TRANSFUSION OF BLOOD AND BLOOD COMPONENTS - SCH

POLICY©

DOCUMENT SUMMARY/KEY POINTS

All clinical staff must be aware of the safe and appropriate use of fresh blood components as well as the process for informed consent and the transfusion verification procedure as in accordance with New South Wales Ministry of Health Policy Directive PD2012_016.

- Sydney Children's Hospital is represented on the Randwick Hospitals Campus Transfusion Committee.
- Currently no national paediatric guidelines exist on the use of blood and blood components in paediatrics.
- This policy has been written to comply in accordance with mandatory Ministry of Health Policy Directives.
- This policy provides guidelines for the safe and appropriate administration of blood and blood components following best practice guidelines published by the following professional organisations:
  - NSW Ministry of Health
  - Australian Red Cross Blood Service
  - World Health Organisation
  - Australian and New Zealand Society of Blood Transfusion Inc.
  - Royal College of Nursing Australia
- This policy includes procedures for the prescribing, ordering, collection, administration and management of the patient, as well as the process for reporting adverse transfusion reactions.
- This policy applies to all staff involved in the transfusion process and all staff responsible for prescribing, administering, taking samples, transporting/storing and issuing of blood components including the following:
  - **Medical staff** , who assess patients, obtain consent, prescribe and order blood products

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1st October 2015	**Review Period:** 3 years
Team Leader:	Clinical Nurse Consultant	**Area/Dept:**. Apheresis/Haematology SCH

- **All staff** involved in collecting blood samples from patients
- **Laboratory staff** who receive the orders and prepare blood products for issue ensuring they are compatible.
- **All staff** involved in the collection, transport, storage and handling of blood products.
- **Nursing staff** who are involved with performing the correct patient identity check procedures prior to administering blood products and who observe and monitor patients before, during and after the transfusion.

CHANGE SUMMARY

- Document due for mandatory review.
- Replaces SCH document C.6.B.01 ***Administration of Blood and Blood Components***
- There are some changes in practice (see body of document for details).

READ ACKNOWLEDGEMENT

- **All clinical staff** must be aware of the safe and appropriate use of fresh blood components as well as the process for informed consent and the transfusion verification procedure.
- All clinical staff involved in the process of transfusing blood or blood products should read and acknowledge this document.
- Other hospital staff (e.g. SEALS Laboratory staff) involved in transfusing blood or handling blood products should read this document.

Training required:

- All staff (i.e. medical, nursing and auxiliary) involved in decision making for, transportation and/or administration of transfusion-related activities MUST complete the BloodSafe e-Learning program every 5 years. (www.BloodSafelearning.org.au)
- All staff that check and administer blood and blood products must undergo clinical competency assessment every 2 years

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Glossary of Terms

Term	Definition
ABO	A term used to describe the principal types of blood groups.
ARCBS	Australian Red Cross Blood Service
ANZSBT	Australian & New Zealand Society of Blood Transfusion Inc
Blood Component	Any product derived from human whole blood or plasma donations. Including red cells, platelets, plasma, cryoprecipitate, coagulation factors, albumin, and immunoglobulins.
Blood Product	See Blood Component
BMT	Bone Marrow Transplant
Buffy Coat	The granulocyte and platelet layer that forms between red cells and plasma when a pack of whole blood is centrifuged.
CMV	Cytomegalovirus
CRYO	Cryoprecipitate
FFP	Fresh Frozen Plasma
G&H	Group and Hold
HLA	Human Leucocyte Antigen
Irradiated	Blood products are gamma irradiated to prevent TA-GVHD in susceptible recipients of blood transfusions.
IV	Intravenous
Leucodepletion	Filtering of red blood collections to remove white blood cells that is performed at the time of collection by the ARCBS
MRN	Medical Record Number
PBSCC	Peripheral Blood Stem Cell Collection
RCNA	Royal College of Nursing Australia
Rh D (Rhesus D)	The D antigen of the Rh Blood Group System
SCH	Sydney Children's Hospital
TA-GVHD	Transfusion Associated Graft Versus Host Disease
TRALI	Transfusion Related Lung Injury

1 Introduction

Blood transfusion is an essential part of healthcare and can save lives and improve health. However it does carry the risk of adverse reactions and transfusion transmitted infections.

The safety and effectiveness of a transfusion depends upon the appropriate use of blood and blood components.

This policy has been developed to reflect current national and international practice to promote safety and minimize the risks to patients associated with blood transfusion.

1.1 When to Transfuse?

The decision to transfuse a patient should be based on clinical assessment of the patient. Separate guidelines are attached to the end of this document

Guidelines for the Transfusion of Red Blood Cells in Children (Appendix I)

- Red blood cell transfusions can be life-saving however there are risks associated with them, every transfusion must be justified and should only be given when the expected benefits outweigh the risks.

Guidelines for the Transfusion of Platelets in Children (Appendix II)

- Platelet transfusions can be lifesaving however there are risks associated with them: every transfusion must be justified and should only be given when the expected benefits outweigh the risks

PLEASE NOTE

- The decision as to whether to transfuse a child with a blood product or not can be a complicated one and should be made on a “case by case” basis. These guidelines do not override the right of the primary physician responsible for the care of the child to make the final decision.
- Advice regarding patient management can also be sought from the SCH Haematology/oncology department which has a consultant on call 24 hours a day, 7 days a week
- Every time a child is transfused with a human derived blood product, consideration must be given as to whether the child requires the product to be irradiated and/or to be cytomegalovirus (CMV) negative (see Section 3.4)

Clinical and laboratory indications for blood transfusion should be documented.

