A&D Blood Pressure Monitors

Easy to use digital blood pressure monitors and equipment you can rely on

www.baxterhealthcare.com.au or phone 02 9848 1111
Terminology

Standards Australia and virtually all national standards bodies around the world including the American Association of Blood Banks are following the rules set down by the international standards body International Organisation for Standardisation (ISO) for the use of the terms ‘shall’, and ‘should’. ANZSBT has used the definitions of these terms for consistency with current international usage:

- the term ‘shall’ indicates a mandatory requirement; however this does not imply a mandatory legal requirement in an Australian standard.

- the term ‘should’ implies a recommendation where guidance is intended and does not preclude other acceptable practices.

- the term ‘may’ is used to indicate an acceptable alternative or addition to the prescribed practice.

Wherever possible sound scientific evidence has been used to support practice. In the absence of such evidence consensus opinion has been used based on international guidelines, and expert opinion. The continuing development of knowledge, opinion and practice necessitates ongoing revision of practice. It is the intent of the authors that these guidelines be reviewed biennially or as the need arises.
CONTENTS

INTRODUCTION

SECTION A  VENOUS ACCESS AND EQUIPMENT FOR TRANSFUSION
   A 1 Venous Access
   A 2 Blood Administration Sets
   A 3 Leucodepletion Filters
   A 4 Blood Warmers
   A 5 Infusion Devices
      Electronic volumetric pumps
      External pressure devices
      Syringe drivers

SECTION B  CONCURRENT FLUIDS AND MEDICATIONS
   B 1 Concurrent Fluids
      Incompatible fluids
   B 2 Medications

SECTION C  RELATED MEDICAL AND NURSING ISSUES
   C 1 Prescription of Blood Components
   C 2 Informed Consent
   C 3 Pre-transfusion Sample Collection
   C 4 Care and Monitoring of Transfused Patients
   C 5 Documentation
   C 6 Training
   C 7 Staff Responsible for Blood Transfusions and Handling of Components

SECTION D  ADMINISTERING BLOOD AND COMPONENTS
   D 1 Administration of Blood Components
   D 2 Collection of Blood Components and Delivery to the Ward or Operating Room
   D 3 Inspections of Blood and Components
   D 4 Identity Check of Patient and Component
   D 5 Completing the Transfusion
   D 6 Out-of-Hospital Blood Transfusions

SECTION E  MANAGEMENT AND REPORTING OF ADVERSE EVENTS

SECTION F  GLOSSARY

SECTION G  BIBLIOGRAPHY

SECTION H  APPENDICES
   H 1 Transfusion Reaction Chart
   H 2 Transfusion Administration Checklist
   H 3 Patient Information Card
   H 4 Pretransfusion Sample Collection Flow Chart
   H 5 Administration of Blood Component Flow Chart
INTRODUCTION

The administration of blood and blood components and the management of transfused patients

Errors in the requesting, supply and administration of blood lead to significant risks to patients. A survey of hospital blood transfusion laboratories in the UK in 1993 revealed 111 instances of blood being transfused to the wrong patient in an 18-month period (an incidence of 1 in 30,000 units transfused); 6 patients died and another 6 had serious morbidity associated with ABO-incompatible transfusions (McClelland & Phillips, 1994). A similar fatality rate was found in the United States (equivalent to approximately 1 in 500,000 units of blood transfused) (Linden et al., 1992). These deaths were due to errors either in the collection or labelling of the sample for blood grouping and compatibility testing, or in the laboratory, or to failure of the final pre-infusion checks.

The incidence of ‘wrong blood’ episodes has changed little over several decades. This contrasts with the dramatic reductions in other hazards of transfusion such as viral transmission (Aubuchon & Kruskall, 1997). Variation in the practice of the administration of blood is becoming increasingly evident from audit, both local and international (Waters et al., 1998), and from the reports of the Serious Hazards of Transfusion (SHOT) initiative. Similar comments and recommendations were made by the Stephen Review into the Australian Blood Banking and Plasma Product Sector [March 2001].

There are no formal recognised Australian or New Zealand guidelines on which to base local procedures for the ordering and administration of blood and the management of transfused patients. Advice on some aspects of the administration of blood can be found in British Committee for Standards in Haematology (BCSH) guidelines (BCSH, 1990, 1996a), and elsewhere (Blood Transfusion Services of the United Kingdom, 1996; Mallett & Bailey, 1996), but there is no single authoritative and comprehensive Australian or New Zealand source supported by medical, scientific and nursing professional opinion.

These guidelines have been produced by the Australian & New Zealand Society of Blood Transfusion [ANZSBT] and the Royal College of Nursing Australia [RCNA]. The following represents a summary of current professional opinion.

ANZSBT are also indebted to BCSH for permission to utilise aspects of their 1999 Administration Guidelines in the preparation of this document.
A 1 VENOUS ACCESS

Blood or components may be administered safely through a peripherally implanted or most central venous access devices. Some Peripherally Inserted Central Catheters (PICC) with small tubing diameters may pose problems with blood or platelet administration leading to slow flow rates and clogging.

The size of cannula chosen depends on the size and integrity of the vein. Standard 18-Gauge to 24-Gauge ultra-thin needles and catheters are used, but the smaller the gauge, the slower the flow rate.

RECOMMENDATION

Peripheral intravenous access should be sufficient to maintain an adequate rate for the transfusion without causing a risk of haemolysis.

- 18-20G size is recommended for adults. Smaller gauge devices can be used but restrict the flow rate of the transfusion and result in a much longer time to infuse a component.
- 22-24G or larger is recommended for paediatric patients.

A 2 BLOOD ADMINISTRATION SETS

The component [particularly red cells and whole blood] should be mixed thoroughly by gentle inversion before use and then transfused through an intravenous line approved for blood administration incorporating a standard 170-200 micron filter, which removes clots and small clumps of debris that may form during collection and storage. The component should cover the length of the membrane filter when priming the giving set.

When blood is being administered by syringe to small infants or neonates, the blood shall be drawn into the syringe via a 170-200 micron filter.

RECOMMENDATIONS

- the standard blood administration set should be primed with normal saline or the blood component.
- Dextrose shall not be used for priming the blood administration set.
- one standard administration set may be used for the administration of 2-4 units of red blood cells provided the flow rate remains adequate. In an emergency or theatre situation 8-10 units may be transfused before the set is changed provided the set is changed every 8 hours.
- because of the risk of bacterial contamination, administration sets should be changed on completion of the red cell transfusion or every 8 hours.
- an administration set used for red cells should never be subsequently used for platelet transfusion since the red cell debris trapped in the filter would trap the platelets.
- blood transfusion sets shall not be ‘piggy-backed’ into other lines.
- medications shall not be added to any blood component prior to its transfusion.

A 3 LEUCODEPLETION FILTERS

Leucodepletion filters are adsorption filters designed to remove most of the white blood cells from either red cell or platelets (reduction of ≥99% white cells in a cellular component is expected).

The policy on use of leucodepletion differs significantly between New Zealand and Australia.
In New Zealand a policy of universal leucodepletion is in place. All blood components provided for direct transfusion to patients will have been leucodepleted. This is undertaken prior to storage of the blood component and uses validated systems which are closely monitored using statistical process control methods. In this scenario there is no requirement for the use of bedside leucodepleting filters.

