guidelines, which will be available from the hospital transfusion practitioner or transfusion laboratory.

The transfusion should begin as soon as possible after the component arrives at the clinical area. This helps to ensure the component will be transfused within the necessary time period and reduces the risk of a valuable resource being wasted. The transfusion must be completed within four hours of collection.

If, after collection, the blood component is no longer required, red cells can be returned to cold storage but only within 30 minutes of removal. Under no circumstances should blood components be stored in a ward fridge.

**Final pre-transfusion checks**

The final identification check between the blood component and the patient is the last opportunity to avoid the possibility of administering a potentially fatal incorrect component to the patient. This checking process is required for each individual blood component that is transfused, and should always take place at the patient’s bedside. Trusts/health boards differ in their policies regarding the number of staff – one or two – who should perform these checks.

The minimum requirement is that a registered healthcare practitioner, who is deemed competent and who will also administer the component, is present during the checking process (BCSH, 2009). If two people are checking the blood component against the patient, they should each do so independently to avoid the risk of one relying on the other to “get it right” (Watson et al, 2008). If the checking process is interrupted, it should be started again.

The check between the blood component and the patient should involve confirmation that the details on the patient identity band – whenever possible also confirmed verbally by the patient (positive patient identification) – match exactly the details on the label attached to the component and generated by the transfusion laboratory. Nurses should also check these details against the patient’s prescription sheet. If patients are unable to confirm their own identity – for example, children or unconscious patients – a relative or carer should be asked to do so on their behalf.

The unique component donation number and the blood group on the

Parents/carers should be asked to confirm the identity of children receiving transfusions.
component pack must be the same as those on the laboratory-produced label attached to the blood component (BCSH, 2009). The nurse should also check the expiry date and time and carry out a visual check of the component to ensure there is no leakage, discolouration or clumping.

Any discrepancies or concerns should be immediately reported to the laboratory and the transfusion must not be started until these issues have been fully resolved. All checks carried out must be signed for and documented according to local policy.

**Safe administration**

Blood components should be administered only by registered practitioners who have been trained and assessed as competent according to local policies (Norfolk, 2013; BCSH et al., 2009). The BCSH advises that such training be undertaken at least every two years and practitioners be assessed as competent every three years in accordance with the relevant regulations, standards and notices (BCSH, 2009).

On a practical note, transfusions should only take place when enough nursing staff are available to care for and observe the patient. Non-essential overnight transfusions should be avoided unless clinically indicated, because of the increased risk of errors and the difficulty in observing patients for signs of a reaction (BCSH, 2009).

As with any IV infusion, blood should be administered aseptically. Protecting patients from cross-contamination and staff from needlestick injury is paramount and appropriate sharps disposal and universal precautions must be observed.

While a patient is receiving a transfusion, observation and monitoring are important to ensure acute transfusion reactions can be recognised early and treated. Recommended observations are outlined in Box 1.

Nurses should document clearly in the patient’s notes all details of transfusion and observations as soon as possible after an adverse event occurs (Nursing and Midwifery Council, 2008). These should include details of:

- Staff administering the transfusion;
- Date, start and finish time of each component transfused;
- A record of all of the observations made before, during and after the transfusion.

If a transfusion reaction is suspected, the transfusion should be stopped immediately, and medical and laboratory staff informed. This should be clearly documented in the patient’s notes.

**After transfusion**

The BCSH (2009) recommends a minimum of post-transfusion observations of pulse, blood pressure and temperature be taken not more than 60 minutes after the transfusion has been completed. However, it is now widely recognised that adverse reactions to transfusions can occur many hours after that time and further observations should be undertaken as clinically indicated.

Patients staying in hospital must be made aware that if they experience any signs or symptoms of a possible reaction (shivers, rashes or shortness of breath), they should tell nursing staff. Day patients discharged within 24 hours of receiving a transfusion should be given a contact card explaining how to access clinical advice in the event of any concerns.

**Conclusion**

Blood transfusion is a common, safe procedure. However, avoidable errors can – and do – occur. Health professionals must adhere to the basic principles of PPI, good communication and clear documentation to reduce the chances of preventable errors being made.

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**BLOOD TRANSFUSION SERIES**

This series, produced by the Patient Blood Management team, comprises five articles:

- Gaining informed consent for blood transfusion (3 September, www.nursingtimes.net/bloodtransfusion)
- Processing, testing and selecting blood components (10 September, www.nursingtimes.net/bloodcomponents)
- Safe administration of blood components (17 September)
- Managing blood transfusion reactions (24 September)
- Patient blood management (1 October)

**References**


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