2 Consent

All Medical Officers must be aware of NSW Ministry of Health PD2012_016 "***Blood - Management of Fresh Blood Components"***.

Consent must be obtained and documented in writing for any patient receiving a blood transfusion or the administration of a blood product.

2.1 Who is responsible for obtaining consent?

It is the responsibility of the prescribing medical officer to obtain valid consent.

- Informed written consent must be obtained and documented on a consent form. If consent has not been obtained the transfusion will be delayed until consent is obtained.
- Written information regarding transfusion can be provided in the form of patient/carer fact sheets via. http://transfusion.com.au/iTransfuse/fact_sheets and are available in a number of languages from the Clinical Excellence Commission: Blood transfusion: Answers to some common questions for you and your family.
- A single consent is valid for one admission episode, where multiple blood product transfusions are required.
- For long term patient's receiving blood products on a regular basis a single consent is valid for 12 months and must be amended if their treatment changes.
- For a guide on how to provide informed consent see Appendix 3.
- Pursuant to section 174 of the Children and Young Persons (Care and Protection) Act 1998,[15] consent is not required to treat a child or young person if treatment is required urgently to save the life, or prevent serious damage to the health of the child or young person.

Emergency Treatment

A medical practitioner may carry out medical treatment on a child (a person aged under 16 years) or young person (a person aged 16 or 17) without the consent of the child or young person or a parent of the child or young person, if the medical practitioner is of the opinion that it is necessary, as a matter of urgency, to carry out the treatment on the child or young person in order to save his or her life or to prevent serious damage to his or her health. This means that emergency medical treatment, and emergency first aid treatment (including any procedure, operation or examination) may be provided without the consent of the minor or a parent or guardian. **In the event of blood / blood component administration being undertaken without prior consent, parents / guardians are to be informed as soon as possible and this conversation documented in the medical record by a medical officer.**

Non-Emergency Treatment

It is NSW Ministry of Health policy that if the patient is under the age of 14 years, the consent of the parent or guardian is necessary. A child aged 14 years and above may consent to their own treatment provided they adequately understand and appreciate the

nature and consequences of the operation procedure or treatment. However, where the child is 14 or 15 years of age, it is prudent for practitioners or hospitals to also obtain the consent of the parent or guardian, unless the patient objects. (See: SCHN Policy 2013-9025)

Generally, the age at which a young person is sufficiently mature to consent independently to medical treatment depends not only on their age but also on the seriousness of the treatment in question relative to their level of maturity. The health practitioner must decide on a case-by case basis whether the young person has sufficient understanding and intelligence to enable him or her to fully understand what is proposed.

For patients 16 years or over, their own consent is sufficient.

- Consent must be obtained and documented by the attending medical officer, or a medical officer to whom that task is properly delegated.
- To ensure that a valid consent is obtained, interpreters should be used for any non-English speaking patients in accordance with the current policy on the use of interpreters (See: SCHN Policy 2014-9057)
- As part of the informed consent process, a patient (or their parent/guardian) should be given a clear explanation of the potential risks and benefits of blood / blood component therapy in their particular case and their right to refuse to receive it. They should be given information about alternatives to blood / blood component transfusion.
- The right to refuse treatment exists, notwithstanding that the reasons for making the choice are rational, irrational, unknown or even non-existent.
- There are some patient's (or their parents/guardians) who for reasons of conviction, including medical and religious, may have definite objections to the transfusion of blood / blood components e.g. Jehovah's Witnesses.
- Patient's (or their parents/guardians) have a right to refuse consent, in this setting:
    - If a patient (or their parent or guardian) refuse to permit transfusion of blood / blood components, they must sign a statement in the patient's progress/ continuation notes outlining the refusal to permit blood transfusion which is to be countersigned by a medical officer.
    - If a decision is made to administer blood / blood components without consent, the patient (or their parent /guardian) must be informed of this decision as soon as possible and events and disclosure fully documented by the medical officer in the patient's medical record.
    - In the event of a patient being under the age of 18 years and the patient or his/her parent or carer refusing medical treatment which, in the opinion of the medical officer concerned, may cause serious damage to the health of the child or young person, the SCHN may approach the relevant authorities, including the Supreme Court of New South Wales, to seek an appropriate directive as to the administration of the medical treatment in question.

3 Prescription and Ordering

3.1 Prescription

1. **The Medical Officer is responsible** for prescribing of blood and blood components at Sydney Children's Hospital.

   The prescription constitutes the legal instruction to administer the blood product and will be retained as part of a patient's medical record.

- Blood and blood components must be prescribed on the "***Blood and Blood Products Administration Form***".
- Small volume products given by intravenous 'push' e.g. Clotting Factor Concentrates, or given intramuscularly e.g. Zoster Immune Globulin, should be prescribed on the Medication Chart.
- For patients in the Operating Theatre the prescription is to be recorded on the anaesthetic record.
- All prescriptions must contain the following details:
  - Surname and Given Name in full
  - Date of Birth
  - Gender
  - Hospital Medical Record Number (MRN)
  - The type of blood or blood component to be administered and the route of administration
  - Any special requirements; e.g. CMV negative and/or irradiated
  - The volume to be transfused must be recorded in millilitres (mL)*
  - The duration and rate of the transfusion
  - Any special instructions e.g.; if pre-medications are required

***** In general, the recommended maximum transfusion volume of packed red blood cells is 15 mL per kilogram body weight. In certain complex clinical situations, the ideal volume of blood to be transfused may NOT be 15 mL/kg and specialist haematological advice should be requested prior to transfusing.