In Australia a policy of targeted leucodepletion is in place. Leucodepleted blood components are restricted to patients with certain clinical conditions as indicated below:

Leucodepleted blood components are indicated:

- as a means of significantly reducing the risk of CMV transmission and CMV disease in immunocompromised patients. It can not completely avoid transmission from occasional case of CMV viremia in the early stage of acute infection.
- for patients who have experienced two or more non-haemolytic febrile transfusion reactions.
- to reduce the rate of HLA alloimmunisation to leucocyte antigens, especially in patients with haematologic malignant disease as a method to prevent platelet refractoriness.
- to reduce the rate of HLA alloimmunisation in non-hepatic solid organ transplant candidates.

Red cell and platelet leucodepletion filters do not use the same technology for leucocyte removal and are NOT interchangeable.

Leucodepleted red cell or platelet components may be supplied as prestorage components or leucodepletion can be done at the bedside. Bedside filtration cannot be adequately quality controlled and should not be used if prestorage leucodepleted components are available.

Where bedside filtration is used the following points should be noted:

- correct use of the filter is necessary to ensure effectiveness and the manufacturer instructions shall be followed.
- certain filters must be primed with the component others with normal saline.
- some are designed to only filter one unit of component and most should not be flushed with saline after use.
- choose filters carefully – most are designed for maximum efficiency at gravity flow.
- a filter used to transfuse red cell or components should hang no longer than 8 hours due to the risk of bacterial growth.

When blood is drawn through the filter at a greater rate ie by pump or syringe, leucodepletion cannot be guaranteed. Specific leucodepletion filters designed for these applications should be used.

Microaggregate filters [they are not effective for leucodepletion]

Microaggregate filters have a very small pore size (20-40 microns) to filter out microscopic debris in stored red blood cells. However their clinical value is uncertain and their use is not generally recommended. [see Woodfield, ANZSBT, Topics in Transfusion Medicine, vol 10, no 1, 2003].

A 4 BLOOD WARMERS

Red Cells should only be warmed using a specifically designed commercial device with a visible thermometer and audible warning. Blood components must not be warmed using improvisations such as putting the pack into hot water, in a microwave or on a radiator (Blood Transfusion Services of the United Kingdom, 1996).

A blood warmer is indicated:

- at flow rates of > 50 mL/kg / hour in adults, > 15 mL/kg/ hour in children, and for exchange transfusions in infants
- when transfusing patients with clinically significant cold agglutinins
RECOMMENDATIONS

- Blood warming devices shall undergo at least a 12 monthly maintenance and validation program (e.g., by the hospital biomedical department).
- Operating temperature of the commercial blood warmer shall be recorded on the patient’s infusion record when used to warm red cells or blood component.
- Blood and blood components shall not be warmed above 41°C (AABB Standard).
- Blood warmer software must be primed as for other blood infusion sets prior to use.
- No warmer coil connections or injection ports shall be immersed in water baths.
- Water bath warmers shall be emptied and cleaned, as per hospital equipment cleaning policy, after use. They shall be stored dry.

Due to the risk of contamination from infected water baths, it is recommended that these types of devices be replaced with dry heat blood warming equipment.

A 5 INFUSION DEVICES

Staff using infusion devices shall demonstrate knowledge and competency in their use including:

- Indications for use.
- Programming the device to deliver the prescribed therapy.
- Mechanical operation.
- Troubleshooting, monitoring and safe use.

ELECTRONIC VOLUMETRIC PUMPS are designed to deliver fluids, including blood and components, at specified flow rates.

If the manufacturer has documented safety of use with red blood cells or other blood components IV infusion pumps may be used by following the manufacturer’s instructions. The manufacturer of the pump chosen for transfusion shall be able to demonstrate that the pump does not cause haemolysis or damage to blood components.

Institutions shall set guidelines for their use based on an evaluation of patient benefit and risk, related to reliability, clinical application, performance, infection control, safety, efficiency, efficacy, and cost.

A suggested rationale may be to limit the use of electronic volumetric pumps to:

- Transfusion to patients via a central venous catheter (including PICC and implanted ‘ports’) where ‘free flow’ cannot be guaranteed.
- Transfusion to small paediatric patients – where very slow rates are required.
- Only those pumps shown by their manufacturers to be “safe” for blood components.

When an electronic pump is used for transfusion of red cells, the pump tubing shall incorporate a 170-200 micron filter.

RECOMMENDATIONS

- The checking procedure prior to hanging the blood shall include a check of the pump and pump settings as well as the standard checks.
- Both pump setting and volume delivered shall be monitored hourly throughout the infusion to ensure that expected volume is delivered.
- Any adverse outcome as a result of using a pump to transfuse red cells shall be notified to the appropriate authority as per institutional guidelines.
EXTERNAL PRESSURE DEVICES make it possible to administer a unit of red cell within a few minutes. These should only be used in an emergency situation and with a large gauge venous access needle.

**RECOMMENDATION**

The external pressure device should:
- exert pressure evenly over the entire bag.
- have a gauge to measure the pressure.
- never exceed 300mm Hg of pressure.
- be monitored at all times when in use.

SYRINGE DRIVERS are devices in which a standard syringe is placed on a housing that depresses the plunger at a given rate.

The syringe is filled by drawing fluid from the primary container thereby creating an open system. This creates potential problems of sterility and storage. In addition, when blood is removed from the primary pack, the risk of mis-labelling and patient identification is increased. As an alternative, the use of T-taps allows continuous attachment of the syringe to the primary pack.

Syringe drivers may be useful for transfusion
- to neonates.
- for continuous infusion of coagulation factors such as Factor VIII or Factor IX.

**RECOMMENDATION**

Syringes used for transfusing blood components :-
- should incorporate an in-line filter [170-200 micron].
- should be single use only and discarded appropriately.
- shall have Leur-lock connections.
- shall have a label attached showing date & time of preparation and expiry date & time.
- shall have identical donor/patient information as the original pack from which the component was drawn.
B 1 CONCURRENT FLUIDS

The only fluids that can be given concurrently through the same IV device as a red cell transfusion are:

- normal saline.
- 4% Albumin.
- plasma protein fractions or
- ABO - compatible plasma.

Incompatible fluids

Electrolyte and colloid solutions containing calcium (eg. Haemaccel™/Gelofusine™) shall never be given with blood cell components collected in an anticoagulant containing citrate as they may cause clotting of the infusion line.

5% dextrose in water or hypotonic sodium solutions may cause red cells to haemolyse.

Other solutions shall not be given with red cells unless there is sufficient data to ensure compatibility.

B 2 MEDICATIONS

Medication shall not be added to the blood bag or the transfusion line. If drugs need to be administered via the same IV line as a transfusion - the transfusion shall be stopped and the line flushed with normal saline. Administer the drug, then flush the line with normal saline before restarting the transfusion. This manoeuvre should not result in the transfusion of red cells exceeding 4 hours.

Co-administration of morphine, pethidine and/or ketamine diluted in normal saline [as for patient controlled analgesia or continuous side arm infusion] via a non reflux valve has been shown not to adversely affect red cells [Birch, 2001].

RECOMMENDATION

- Local hospital policy should be developed for co-administration of patient controlled analgesia and blood transfusion.
C 1 PRESCRIPTION OF BLOOD COMPONENTS

The prescription of blood and blood components is the responsibility of a doctor, midwife or a nurse practitioner who is licensed to prescribe blood components.

Blood and blood components shall be prescribed on prescription sheets for intravenous fluids or on special transfusion prescription sheets; the prescription sheet shall contain the patient identification details (surname, first name, date of birth, the gender of the patient, patient identification number).

The prescription and order for blood components are strictly different from a legal perspective.

The prescription constitutes the legal instruction to administer the blood component. It will normally be held on the ward.

The order constitutes the mechanism whereby the prescription is communicated to the transfusion service provider to prepare and issue the component for administration.

The person ordering shall be identifiable and the prescription shall be legible and should specify:

- urgency of the transfusion, including date & time transfusion is to take place. This is not pertinent to the prescription, only to the order.
- the blood or blood component to be administered, including any special requirements, eg. gamma-irradiated, CMV antibody-negative*.
- the quantity to be given
- the duration of the transfusion.
- any special instructions, eg. any medication required before or during the transfusion.

* In many situations the transfusion service provider will flag patients according to category or following initial instruction from the requestor.

C 2 INFORMED CONSENT

Informed consent for transfusion means a dialogue has occurred between the patient and the doctor. The significant risks, benefits and alternatives to transfusion including the patient’s right to refuse the transfusion will have been discussed.

The length of time that consent is valid may range from a single prescription to an episode of care or as specified by local health department requirements.

As a result of this discussion the patient should:

- understand what medical action is recommended.
- be aware of the risks and benefits associated with the transfusion.
- appreciate the risks, and possible consequences of not receiving the recommended therapy.
- be given an opportunity to ask questions.
- give consent for the transfusion.

The consent shall be documented by a consent form or by documenting the discussed information in the patient's case notes.
In the event of the patient being unable to give consent for whatever reason, local, State or Federal legislation regarding consent for a medical procedure shall apply.

In an emergency, NZ legislation gives the Medical Practitioner authority to act within the guidelines of accepted, best practice.

It is helpful to provide patients with an information sheet outlining the risks and benefits of blood transfusion. The Australian National Health and Medical Research Council (NHMRC) has produced a patient information leaflet, but locally produced information has the advantage of taking into account the local availability of services such as autologous transfusion. In New Zealand, New Zealand Blood Service (NZBS) produces a series of leaflets for this purpose.

C 3 PRE-TRANSFUSION SAMPLE COLLECTION

Experience has shown that many errors occur in documentation when labelling samples and completing forms. It is suggested that wherever possible a second person verifies that correct patient identification and recording of correct patient details have been accurately performed, on both the sample tube and request form.

Request forms

It is recommended that request forms for transfusion be formulated for this purpose alone. They should be designed to alert the user to the need for considerable caution in identifying patients and ensuring that the pre-transfusion samples are collected from the correct patient.

These request forms should summarise the clinical recommendations of the NHMRC/ASBT guidelines and be able to collect standardised data items. Clinical and laboratory indications for blood components should be accurately recorded on these request forms and in the patient’s medical record.

A formal request is required for pre-transfusion testing which may be handwritten or in electronic form.

The request form shall clearly identify the patient and include in legible form:

- patient surname, given name(s) in full, and hospital record number and/or date of birth
- date and time of collection
- name of requesting physician and signature
- details of the request eg. type of blood component, group and screen, etc.
- date and time required
- signature of the collector to confirm the correct labelling of the sample at the time of collection.

The collector shall also sign a statement on the request form as follows:

“I certify that the blood specimen(s) accompanying this request was drawn from the patient named above and I established the identity of this patient by direct inquiry and/or by inspection of wrist band, and immediately upon the blood being drawn I labelled the specimen(s).”

In emergency situations, where the patient’s identity is unknown, an alternative reliable documented method of identification shall be substituted and be reliably linked to the patient’s name once available.

Other information should include clinical diagnosis and indication for transfusion, previous transfusion history, known red cell antibodies, gender and pregnancies, clinicians details and urgency of transfusion.

For patients with a valid group and screen, a verbal request may be accepted to order blood dependent on local rules or other legislation, eg, a signed form to follow.
**Samples**

Either serum or EDTA plasma may be used for pre-transfusion testing. Serum separator tubes **shall not** be used due to the potential for the gel to adsorb antibodies resulting in possible false negative results in antibody detection.

Grossly haemolysed samples may indicate a problem with collection or transport.

An EDTA sample is recommended for direct antiglobulin tests.

**Sample Collection & Labelling**

The patient’s identity **shall** be positively confirmed* at the time of sample collection.

*Patient identity shall be confirmed by asking the patient [if conscious and rational] to state their surname, given name(s), and date of birth and by checking the identity label securely fastened to the patient. Outpatients without an identity bracelet must be asked to provide evidence of identity or as with an unconscious patient a system must be in place to securely link the requested specimen to the patient.

Following collection and before leaving the patient, the tube(s) containing the sample(s) **shall** be legibly labelled with:

- patient’s surname, given name(s) in full, and hospital record number or date of birth. [For unidentified patient an alternative reliable documented method of identification shall be substituted and be reliably linked to the patient’s name once available]
- date and time of collection
- the signature or initials of the collector **shall** appear on the sample tube, indicating that identity has been confirmed.

It is strongly recommended that addressograph labels should NOT be used, but if used they must conform to the above.

**Samples that do not conform to these labelling requirements SHALL be discarded.**

The request form and sample tube **shall** carry identical patient identification information.

The request form and sample label **shall** be checked on receipt in the laboratory and, in case of discrepancy or doubt, a clear, documented protocol approved by the officer-in-charge of the laboratory **shall** be applied.

Unlabelled samples **shall** be discarded.

**C 4 CARE AND MONITORING OF TRANSFUSED PATIENTS**

The most basic principle of patient care during transfusion is to ensure the patient’s safety. Patients receiving transfusions shall be monitored for signs of the potential complications of transfusion and any suspected problems dealt with swiftly and efficiently. There is wide variation in the frequency of nursing observations during transfusion (Waters et al., 1998), and it is not clear what is the optimum type and frequency of observations. Severe reactions are most likely to occur within the first 15 min of the start of each component, and patients should be most closely observed during this period.

Unless otherwise indicated by the patient’s clinical condition, the rate should be no greater than 5mL/minute for the first 15 minutes.

**All blood components should be infused within 4 hours unless otherwise specified on product information sheets [with exception of Factor VIII or IX prepared for continuous infusion].**
RECOMMENDATION

A policy for the care and monitoring of patients receiving transfusions of blood and blood components shall be in place.

The policy shall clearly define the following:

- the staff responsible for the care and monitoring of transfused patients.
- the information to be given to the patient about possible adverse effects of transfusion, and the importance of reporting immediately any adverse effects, including shivering, rashes, flushing, shortness of breath, pain in extremities or in the loins.
- the parameters for visual observation of the patient. Visual observation is often the best way of assessing patients during transfusion. Transfusions should be given in clinical areas where members of the clinical staff can readily observe patients.
- the clinical area where transfusions are given. There shall be sufficient trained and competent staff to monitor the patients.
- a clear plan of action to be followed in case of an emergency or transfusion reaction.
- documentation of observations should clearly indicate the start and finish times of the infusion of each component.
- a protocol for maintaining a fluid balance record.