For any enquiries on prescription of Blood and Blood Components, please contact the Haematologist on-call

2. **Neonatal Exchange Transfusions**

   For prescription, ordering and procedural instructions on Neonatal Exchange transfusion please see the Royal Hospital for Women Exchange Transfusion Protocol: http://www.seslhd.health.nsw.gov.au/rhw/Newborn_Care/Guidelines/Medical/X-changeTransfusion-2012.pdf

3.2 Pre-transfusion Testing

Blood request forms should be made through the eMR system. Manual hard copy forms can be used during eMR system failure.

1. **Group & Screen**

- A group & screen is required for compatibility testing prior to the transfusion of blood.
- Each sample is tested to determine the ABO and Rh D (Rhesus D) grouping of the recipient and is confirmed with previous records of transfusion.
- A red cell antibody screen is performed to detect any red cell antibodies in the recipient.
    - Patients who have red cell antibodies require further laboratory investigations and complete serological crossmatching, this may take up to several hours to process.
    - Red Cell extended phenotype test should be requested on all patients where it is thought a 'chronic' red cell transfusion regime is about to commence e.g. patients with thalassaemia and sickle cell disease.

2. **Crossmatch**

- A crossmatch is the final test which confirms the compatibility between the donor blood and the recipient blood.
- For each crossmatch, a minimum of 1mL sample in an EDTA tube (pink top tube) must be supplied.

3. **Sample Validity**

- Any sample provided for a patient who has been transfused or is/has been pregnant within the last 3 months expires 72 hours after the date and time of collection.
- Any sample provided for a patient who has NOT been transfused or pregnant within the last 3 months and contains the appropriate history will expire after 7 days from the original date and time of collection.
- Sample expiry can be found on ***PowerChart***, "*Patient Product Enquiry*".
- Any patient discharged from any hospital and transferred to SCH requires a new pre-transfusion sample. This is regardless of whether the patient was discharged from within POW campus hospitals e.g. babies transferred from The Royal Women's Hospital and transferred to SCH as these patients are classified as 'discharged' from The Royal Women's Hospital.

3.3 Ordering

The ordering of blood or blood components involves the process of communicating to the POWH/SEALS blood bank to prepare and issue a product for administration.

An eMR transfusion request form must be used to place orders for tests and blood products required for blood transfusion.

In the situation where a FBC and a Group and Hold have been ordered on an eMR request form, and the decision has been made to transfuse because the Hb is low, a new request for

the "Crossmatch (Add on)" needs to be made on the eMR, the form printed out and sent to POWH/SEALS Blood Bank either by a porter or in the Scud system.

ALL details requested on the blood transfusion request form must be completed accurately and legibly. Otherwise re-sampling is required.

If blood is needed urgently, the blood bank must be notified by telephone.

For any enquiries related to the ordering of blood products; the POWH/SEALS Blood Bank can be contacted by phone on EXT 29145/29146.

The person ordering the blood must be identifiable and provide the following information on the transfusion request form:

- Date of request
- Date and time when the product is needed
- Complete patient ID details (Surname, Given Name, Date of Birth, gender, MRN)
- Patients Ward/Location
- Diagnosis & Indication for the transfusion
- Describe the actual blood product required
- Indicate the number of units/volume requested
- Indicate any special requirements e.g.; CMV negative, irradiated products, triple washed red cells
- State the urgency of the request. If urgent, verbally inform blood bank of urgency
- Indicate if a Group, Hold & Screen or Crossmatch is needed

In emergency situations where blood is required immediately, urgent samples will be crossmatched as a priority over non-urgent samples.

3.3.1 Ordering of Red Cell Concentrates from POWH/SEALS Blood Bank

When ordering red cells the following is required:

- Refer to section 4 Pre-transfusion Sample Collection for further information regarding the pre-transfusion sample.
- Transfusion volume: In general, the recommended maximum transfusion volume of packed red blood cells is 15 mL per kilogram body weight. In certain complex clinical situations, the ideal volume of blood to be transfused may **NOT** be 15 mL/kg and specialist haematological advice should be requested prior to prescribing, e.g. an acutely unwell patient with sickle cell anaemia should have their transfusion prescription discussed with a paediatric haematologist.
- Indicate any special requirements e.g.; CMV negative, irradiated products, triple washed red cells

For any further enquiries on **transfusion volumes**, please contact the Haematologist on-call

3.3.2 Ordering Platelets

When ordering platelets the following is required:

- It is preferable that ABO and Rhesus compatible platelets are transfused. If unable to locate compatible platelets, seek permission to proceed from patient's consultant.
- For urgent samples only, telephone requests can be made when ordering platelets if the patient's blood group and Rh (D) status is known and documented in the Blood Bank computer system. For routine platelet requests, an eMR request form must be sent to blood bank.
- Indicate any special requirements e.g.; CMV negative, irradiated products.
- The volume of platelets to be transfused depends on the age and weight of the recipient. In neonates and infants, the usual volume is 15 mL/kg. In the older child it is common practice to give the entire unit released by the POWH/SEALS Blood Bank. If in doubt, seek advice from the Consultant in charge of the patient.

Platelets have a very short expiry date: *When making a request to order platelets, please be absolutely sure that the product will be used prior to making the request. If later on, platelets are not required you must inform blood bank so they can be released for other patients use.*

3.3.3 Ordering Fresh Frozen Plasma & Cryoprecipitate

When ordering FFP or Cryoprecipitate the following is required:

- For urgent samples only, telephone requests can be made when ordering FFP or cryoprecipitate if the patient's blood group and Rh (D) status is known and documented in the Blood Bank computer system.
- For routine FFP or cryoprecipitate requests, an eMR request form must be sent to blood bank.
- Please Note that each unit of FFP requires 30 minutes thawing time and cryoprecipitate requires at least 10 minutes for thawing.
- The usual recommended volume of FFP for transfusion is 10-15 mL/kg.
- The usual recommended volume of cryoprecipitate is 5-10 mL/kg.
- FFP is not irradiated prior to transfusion.