Observation & monitoring of transfusions

VITAL SIGNS (temperature, pulse, respirations and blood pressure) shall be measured and recorded before the start of each unit of blood or blood component, and at the end of each transfusion episode as follows:

- vital signs related to transfusion should be recorded separately from routine observations and clearly dated to enable the information to be retrieved later, if necessary. Observations should be continued on unconscious patients in operating theatres and intensive care units.

- the patient should be closely observed for the first 15 min after the start of each unit of blood or blood component to detect any adverse events such as rash, wheezing etc.

- further observations during the transfusion of each unit of blood or blood component is at the discretion of each clinical area and need only be taken should the patient become unwell or show signs of a transfusion reaction. The frequency of vital sign observation during transfusion depends on the patient’s clinical condition. There is no consensus on frequency of observations but most hospitals stipulate hourly vital sign measurements.

- all observations shall be recorded in the patient chart.

Unconscious or anaesthetised patients

Unconscious or anaesthetised patients are more difficult to monitor for signs of transfusion reactions. Routine observation patterns should continue. Transfusion reactions should be considered when assessing a change or deterioration in the patient’s condition, particularly during the first 15 - 20 min following the start of a unit of blood or blood component.

Closer observation should take place for infants, unaccompanied children and patients who are unable to verbalise symptoms or use the call bell due to mental or physical limitations.

Hypotension, uncontrolled bleeding or generalised oozing during surgical procedures may suggest a coagulopathy, eg disseminated intravascular coagulation. However these symptoms may indicate the possibility of an acute haemolytic reaction due to an incompatible red cell transfusion.

Haemoglobinuria or oliguria may also be an early sign of an acute haemolytic transfusion reaction due to an incompatible red cell transfusion.
C 5 DOCUMENTATION OF TRANSFUSIONS

Complete documentation of transfusions is essential so that the cause of serious adverse effects can be adequately investigated, which can entail retrospective ‘lookback’. It also facilitates auditing of all aspects of the transfusion process.

RECOMMENDATION

Patient Case File
A permanent record of the transfusion of blood and blood components and the administration of blood components shall be kept in the patient’s case file including:

- the blood transfusion compatibility report.
- the sheets used for the prescription of blood or blood components and for nursing observations during the transfusion.
- the transfusion shall be documented by medical and nursing staff and include the indication for the use of blood or blood components, the outcome of the transfusion including whether or not it achieved the desired effect, and the occurrence and management of any adverse effects.
- a complete record of the component or donation numbers transfused (usually the labels).

Audit Trail
All documentation related to the administration of blood other than that held in the medical notes (see above), including the request form shall be retained for periods as stipulated by current accreditation requirements (e.g. NPAAC). The same should apply to the documentation used for the collection of blood from a blood bank refrigerator.

The blood sample for compatibility testing should be kept for 7 days. Hospitals and transfusion service providers are required to keep records such as worksheets, blood bank registers and refrigerator and freezer charts again for periods as stipulated by current accreditation requirements.

Location of the blood transfusion compatibility report form (When used)
The blood transfusion compatibility form should be readily available during the transfusion. Each hospital should have a policy for the location of the compatibility report form until the transfusion is completed, when it must be fixed in the patient’s medical notes as a permanent record of the transfusion.

C 6 TRAINING

To be effective, local blood transfusion guidelines must reach the staff groups for whom they are intended.

RECOMMENDATION

- One identifiable member of staff should be responsible for coordinating local policies for blood transfusion, and ensuring that staff involved in blood transfusion receive adequate training. This process should be subject to regular quality assurance audits, and competency assessment.

Training in blood transfusion policies and procedures should be included in induction programs for medical and nursing staff, ancillary staff, hospital blood bank laboratory staff, and any other staff, such as operating room personnel, involved in transfusion.

Regular updates should occur for all relevant staff as part of the hospital’s training and risk management programs. Such updates should be held no less frequently than biennially and whenever a new procedure or policy is introduced.
A register of training and competency for staff attending induction programs and updates should be maintained. These should be monitored by the hospital risk management team.

Regular audits should be carried out testing staff knowledge of transfusion policies and clinical transfusion practice. A specific training program should remedy any deficiencies.

Transfusion practitioners/nurse specialists should be given sufficient resources to allow the undertaking and development of their role.

**C 7 STAFF RESPONSIBLE FOR BLOOD TRANSFUSIONS AND HANDLING OF COMPONENTS**

Many groups of staff are involved in one or more aspects of blood transfusion. Some procedures are specific to one staff group, but many can be carried out by more than one. Local guidelines should define the responsibilities of each staff group and competency requirements.

A typical definition of responsibilities could be that:

**Medical staff, registered midwifes and designated nurses who are licensed** to prescribe blood components are solely responsible for prescribing blood components and for ensuring adequate documentation of blood transfusion in the medical notes.

**Medical midwifery and/or nursing staff** may carry out the following actions (depending on local guidelines) and be responsible for:

- requesting blood & blood components.
- taking blood samples for compatibility testing.
- explaining the risks and benefits of blood transfusion to patients and obtaining consent.
- carrying out the procedure for the administration of blood and blood components.
- monitoring patients during transfusion, and carrying out the appropriate actions in the event of adverse effects.
- reporting of transfusion reactions or other incidents related to the transfusion, to the transfusion service provider.

**Phlebotomists’ responsibilities are restricted to:**

- taking blood samples for compatibility testing.

**Ancillary staff responsibilities are restricted to:**

- the collection of blood components from the transfusion laboratory or blood storage refrigerator.

  *It is emphasised that this is a vital role, and errors in blood collection have been identified as an important cause of administration of the wrong blood* (Williamson et al., 1998).

**Staff of transfusion service providers are responsible for:**

- ensuring that the labelling of request forms and blood samples comply with local guidelines.
- blood grouping and compatibility testing.
- checking whether there are any special requirements whenever blood or blood components are requested.
- ensuring that blood and blood components are properly labelled, and the identification details of the patient and the blood to be transfused are the same on the compatibility label attached to the component and the blood transfusion report form.
- the investigation and reporting of transfusion reactions or other incidents related to transfusion.
Clinical Governance:

The hospital management board shall be responsible for ensuring that health care professionals are informed of, and follow, policies on blood transfusion through its arrangements for clinical governance and shall establish a Hospital Transfusion Committee. One identifiable member of staff should be appointed by the Board to be responsible for setting local policies for blood transfusion and organising the training of the staff involved in transfusion policies and procedures.

Small country hospitals may not have a Transfusion Committee but may come under a regional or district committee, or a general clinical governance committee as a standing committee. It is strongly recommended that there is a forum for transfusion quality and safety issues that caters for these smaller facilities.