When making a request to order the above products, please be absolutely sure that the product will be used prior to making the request.

3.3.4 Ordering Albumin & Coagulation Factors

- The blood bank keeps a constant supply of albumin and Factor VIII, Factor IX and von Willebrand's factor in stock. Some rarely used coagulation factors must be ordered in advance of their usage.
- When ordering albumin or coagulation factors, a telephone request can be made to the blood bank & the blood bank can advise on stock availability.

- Recombinant FVIIa ("Novoseven"), for use in haemophilia patients with an inhibitor, is supplied to SCH by the pharmacy department.
- Queries regarding the use of coagulation factors can be directed to the Haematologist On Call or to the Haematology CNC.

3.3.5 Ordering Intravenous Immunoglobulin's

For all patients who require IV immunoglobulin the following is required:

- For the initial first dose, the requesting Medical Officer must carry out the following:
  1. Go to the NBA website and review the criteria for IVIG http://www.blood.gov.au/public-consultation
  2. Fill in Authorisation Request Form http://www.blood.gov.au/Ig-forms
  3. Contact an ARCBS Medical Officer directly by phoning ***1300 478 348*** to notify them that you are faxing an Authorisation Request Form for supply of immunoglobulin
  4. Fax the Authorisation Request Form to ARCBS. Fax no 92342050.
- For any subsequent transfusion of immunoglobulins, orders can be placed directly with the POWH/SEALS Blood Bank.
- See also Immunoglobulin Infusions for Replacement and Immunomodulation Practice Guideline.

3.3.6 Ordering of Non Stock Blood Component Items

The following link provides detail for all items stocked by the ARCBS:
http://www.transfusion.com.au/blood_products

When ordering non-stock items the following is required:

- A telephone request is to be made to the POWH/SEALS blood bank.
- The name of the person making the telephone request and the name of the requesting clinician is required.

3.4 Special Blood Requirement Guidelines

3.4.1 Irradiated Blood Products

The irradiation of red cells and platelets is effective in the prevention of *Transfusion Associated Graft versus Host Disease* in susceptible patients.

Irradiated red cells and platelets must be ordered for the following patients:

1. All oncology patients.
2. Premature/very low birth weight infants up to 6 months of age.
   - POWH/SEALS Blood Bank irradiates blood products for **ALL** babies up to a chronological age of 6 months
3. Neonates receiving an *exchange transfusion*.

4. Diagnosed with or suspected of having a congenital or acquired immunodeficiency disorder
    - e.g. Severe Combined Immunodeficiency, Velocardiofacial Syndrome, Di George Syndrome, Athymic patients, Acquired Immune Deficiency Syndrome (AIDS).
5. Recipients of (or candidates for) autologous and allogeneic *Bone Marrow/PBSC Transplant*
6. Patients receiving Immunosuppressive therapy (e.g.; *Aplastic Anaemia*, post liver/renal transplant)
7. Patients receiving alemtuzumab.
8. Patients requiring HLA matched single donor platelets (if not in the above category)
9. Neonates with *Necrotizing Enterocolitis* if they do not fit in the above categories.
10. Patients receiving a directed donation (from a first or second degree relative)
11. Granulocyte transfusions require irradiation.

3.4.2 CMV Negative – Cytomegalovirus Antibody Negative Blood Products

The use of CMV negative blood components are available for patients who are considered at high risk of acquiring transfusion transmitted CMV infection.

Patients considered at high risk of CMV infection are:

1. Neonates/ Infants weighing <1500 grams or who are immunosuppressed,
    - POWH/SEALS Blood Bank provides CMV negative products for ALL babies up to 4 months of age.
2. Recipients of neonatal exchange transfusion,
3. CMV negative recipients of bone marrow/stem cell or solid organ transplant,
4. Oncology patients who may be candidates for a stem cell transplant procedure and who are CMV negative at diagnosis e.g. those with ***A.L.L.***,
5. Other severely immunosuppressed patients.

If CMV seronegative units are not available, leucocyte depleted units are generally considered 'CMV safe' and may be administered **ONLY** after discussion with the patients' Consultant Medical Officer.

3.4.3 Leucodepletion

Leucodepletion of red cells and platelets removes ≥ 99% of leucocytes which assists in reducing febrile non-haemolytic transfusion reactions as well as reduce the risk of CMV transmission during transfusion.

Since 2008 all Red cells and Platelets are now leucodepleted at source at time of collection (pre-storage white cell filtration) at the ARCBS.

3.4.4 Washed Red Cells

Washed red cells are ordered only after consultation with a haematologist. They may be indicated for patients who have had previous severe allergic reactions to red cell transfusion. Due to the added preparation required, advance notification should be given to POWH/SEALS blood bank and the ARCBS where possible.

3.4.5 Extended Red Cell Phenotyping

i.e. *red cells matched for blood groups additional to ABO & Rh (D)*

- Consultation with a Haematologist is required for the request of phenotyped red cells.
- Phenotyped red cells are ordered for all patients who:
  - Are known to have red cell antibodies (e.g. anti Kell, anti-Jka)
  - Are scheduled to receive chronic regular blood transfusion therapy (e.g.; *Thalassemia major*, *Aplastic Anaemia*, *Sickle Cell Anaemia*)

4 Pre-transfusion Sample Collection

It is a mandatory requirement by the NSW Health that all patients receiving blood or blood components must be accurately identified in the presence of the patient at the time of sample collection in order to prevent the "wrong blood in tube" episodes.

(See: NSW Health PD2012_016)

4.1 Request Forms & Samples

- The eMR blood transfusion request form must be completed accurately and state clearly the patients diagnosis and the clinical indication for transfusion.
- Any previous transfusion history must be documented on the eMR form.
- The product, the number of units required and date and time required must be indicated.
- Any urgent request should be phoned through to the POWH/SEALS blood bank and the degree of urgency should be stated.
- The blood transfusion request form should be clearly labelled with the following patient identification details:
  - Surname & Given name
  - DOB
  - MRN
  - Sex
- Special requirements such as 'CMV negative' or 'irradiated' should be indicated under the heading 'order details'.

If the request form or blood sample identification is **incomplete** or **incorrect**, the request for grouping or crossmatch will be **refused** by POWH/SEALS blood bank staff and the patient will need to be re-bled for repeat sample.

4.2 Sample Collection Procedure & Patient Identity Check

- Samples collected for testing may be collected by a medical officer, a registered nurse or a pathology collection staff.
- The procedure for collecting the sample must be carried out in one continuous uninterrupted event involving one patient at a time only.
- The sample must be verified by a second checker in accordance with NSW Health policy directives PD2012_016 to correctly verify the patient identity.
- The second checker may be any clinical member of staff, the patient if they are of the age and ability to consent or the parent/guardian.
- Whenever possible the patient should be asked to verbally state their name and the information given should be checked against the patients ID wristband.
- The blood sample must be completely 'hand written' on the blood bottle label immediately **after** it has been added to the tube and **before** leaving the patient.
- The sample tube must be hand written and labelled with the following information:
  - Given Name & Surname
  - MRN & Date of Birth, Date & time of collection
  - Signature of the collector on the tube

Note: ***Sample tubes must not be pre-labelled***

- All samples must be accompanied by a completed & printed eMR blood transfusion request form. Both the collector and the second checker are required to sign the form.

4.3 Maternal Samples

- Maternal samples should be collected for any patient under the age of 4 months requiring blood grouping or crossmatching
- The procedure for collecting maternal samples should be followed in accordance with section 4.2 and the sample must be labelled with both the mother's and the baby's identification details.
- Maternal samples should be requested using the eMR blood transfusion request form and the patient ID details on the form and sample must be those of the mother.
- At the top of the form or in the clinical notes section of the form it should indicate who the maternal sample is for e.g.; "Alana Smith, Mother of John Smith" and include the baby's MRN.
- Maternal samples sent from external hospitals will be accepted if there is a completely labelled blood sample tube and an external hospital request form. DO NOT transfer the details of the order form onto a POWH/SEALS eMR blood transfusion request form.
- If a baby is transferred to SCH – Randwick via the Neonatal Emergency Transport Service (NETS), a properly labelled and collected maternal sample, collected at the mother's hospital, will be accepted at the POWH Blood Bank if it is accompanied by a correctly completed NETS crossmatch form. This is an interim measure until the baby's mother arrives at the Randwick campus, when a new sample and hospital form must be sent to the POWH Blood Bank.

A patient discharged from any hospital and transferred to SCH requires a new pre-transfusion sample. *This is regardless of whether the patient was discharged from within Randwick Hospitals Campus e.g. babies transferred from the Royal Hospital for Women (RHW) and transferred to SCH as these patients are classified as 'discharged' from RHW..*

4.4 Unlabelled or Mislabelled Samples

- The blood bank has a zero tolerance policy in relation to errors in patient identification on the sample or request form.
- Zero tolerance means that:
  - Samples must be hand-labelled with:
    - **i.** Patients given name and surname,
    - **ii.** Medical record number and date of birth, date and time of collection,
    - **iii.** Signature of collector.
  - Request forms must have:
    - **i.** Name and signature of requestor,
    - **ii.** Surname and given name of patient,
    - **iii.** MRN and date of birth,
    - **iv.** Signed and witnessed collector declaration.
- **The details on the request form and the tube must be identical** as per ANZSBT and RCNA guidelines.
- In the event of an unknown patient arriving in ED/CICU the tube and request form will be accepted with "Unknown (Fe)male" and MRN as the patient identifiers.
- If there are any errors in the patient identification **on the sample** or **the form** the sample is to be discarded and the collector will be notified to recollect.
- **Samples labelled with an addressograph** will be discarded and the collector will be notified to **recollect the sample**.

5 Storage and Transportation

The proper storage and transportation of blood and blood components is critical for safe transfusion. If stored incorrectly, blood carries the risk of bacterial contamination.

Safe practice requires all blood and blood components (except platelet concentrates and frozen plasma) to be maintained between 2 and 6°C until immediately prior to administration.

- Blood and blood components must only be stored in **designated monitored blood refrigerators**.

Blood and Blood Components **MUST NOT** be stored in ward refrigerators.

5.1 Collecting and Transporting Blood Products

It is vital to confirm that the right blood component is collected for the right patient to avoid "wrong blood to patient" episodes.

- Ensure a patent iv access is securely in place prior to collection of the patient's fresh blood product from blood bank.
- Any person collecting blood MUST have complete patient identification details recorded on an "Authority To Issue Blood Products" form (pink form). Blood bank will not issue blood products without receiving this form.
- The hospital SCUD shoot system may be utilised to transport forms, blood samples and suitably sized blood products. All fresh blood products must be placed inside a zip lock plastic bag within the SCUD container prior to sending.

if a product has not arrived within the expected time period, phone blood bank to enquire about the product. **Glass bottles** are **NOT PERMITTED** for transportation **via the SCUD system**, due to breakage and damage to product viability.