- **The Hospital Transfusion Committee [HTC] is responsible for:**
  - reviewing transfusion policies and procedures.
  - reviewing the arrangements for training of staff in transfusion policies and procedures.
  - reviewing adverse transfusion events including ‘near misses’.
  - reviewing the appropriateness of blood transfusion, and making recommendations about the proper use of blood and blood components.
  - recommending corrective action in transfusion practice, where indicated.
  - promoting continuing education in transfusion medicine for all relevant members of staff.
  - investigating the use of Information Technology (or other technology) to improve transfusion safety.

Membership of the HTC shall include executive management and representation from the divisions of medicine, surgery, pathology, anaesthesia, obstetrics, intensive care, nursing and pharmacy.

The HTC should meet at regular intervals and report within the hospital/health service quality improvement structure.

**Transfusion practitioner/nurse specialists** (hospital scientists or nurses who have received training), where employed should undertake the following:

- implementing recommendations made by the HTC.
- performing and reviewing systems audits.
- following-up ‘near miss’ events.
- provision of education materials which comply with recognised guidelines, statutory policies and/or memorandum of understanding.
- to take such actions as necessary to maintain high standards of transfusion practice.
- consider legal implications of transfusion practice.
SECTION D
ADMINISTERING BLOOD AND COMPONENTS

D 1 ADMINISTRATION OF BLOOD COMPONENTS

Errors at the time of administration of blood or blood components are the most frequent documented site of error culminating in the transfusion of the wrong blood (McClelland & Phillips, 1994; Sazama, 1990). However, preceding errors in blood sampling, laboratory procedures and especially in withdrawal of blood components from storage refrigerators were found to be an important contributory factor in many of the incidents (Williamson et al., 1998).

**RECOMMENDATION**

Hospitals shall have a policy for the administration of blood and blood components that should cover the following items:
- the staff responsible for different aspects of this procedure.
- the education, training and competency of these staff.
- documentation / checking procedures.

D 2 COLLECTION OF BLOOD COMPONENTS AND DELIVERY TO THE WARD OR OPERATING ROOM

Withdrawal of blood and blood components from the storage location was identified as a major source of error in the transfusion of the wrong blood in the 1996/97 SHOT report (Williamson et al., 1998). Multiple errors were found to contribute to two-thirds of such incidents, and collection of the wrong blood was the most frequent cause of the first error. Most errors at the time of collection occurred because the blood was not checked for identity with the patient, but there were some even when it was personally handed from blood bank staff to a porter or a member of the clinical team.

In some institutions pneumatic tube systems are used to transport blood components. These systems shall be carefully validated for this purpose before implementation.

**RECOMMENDATION**

Hospitals shall have a policy for the collection of blood or blood components from the hospital transfusion provider or remote blood transfusion issue refrigerator and its delivery to the ward, operating theatre or other clinical area where the transfusion is to be given, and it shall cover the following items:
- the staff responsible for this procedure.
- the education, training and competency of these staff.
- documentation / checking procedures.
- validated methods for transporting required blood components.

Blood shall be stored only in temperature controlled blood transfusion refrigerators [to Australian Standard 3864], and not in ward or domestic refrigerators.

Where a hospital or health service has a remote blood refrigerator ie. one not situated within a transfusion laboratory, the hospital shall be responsible for ensuring that a maintenance and QC programme for the refrigerator is in place along with the following requirements:
- the remote refrigerator shall have a 24 hour monitored alarm system which shall be actioned immediately by suitably trained staff.
there should be a backup procedure in place in case of refrigerator failure that includes:

- an alternative storage site (eg. another nearby hospital).
- resources to adequately store blood components until such transfer is possible.

if situated in an unsupervised area the remote refrigerator shall be locked.

it shall be connected to emergency power.

blood (not for immediate use) shall only be stored or transported in boxes/eskies designated for this purpose and which have been validated as satisfactory for transporting blood. The time for which storage is validated shall be indicated on the box.

It is a requirement for hospital transfusion providers to record the time when blood was placed into a box, the time for which storage will be satisfactory and to indicate that blood should be returned to a blood transfusion refrigerator if it is not used within that time.

**Patient and blood/blood component identification check requirements:**

- the staff member, prior to collection of blood from the hospital blood bank or other blood transfusion issue refrigerator, shall have documentation containing the patient’s identification details (surname, first name, date of birth and/or patient identification number), by means of a blood collection slip, prescription chart or the patient’s notes.

- if a telephone request is given to ancillary staff to collect blood, this staff member shall be given documentation containing the patient identification details as above and in addition should be given the location of the patient and the degree of urgency that the blood or blood component is required.

- the patient identification details (surname, first name, date of birth and/or patient identification number) on the collection slip, prescription chart or in the patient’s notes shall be checked by the staff member removing blood from the hospital blood bank or other blood transfusion issue refrigerator with:
  
  (i) the patient identification details on the blood transfusion compatibility report form *(where used).*

  (ii) the patient identification details on the compatibility label attached to the component.

- the blood or blood component unit identification details (blood group and component number or batch number) must be checked with:

  (i) the details on the blood transfusion report form *(where used).*

  (ii) the details on the compatibility/patient label attached to the component.

- all withdrawals of blood components from a blood transfusion issue refrigerator should be documented, including the name of the staff member and the time the blood component was removed from the refrigerator.

- withdrawal of other blood components from the designated storage area shall be documented including the staff member and the time the component was withdrawn from the area.

- when blood components are delivered to a ward or operating theatre, a member of appropriately trained staff should check that the correct blood has been delivered and sign the blood collection slip including the time of delivery.

- where a blood collection slip is used, it should be retained by the laboratory for at least 1 month.

**Commencement of transfusion following its delivery to the ward or operating theatre**

The transfusion of blood and blood components shall begin as soon as possible after delivery to the ward or operating theatre or removal from the designated transport box.
If this is not possible, it shall be returned to a blood transfusion refrigerator with the time of return documented.

The transfusion of platelet concentrates and fresh frozen plasma should commence as soon as possible to preserve the maximum viability and activity of the platelets or coagulation factors.

Once a unit of red cells has been out of approved storage for more than 30 min they must either:

- be administered to the intended recipient and be completed or ceased within 4 hours of leaving approved storage, or
- be returned to the transfusion service provider to determine if they are still suitable for use, or
- be marked as unsuitable for further use by a designated method, if not being transfused and no on-site transfusion service provider.

To avoid wastage of red cell concentrates, only one unit of blood should be removed from a blood transfusion refrigerator at a time for each patient unless extremely rapid transfusion of large quantities of blood is needed.

### D 3 INSPECTIONS OF BLOOD AND COMPONENTS

Transfusion service provider staff shall check the expiry date and inspect blood components before issue with particular attention to:

- the integrity of the pack by checking for leaks at the ports and the seams.
- evidence of haemolysis in the plasma or at the interface between red cells and plasma [check interface in attached donor segments].
- evidence of unusual discolouration or turbidity.
- the presence of large clots.

If there is evidence of any of the above, the component should not be used and should be returned to the issuing blood service [ARCBS/NZBS], CSL or other manufacturer.

It is good practice for the staff administering blood or blood components to inspect each component in a similar way before its transfusion and to return the component to the hospital blood bank if any defects are found.

### D 4 IDENTITY CHECK OF PATIENT AND COMPONENT

The bedside check is a vital step in preventing transfusion error, and staff shall be vigilant in the checking procedure to ensure that the right blood is given to the right patient.

Two members of staff shall be responsible for carrying out the identity check of the patient and the blood component at the patient’s bedside. The members of staff shall be doctors, or nurses holding current registration.

In NZ the requirement is for the nurses to be IV certified (and in some places Anaesthetic technicians and Renal technicians are credentialled to check blood) There is also a trend for one person to be responsible for this action.

The procedure shall have the following steps:

- **the patient shall be positively identified** by asking the patient to state their surname, first name and date of birth (whenever possible) and make sure that the surname and first name are the same as on the patient’s identity bracelet. Special care should be taken for those patients who cannot state their name for whatever reason.

- verification of patient identity should be checked with parent/carer/spouse if the patient is unable to state his/her name and the carer is present.

- **the person spiking/hanging the component shall be one of the 2 people who have undertaken the component and patient identity check.**
All patients having a blood transfusion shall have an identification band attached, that includes the patient’s surname, first name, gender, date of birth and patient identification number. Exceptions to this rule (emergency retrieval/neonate/day stay outpatients) shall ensure a method of positively identifying the patient. Where an emergency number has been allocated to an ‘unknown’ patient the identity of that patient shall be confirmed to the transfusion service provider as soon as this is known.

The following details (surname, first name, date of birth, patient identification number) shall be checked and found to be identical on:

- the patient’s identification band.
- the compatibility label attached to the blood component.
- the prescription.
- the blood transfusion compatibility report form; (where used).

In addition the following checks shall be made:

- the blood group and donation/batch number put on the component by the supplier shall be checked and found to be identical to the information on the label attached by the laboratory.
- the blood group on the component shall be compatible with the blood group of the patient as indicated on the compatibility label attached to the blood component. If the blood group of the component and the patient are not identical, the transfusion service provider should make a specific comment to indicate that the blood is compatible (or most suitable available).
- the blood component shall be checked for compliance with any special requirements on the prescription sheet, eg. gamma-irradiated, CMV-seronegative.
- the blood component shall be checked to ensure it has not passed its expiry date, or expiry time in the case of components with a short shelf-life, eg. washed red cell and platelet concentrates.
- check for consent and any premedications required.

If a discrepancy that is not covered by a comment by the issuing transfusion laboratory is found during the bedside identity checking procedure, the blood component shall not be transfused until the discrepancy is resolved with the transfusion service provider.

D 5 COMPLETING THE TRANSFUSION

All blood components should be infused within 4 hours [with exception of Factor VIII or IX prepared for continuous infusion].

Ensure the blood transfusion compatibility report form is filed in the patient’s notes.

Ensure documentation is completed (see Section C 1.5).

Ensure the empty bag/bottle is discarded according to the hospital policy for disposing of clinical waste [glass bottles are not suitable for recycling]. Retention of empty blood bags for a period of 48 h after transfusion has been previously recommended (BCSH, 1990), so that they are available if a severe transfusion reaction occurs some hours after discontinuation of the transfusion. This can be considered to be good practice, but it is cumbersome to implement and the benefits are uncertain.
A small number of red cell and platelet transfusions are now being carried out in non acute care settings. The following points shall be considered by a facility when planning of an out-of-hospital transfusion service:

- a policy for community transfusion shall be drawn up taking into account the recommendations made in this document for hospital transfusion, including the requirement that the patient is closely observed during the transfusion.
- the responsibilities for the various aspects of this type of transfusion shall be set out, including overall responsibility for the service.
- patients shall be allocated a patient identification number to be used throughout the process of blood transfusion, including sample collection, the collection of component and the administration of blood/blood components eg. platelets.
- when blood is collected for transfusion testing an identification band shall be attached to the patient and shall remain in situ until completion of the transfusion.
- patients receiving a transfusion shall have an identification band attached to their person.
- there shall be a clear plan of action to be followed in case of an emergency or transfusion reaction.
- training shall be provided to all staff involved in out-of-hospital transfusion.
- components for transfusion shall be transported according to D 2 of these guidelines.
- checking procedure shall be performed before administration of blood or blood component as per ANZSBT guidelines. One of the two people checking may be a relative or carer of the patient as well as the health professional.
- a back-up support system shall be identified in case of transfusion reaction.
- a 24 hour liaison service will be provided.
- a policy for appropriate patient selection shall be developed.
- OH&S procedures for staff involved in out-of-hospital transfusions shall be as rigorous as those for in-hospital transfusion.
Many of the serious adverse events following blood transfusion are unpredictable. The most important are acute and delayed haemolytic transfusion reactions, febrile (nonhaemolytic) transfusion reactions, urticaria and anaphylaxis [including IgA/anti-IgA reactions], transfusion-related acute lung injury (TRALI), post-transfusion purpura (PTP), transfusion- associated graft-vs.-host disease (TA-GvHD) (BCSH, 1996b), and transmission of infection (Appendix 1).

If a transfusion reaction is suspected - remember, a second patient may be at risk and other components collected from the same donor may be implicated.

**RECOMMENDATION**

Hospitals shall have a policy for the management and reporting of adverse events following transfusions of blood and blood components, and it shall include the following:

- the staff responsible for this procedure.
- the education, training and competency of these staff.
- documentation procedures.

If a transfusion reaction is suspected because the patient complains of symptoms or there are changes in vital sign measurements:

- a member of the medical staff shall be contacted immediately.
- the patient’s temperature, pulse, respirations and blood pressure shall be recorded.
- all clerical and identity checks shall be repeated.
- further management depends on the type and severity of the reaction. Some examples of transfusion reactions and their management are given in Appendix 1.

If a severe reaction is suspected:

- the transfusion shall be stopped and urgent medical advice sought
- the blood administration set shall be changed and venous access maintained using normal saline running slowly to keep the vein open
- recheck the blood component labelling and identity of the patient.
- the reaction shall also be reported immediately to the transfusion service provider. The laboratory may request the return of the implicated component and further blood samples from the patient
- nursing observations should be carried out at regular intervals.
- the volume and colour of any urine passed shall be recorded and sent to the laboratory for analysis.
- document all observations and actions in the patient’s case notes.

**Reporting of adverse events**

Some health departments require mandatory reporting of sentinel events related to transfusion, eg. acute haemolytic reactions due to incorrect blood administration.

Irrespective of such a requirement hospitals shall have a policy for recording and reviewing adverse events related to blood transfusion, including ‘near misses’, which should take into account:
- all adverse events related to blood transfusion shall be reported to the transfusion laboratory and/or supplier.

- if a severe reaction is suspected, medical advice from a haematologist or transfusion medicine specialist shall be sought.

- if a reaction is a result of a suspected ABO mismatch or bacterial contamination the transfusion service provider shall be notified immediately because a second patient may be involved and components need to be recalled.

- significant adverse events related to blood transfusion shall be reviewed by the Hospital Transfusion Committee

- serious non infectious adverse events (incorrect blood or blood component transfused, acute and delayed transfusion reactions including anaphylaxis, TA-GvHD, TRALI, PTP) should be reported to Australian Incident Monitoring System [AIMS] or in the case of New Zealand to NZBS.