Rare and urgent blood products should not be sent through the SCUD system in case the product is lost or damaged. Such products should be collected in person.

- If medical or nursing staff request that ancillary staff pick blood up from the blood bank, they MUST ensure that ancillary staff are given the appropriate documentation and instructions prior to collection of the product.
- Ice/cold packs MUST NOT be used in the carrier when transporting blood.
- The person collecting the product must supply the blood bank staff with their Hospital Staff Identification for the product to be issued.

ALL blood and blood components MUST commence transfusion **within 30 minutes** of collection time once removed from storage. If for any reason the transfusion cannot commenced within 30 minutes, the product **must** be returned back to the appropriate storage refrigerator in POW/SEALS Blood Bank. An "Authority To Issue Blood Products" form (pink form) must accompany the returned blood product to Blood Bank.

6 Administration

The most basic principle of patient care during a transfusion is to ensure patient safety. A patient can have blood transfusion reactions at any point regardless of having received blood previously.

The **bedside check** is a vital step in preventing transfusion error. All patients receiving blood or blood components must be positively identified prior to administration.

6.1 Pre Transfusion Check

- **In the presence** of the patient, two people must independently identify the patient when the transfusion is being **set up**. This involves either two Registered Nurses or a Registered Nurse and a Medical Officer or two Medical Officers.
- The patient's identity must be checked against the patient's identification wristband
- The patient should be asked to verbally state the following if able to do so:
  - Surname, Given Name,
  - Date of Birth
  - Address (if an outpatient)
- If a patient is unconscious or unable to state their correct name (e.g.: neonate) a parent/guardian may state the patient identity. In the absence of carers, it is sufficient that the two people completing the pre-transfusion check confirm the patient's identity.
- The following details on the blood pack component label must be checked and must match exactly the details on the blood request form, the prescription order AND with the patient's identification band:
  - Patients Surname, Given Name (or in the case of an unnamed Neonate "Baby of ……)
  - Date of Birth
  - Hospital Medical Record Number
  - Unique blood unit number
  - The ABO and Rh group
  - The expiry date on the blood product
  - Any special requirements e.g. specific phenotypes, CMV -, irradiated.
- In some instances, blood issued may be compatible but not identical to the patient's own ABO and Rh group. Check with blood bank staff or haematologist regarding compatibility queries before commencing transfusion.
- **Check** that special requirements specified by the prescribing medical officer are met e.g.:
  - CMV negative or irradiated products.
  - if a pre-medication or furosemide is required,
  - the volume, rate and the duration of the transfusion.
- The blood product should be visually inspected for any signs of deterioration or damage. If there is evidence of any leaks, clots or discolouration, the product should not be infused and should be returned to the blood bank immediately.

- All staff members responsible for completing the pre-transfusion check must both sign, date and time the blood transfusion request form.

6.2 Administration and Set up

All Red Cell, Platelet, FFP and Cryoprecipitate units require filtration via a standard 170-200 micron filter. Standard Precautions MUST be used:

- **If a CVAD is in-situ**, staff are to ascertain from a medical officer whether the line may be used for blood / blood component administration. **The viscosity of the blood / blood component can cause occlusions in some of these catheters**.
    - If a multi-lumen CVAD is in-situ staff are advised to attempt to utilise the largest lumen for the administration of blood / blood components.
- A new, sterile infusion set is to be used for each component of blood to be transfused and with each new blood transfusion episode. A maximum of 4 units (of the same blood component only) can be transfused through the same giving set within one transfusion episode.
- A burette should be attached to the infusion set and used to "spike" the blood pack using an ***aseptic technique*** with appropriate PPE.
- The infusion set may be only primed with normal saline or the blood component.
- Recheck that IV access is patent prior to connecting the infusion set to the patient's IV access device.
- Ensure the correct infusion rate is set and checked by both people checking the blood product, before commencing the transfusion.
- To ensure a closed system is maintained during the administration of blood and blood products via a CVAD, the infusion set can be attached through the closest Luer activated valve to the patient, ensuring the valve is flushed with 0.9% sodium chloride prior to and post transfusion.
- Blood and blood products must not be administered concurrently with any other fluid, medication, parental nutrition or blood product.
- Medications MUST NOT be added to the blood pack to be transfused or to the infusion administration set. Refer to section 6.6 on co-administration of IV fluids and medications.
- Dextrose or Glucose MUST NOT be used for priming or adding to the infusion Set.
- The filter within the infusion set may be flushed with saline after blood has transfused through it.

6.3 Use of a Syringe Driver to Administer Blood

The following procedure should be followed in accordance with the pre-transfusion check

- For infants and neonates or any patient on minimum fluid requirements, a syringe driver may be used to transfuse blood and blood components.

- The volume of blood required should be drawn into the syringe and administered via a 170-200 micron filter.
- Each syringe & infusion set used should be single-use only and discarded appropriately at the end of the transfusion.

6.4 Patient Observation and Monitoring

All patients receiving a transfusion must be monitored for any potential complications and adverse transfusion reactions. **The patient should be closely observed for the first 15 minutes** as severe and life-threatening reactions can occur after only a small amount of blood being transfused.