- suspected cases of transfusion-transmitted infection should be reported immediately to the transfusion service provider who will notify the blood manufactures (ARCBS, NZBS or CSL) who have 24 hour on-call medical staff.
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AABB</td>
<td>American Association of Blood Banks</td>
</tr>
<tr>
<td>AIMS</td>
<td>Australian Incident Monitoring System</td>
</tr>
<tr>
<td>Ancillary staff</td>
<td>Porters, orderlies, patient care attendants, patient service assistants</td>
</tr>
<tr>
<td>ARCBS</td>
<td>Australian Red Cross Blood Service</td>
</tr>
<tr>
<td>ANZSBT</td>
<td>Australian &amp; New Zealand Society of Blood Transfusion</td>
</tr>
<tr>
<td>BCSH</td>
<td>British Committee for Standardisation in Haematology</td>
</tr>
<tr>
<td>CMV</td>
<td>Cytomegalovirus</td>
</tr>
<tr>
<td>Component</td>
<td>Used throughout these guidelines to describe all components and products, including such terms as ‘units’, ‘packs’, ‘bottles’, etc</td>
</tr>
<tr>
<td>CSL</td>
<td>CSL Limited</td>
</tr>
<tr>
<td>Factor VIII</td>
<td>Antihaemophilic factor used to treat Haemophilia A</td>
</tr>
<tr>
<td>Factor IX</td>
<td>Antihaemophilic factor used to treat Haemophilia B</td>
</tr>
<tr>
<td>FNHTR</td>
<td>Febrile non-haemolytic transfusion reaction</td>
</tr>
<tr>
<td>HLA</td>
<td>Human leucocyte antigen</td>
</tr>
<tr>
<td>HTC</td>
<td>Hospital transfusion committee</td>
</tr>
<tr>
<td>ISO</td>
<td>International Standards Organisation</td>
</tr>
<tr>
<td>NHMRC</td>
<td>National Health Medical Research Council [Australia]</td>
</tr>
<tr>
<td>NPAAC</td>
<td>National Pathology Accreditation Advisory Council</td>
</tr>
<tr>
<td>NZBS</td>
<td>New Zealand Blood Service</td>
</tr>
<tr>
<td>Patient case file</td>
<td>Medical record, patient unit record, - a document containing medical and nursing notes pertaining to diagnosis and treatment for the named patient</td>
</tr>
<tr>
<td>PICC</td>
<td>Peripherally inserted central catheter</td>
</tr>
<tr>
<td>PTP</td>
<td>Post transfusion purpura</td>
</tr>
<tr>
<td>RCNA</td>
<td>Royal College of Nursing Australia</td>
</tr>
<tr>
<td>SHOT</td>
<td>Serious Hazards of Transfusion [UK] - adverse event reporting system</td>
</tr>
<tr>
<td>TAGvHD</td>
<td>Transfusion associated graft versus host disease</td>
</tr>
<tr>
<td>TRALI</td>
<td>Transfusion related acute lung injury</td>
</tr>
</tbody>
</table>
American Association of Blood Banks – *Standards for blood banks and transfusion services Vol 19th Ed. 2000*


*Guidelines for Consent to Treatment & Related Medical Procedures*. Department of Human Services [DHS], Adelaide, 2001


*Journal of Intravenous Nursing – Standards of Practice* Vol 23 Number 6S Nov-Dec 2000


*Medical ethics in transfusion Medicine: A Focus on the Issue of Informed Consent*. Blood Therapies in Medicine Vol 1; No 1 pp 11-16


## TRANSFUSION REACTION CHART

### Suspected Transfusion Reaction Signs & Symptoms

<table>
<thead>
<tr>
<th>FEVER (≥38°C &amp; Tof at least 1°C from baseline)</th>
<th>URTICARIA (HIVES) OR RASH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 38°C to &lt;39°C and No other symptoms</td>
<td>4. &gt;2/3 body and No other symptoms</td>
</tr>
<tr>
<td>2. &lt;39°C and other symptoms (ie rigors, hypotension) OR</td>
<td>5. &gt;2/3 body and No other symptoms</td>
</tr>
<tr>
<td>3. ≥39°C</td>
<td>6. Dyspnoea/ Airway obstruction</td>
</tr>
<tr>
<td>With</td>
<td>7. Hypertension</td>
</tr>
<tr>
<td>AND/OR</td>
<td>8. Hypertension</td>
</tr>
</tbody>
</table>

### Call Blood Bank and send Blood Bank Testing Done ‘Possible’ Etiology Timing of Symptoms Actions & Suggested Treatment/Investigation

<table>
<thead>
<tr>
<th>1. STOP transfusion</th>
<th>2. KVO with saline using new IV set</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Check vital signs</td>
<td>4. Re check name of patient with details on product label</td>
</tr>
</tbody>
</table>

### ’Possible’ Etiology

- FNHTR (febrile non hemolytic transfusion reaction)
- BACT (bacterial contamination)
- AHTR (acute hemolytic transfusion reaction)
- Minor Allergic
- Severe Allergic
- Anaphylaxis

### Timing of Symptoms

- During transfusion; usually towards the end
- Usually within first 15 minutes but may be later
- During transfusion, up to 2–3 hours from start
- Usually early in transfusion
- Within several hours of transfusion
- Within 6 hours of transfusion

### Actions & Suggested Treatment/Investigation

- Consult with phyaidr & proceed cautiously if product still viable
- Framed with antipyretic only after 2 episodes
- Also consider leukodepleted product
- DO NOT RESTART
- Monitor patient’s status (TTT), Antipyretic
- If bacterial contamination suspected start antibiotics immediately
- Pethidine (MD order) for shaking chills (rigors) and monitor for BP
- If plasma hemolysis reported by Blood Bank send request for: INR, APTT, WBC, CBC electrolytes, creatinine, bilirubin, LDH and haptoglobin
- Monitor for hypotension, renal failure and DIC (coag)
- Consult with physician
- Antipyretic and proceed cautiously if product still viable
- Premed with antipyretic only after 2 episodes
- DO NOT RESTART
- Premedication with antihistamine with/without corticosteroid, plasma depletion or washed cells may be required for future transfusions
- DO NOT RESTART
- Epinephrine (MD order)
- May require special blood products
- Request haptoglobin and IgA + (anti-IgA)
- DO NOT RESTART
- Diuretics, O2, sit upright
- Slow transfusion rate for subsequent transfusion (1mL/kg/hr maximum 4 hours/bag) and diuretics
- DO NOT RESTART
- Assess CXray for pulmonary infiltrates
- O2, possible intubation and ventilation, vasopressors
- If bacterial contamination suspected start antibiotics immediately
- If plasma hemolysis reported by Blood Bank (bloodwork as above in #3)
- DO NOT RESTART

### References

4. Patterson, BJ, et al. Factors that affect the rate of FNH platelet transfusion reactions. Transfusion Medicine, 10, 191–206
H 2 TRANSFUSION ADMINISTRATION CHECKLIST

This is a checklist only (use of which is optional).

Know your hospital transfusion protocols before you proceed.
Follow standard (universal) precautions.

Ensure the right blood component is given to the right patient at the right time.
Whenever possible avoid overnight transfusion in stable patients (check urgency with MO- if there is doubt, do not delay transfusion).