- **Visual observation** of the patient is the best way of assessing patients during transfusion.
- Transfusions should be given in areas of the ward where patients can be readily observed.
- Transportation of patients should be avoided whilst a transfusion is in progress. However, if a patient is required to leave the ward/ outpatient area for any reason, a staff member trained in transfusion reaction management must accompany the patient.
- Vital Sign monitoring including Temperature, Pulse, Respiratory Rate and Blood Pressure should be taken before, during and after the transfusion to detect any adverse event as early as possible.
- Vital Signs should be checked and recorded:
  - As a baseline before the start of the transfusion.
  - Within 15 minutes after the start of the transfusion.
  - At the end of the transfusion.
  - More frequent observations should be done when administering blood to a critically unwell patient or if the patient's condition deteriorates during an infusion.
- All patients must have the volume of blood they receive each hour recorded every hour during the transfusion.
- Patients should also be instructed to report to staff if they experience any discomfort or unusual symptoms.
- Each patient's clinical circumstance must be assessed on an individual basis.

Refer to Section 7 regarding Management of Adverse Transfusion Reactions if a patient displays or reports any signs and symptoms of an adverse event.

6.5 Time Limitation for Blood Administration:

There is an increased risk of bacterial contamination once blood products have been removed from the appropriate storage conditions

- Red cells, FFP and cryoprecipitate for transfusion must commence transfusion within **30 minutes** of removal from storage and must be completed within **4 hours** from the start of administration.
- **Platelet transfusions** should be commenced within **30 minutes** of removal off a platelet agitator because of the high risk of bacterial contamination and the risk of the platelets clumping and becoming damaged. Once transfusion has commenced they should be infused within **1 hour**.
- Refer to Appendix IV

6.6 Administration of IV Fluids and Medications when a blood product is infusing

Medications **MUST NOT** be added to any blood component pack or to the administration set.

As a general rule blood and blood products must not be administered concurrently with any other fluid, medication, parental nutrition or blood product.

ONLY in situations where alternate IV access is unobtainable or when it is absolutely necessary that medications are to be given during a blood transfusion, should the following procedure be followed:

- The blood transfusion should be stopped and the IV line should be flushed with normal saline before and after the administration of the medication.
- The medication must be administered through a separate IV giving set.
- The blood transfusion can then be recommenced ensuring that the transfusion is completed within 4 hours from the start of administration.

In exceptional circumstances co-infusion of certain drugs e.g. morphine in 0.9% sodium chloride and Packed Red Blood Cells may be necessary for the welfare of the patient. This should only occur after discussion with the Consultant in charge of the child's management.

- Normal saline, 4% albumin and ABO compatible plasma are the ONLY fluids compatible for co-administration with a red cell transfusion. If co-administration of any one of these fluids is required, they must be infused via a separate IV giving set.
- Co-administration of Morphine, Pethidine and/or Ketamine diluted ONLY in Normal Saline has been shown not to adversely affect red cells. If morphine and/or Ketamine are required to be co-administered as a PCA infusion, they must be infused via a separate IV giving set, and via a continuous side line infusion.
- All co-infusions are to be administered via a sideline at the connection closest to the patient.

6.7 Albumin Administration

Human Albumin is available for administration as Albumex® and comes in two concentrations, Albumex® 4% and Albumex® 20%. Caution should be taken to ensure the correct dose and concentration is given.

The following procedure should be followed in accordance with section 5.1 and section 6.1.

Standard Precautions must be used:

- A new standard IV administration set is to be used for the administration of Albumin concentrations. No filter is required.
- Administration from glass bottles requires a vented system. (Check if an airway needle is required for adequate flow.)
- Medications are not to be added to the bottle or to the administration set.
- Patient observation: **Standard routine observations.**
- Record the batch number of each bottle by removing the batch sticker and placing on the patients "Blood & Blood Products Administration" form.(or flow chart in CICU)
- Each bottle should be accessed once and be used as single use only.
- Albumin does not contain an antimicrobial agent and all studies regarding stability have only been undertaken looking at Albumin stored in glass bottles. Consequently, ONLY 4 HOURS VOLUME IS TO BE WITHDRAWN or used and the remainder left in the bottle must be discarded. If further volume is required after this time, a fresh bottle must be accessed.

6.8 Coagulation Factor Administration

Several Coagulation Factor products are available from the POWH/SEALS blood bank.

- Informed consent must be taken and documented for all bleeding disorder patients receiving "plasma derived"' coagulation products prior to their first dose of the coagulation factor. After which consent does not need to be repeated unless treatment options change. (See: PD2012_016.)
- The procedure for collecting coagulation factors from the Blood Bank should be followed in accordance with section 5.1.
- Reconstitution MUST be followed as per individual product information.
- The correct coagulation factor brand MUST be administered as per the Haematologists orders. If the prescribed brand is unavailable, the haematologist MUST be informed as brand switching can only be done with the haematologists consent.
- Bolus orders must be administered as a bolus dose and not infused through an IV infusion giving set.
- Record Batch numbers on the medication chart or remove the peel off the sticker and place on the medication chart.(If multiple doses are given each day then the sticker should be applied to the continuation notes with documentation of date and time given.)

6.9 Waste Management

- Standard precautions must be used when handling blood products required for clinical waste.
- All transfused fresh blood product packs MUST be safely retained on the ward for 24 hours following completion of the transfusion.
- If a severe transfusion reaction is suspected then the blood pack should be sent to the POWH/SEALS blood bank for further testing. Refer to Section 7 for Transfusion Reactions.

All waste should be discarded following Randwick Hospitals Campus/SESLHD policy: Waste Management.

7 Management of Adverse Transfusion Reactions

Blood Transfusion can be associated with various adverse effects. **Some reactions are acute, others delayed**. It is essential to monitor all patients closely to recognise the signs and symptoms of a transfusion reaction.