Before blood product is collected

☐ Medical order for product written & complete
☐ Current cross match specimen available & product ordered
☐ Special requirements? (Check for pre-medication, diuretic or special product such as Leucodepleted [filtered], CMV Neg, Irradiated etc - as per doctor’s order or ward policy for specific patient groups)
☐ IV access patent
☐ Informed consent obtained & documented by doctor (where time & circumstances allow)
☐ Does the hospital transfusion service have the product ready?
☐ Procedure explained to the patient
☐ IV Blood / solution Giving Set (approved for blood administration) prepared
  ☐ Change at least every 8 hours or with new fluids
  ☐ If leucodepleting at the bed side use filter as per manufacturers instructions
☐ Baseline observations taken & documented
☐ Blood collection / request form completed

Blood Product Collection - Always take written patient details

☐ Full Name, Date of Birth & / or Unit Record Number of the right patient!
☐ Applies to collection from all areas including blood fridges / blood shippers
☐ Check details & complete documentation required by transfusion service provider

After blood product is delivered / collected

☐ Start red cells within 30 minutes of issue & complete within 4 hours
☐ Checking - A final patient identity check must be undertaken at the bedside by 2 appropriate staff one of whom must then connect & spike the pack
  ☐ Blood pack label & compatibility label / paperwork are all identical / compatible & correct
  ☐ All the blood pack & patient details are identical & correct
  ☐ The wristband(s) details are identical & correct - ask the patient if able to state / spell their full name & DOB
  ☐ Correct type of blood product including special requirements met
  ☐ Check expiry date & time of blood pack
  ☐ Visual inspection of the blood pack (& remember to mix gently before use)
    ▪ Intact - no leaks or evidence the bag has been tampered with
    ▪ No unusual discolouration or turbidity or haemolysis (& no significant colour change in bag as compared with tubing segments)
    ▪ No clots
  If any checks fail – contact / return the pack to the hospital transfusion service

Continued over →

[Developed by ‘BloodSafe’ Project, South Australia, 2004]
Observations - As per hospital protocol & observe patient closely during the first 15 minutes. Proceed as per your hospital transfusion protocols.

- Ensure documentation is complete
  - Fluid balance chart
  - Administration times (start & finish)
  - 2 checking signatures & printed names
  - Pack / donation number
  - Transfusion observations
  - Outcome of transfusion documented in the patient’s case-note

Safe Blood Transfusion Starts with Me

Make sure the right patient gets the right blood at the right time

Verify patient identity at all steps

Never put blood in ward refrigerators

Never warm blood except with an approved blood-warming device

Mix gently before transfusion- never shake a blood pack / product

If you have any doubts contact the hospital transfusion service

If a Blood Transfusion Reaction Occurs

- Stop the blood transfusion immediately &
  - assess vital signs
  - notify the doctor
  - change line & maintain IV access
- Recheck patient & pack details
- Contact the hospital transfusion service & if required:
  - complete transfusion reaction report
  - return blood pack & giving set
  - collect blood/ urine specimens
- Monitor the patient closely

Compatible ABO Groups for Red Cell Concentrates Only
(Other rules apply for components containing plasma such as platelets, fresh frozen plasma, cryoprecipitate & whole blood)

<table>
<thead>
<tr>
<th>Patients ABO group</th>
<th>ABO group of red cells that can be given</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>O only</td>
</tr>
<tr>
<td>A</td>
<td>A or O</td>
</tr>
<tr>
<td>B</td>
<td>B or O</td>
</tr>
<tr>
<td>AB</td>
<td>AB or A or B or O</td>
</tr>
</tbody>
</table>

There are many other aspects to ensuring compatible red cells for a patient. If ever in doubt contact the transfusion service provider.
More Info About Blood Transfusion?:

Contact your hospital transfusion service.


See NZBS Transfusion Medicine Handbook www.nzblood.co.nz
Blood Transfusion?

Questions to Ask Your Doctor
- Why do I (or might I) need a blood transfusion?
- What are the
  Benefits?
  Risks and side effects?
  Alternatives including the risk of doing nothing?

For people having planned surgery:
- Do I need my blood counts checked before hand?

And when the test results are through:
- Am I starting with normal blood counts?

Ask anything else you would like to know or don’t understand about Blood Transfusion
[These same questions can be used if you are asked to give consent for family members]

People often want to know their blood group.
You might like to ask your doctor to record yours here:

Your Blood Group

Note: If you need a blood transfusion in the future then a new blood sample would be taken to confirm your blood group (the blood group written on this card would never be used to match blood).

The person taking your blood (at the time they are labelling the tube containing your blood) will ask you to state out loud your full name and date of birth to ensure that no mistakes are made.

Check that your names are spelt correctly

Record yours here

Full name

Date of birth
H 4 PRETRANSFUSION SAMPLE COLLECTION FLOW CHART

Is a blood transfusion indicated for this patient?

NO

Document the transfusion decision rationale in accordance with recognised clinical practice guidelines

YES

Patient refuses transfusion

Has informed patient consent been obtained?

Patient unable to consent (e.g. unconscious)

Seek consent from next of kin if time allows, if life threatening administer transfusion when available

YES

Patient refuses transfusion

Has informed patient consent been obtained?

NO

Document reasons

Seek expert advice in alternative patient management strategies

YES

Complete the blood component prescription; and

The blood request form accurately and legibly

NO

Do not collect sample

Correctly identify the patient

ENSURE CORRECT TRANSPORT OF SAMPLE AND DOCUMENTATION TO THE CROSS-MATCHING LABORATORY

YES

Has the patient ID been accurately confirmed prior to collecting the pre-transfusion sample?

NO

Unable to be confirmed

Substitute an alternative reliable method of identification, which can be reliably linked to the patient’s name once available

YES

Collect appropriate pre-transfusion sample

NO

Recollect sample correctly

Laboratory performs compatibility testing:

- ABO and Rh type
- Antibody screen
- Crossmatch if required
- Checks historical records

Follow flow chart for administration of blood components
Does the patient's identification details completely match the identification details on the blood components and the compatibility label?

- No
  - Do not transfuse the blood
  - Return the blood immediately to the storage refrigerator; and
  - Evaluate reasons for identity mismatch

- Yes
  - Release correct blood component for transfusion

Is there time to compete the required compatibility?

- No
  - Wait until required compatibility testing is completed

- Yes
  - Do not transfuse the blood
  - Return the blood immediately to the storage refrigerator; and
  - Evaluate reasons for identity mismatch

- Yes
  - Medical decision to transfuse uncrossmatched blood

Does the patient have blood components available for issue?

- No
  - No further action is required.

- Yes
  - Does the patient have an unexpected transfusion reaction?
    - No
      - Follow the chart (H1) for Management and Investigation of transfusion reactions.
    - Yes
      - Transfuse according to the doctor's prescription
      - Monitor patient

Follow the flow chart for Management and Investigation of transfusion reactions.
(BLANK)
(BLANK)
(BLANK)
Blood in Motion®

Modular system for cost efficient, reliable easy transport of blood and blood products

www.baxterhealthcare.com.au or phone 02 9848 1111
Purpose created, economical, innovative blood storage systems you can bank on