ALL transfusion reactions **MUST** be:
(i) reported to the POWH/SEALS blood bank,
(ii) recorded on the SCH IMMS system.

and
(iii) documented as an 'alert' in the patients *e*MR..

Complications of Transfusion
• Haemolytic transfusion reaction
• Alloimmunisation of the recipient of red blood cells, white blood cells, platelets and protein antigens
• Febrile reactions
• Allergic reactions manifested as urticaria, wheezing, anaphylactoid reactions
• Circulatory overload
• Metabolic complications such as hypothermia, acidosis, hyperkalemia, hypocalcaemia
• Clinically significant depletion of coagulation proteins and platelets if massive transfusion.
• Transmission of viral infectious disease
• Bacterial contamination
• Transfusion Associated Graft-versus-host (TA-GVH) disease
• Iron overload

7.1 Acute Complications of Transfusion

Acute transfusion reactions can occur during or shortly after the transfusion (within 24hours). They can be mild, moderately severe and even life-threatening with the most common reactions being fever, chills and a rash.

- The most common cause of Mild Reactions is hypersensitivity.
- Moderately Severe Reactions include febrile non-haemolytic transfusion reactions. During the early stages of a transfusion reaction it may be difficult to distinguish between a moderate severe reaction and a life-threatening reaction.
- Life-Threatening Reactions involve shock, intravascular haemolysis, anaphylaxis and TRALI. Common causes are ABO incompatible transfusions and contaminated blood packs.

7.2 Delayed Complications of Transfusion

Delayed complications include transfusion transmitted infections and delayed haemolytic reactions that can occur days, months or even years after the transfusion.

Some examples of delayed transfusion reactions include:

- Cytomegalovirus, Epstein Barr Virus, Toxoplasmosis, Hepatitis B and C
- Delayed haemolytic transfusion reactions
- Post-transfusion Purpura
- Graft versus Host Disease
- Immunosuppression

Patients and parents/guardians should be instructed to report immediately if any of the below signs and symptoms are experienced as they could indicate a transfusion reaction.

7.3 Reaction Types and Signs & Symptoms

Type of Reaction	Signs and Symptoms
Mild Allergic	Localized urticaria, pruritis, rash
Severe Allergic	Flushing, wheezing, facial oedema, hypotension, anaphylaxis
Febrile	Unexpected fever > 38° C may be accompanied by rigors/chills
Acute Haemolytic	Rigors, fever, flank pain, tachycardia, dyspnoea, hypotension, haemoglobinuria, unexplained bleeding
Transfusion Related Lung Injury (TRALI)	Dyspnoea, respiratory failure, pulmonary oedema, chills, fever
Septic reaction	Fever, chills, rigors, nausea/vomiting/diarrohea, hypotension

7.4 Immediate management of a suspected transfusion reaction

If a patient develops any of the above reactions:

1. STOP the transfusion and provide immediate care.
2. Withdraw any residual blood product in the line, then flush the line and maintain IV access with normal saline using a new giving set.
3. Perform a complete check of vital signs, Temperature, Pulse, Respiratory Rate, Blood Pressure and SpO_2.
4. Refer to Clinical emergency Response system Protocol (CERS), Blue (escalate care) Contact the patients' medical officer for an immediate review. Yellow zone (clinical review), Red zone (rapid response).
5. Check patient identity and confirm that the right blood pack has been given to the right patient.
6. Contact the Haematologist on-call and the POWH/SEALS blood bank for further investigations.
7. Having removed the blood product bag from the giving set, prepare the bag for return to POWH/SEALS Blood Bank along with a completed back page of the "Authority To Issue Blood Products" form.
8. Document the reaction and the management in the patients' medical record and place an "alert" in the eMR
9. Report the incident in IIMS reporting system.

7.5 Investigation of a Transfusion Reaction

After the decision is made to discontinue the transfusion, send the following requests and blood samples to the POWH blood bank in consultation with the blood bank lab staff:

- 1mL EDTA tube sample x 1:FBC
- >1mL EDTA tube sample, hand labelled, x 1: Group & Screen, DAT
- 2mL Lithium HeparinGold top tube sample: EUC's
- Blood Cultures from the patient
- A 2nd Blood culture form - requesting blood culture of the "used unit of blood". This blood culture sample will be taken from the used unit of blood by the microbiologist in the SEALS laboratory.
- Urine sample (first voided sample after the reaction): Urinalysis (to check for blood)- if positive, send to Micro for MC&S
- Blood Pack (Placed in a sealed specimen bag. Do not send via the SCUD system. Do not send any sharp objects)

7.6 Incident Information Management System - IIMS.

The Incident Information Management System or IIMS MUST be used to report any suspected transfusion reaction or any 'near miss' event that occurs related to the blood transfusion process.

8 Documentation

The complete documentation of transfusions, allows adequate follow up investigation of any serious adverse event as well as aid the auditing process in transfusion practice.

All blood transfusions should be completely documented and include the following:

- The indication for the use of blood or blood components
- Documented Consent
- The outcome of the transfusion
- The date of the transfusion
- The time the transfusion commenced and completed
- The volume of blood product transfused
- Complete documentation of nursing observations throughout the transfusion
- The management and outcome of any adverse event.

Remember to record ALL related blood incidents, including 'near misses' and 'wrong blood in tube episodes' using the Incident Information Management System - IIMS.

9 Related Information

- Immunoglobulin Infusions for Replacement and Immunomodulation Practice Guideline: http://chw.schn.health.nsw.gov.au/o/documents/policies/guidelines/2015-9069.pdf
- ***Blood - Management of Fresh Blood Components.*** MoH PD2012_016 http://www0.health.nsw.gov.au/policies/pd/2012/pdf/PD2012_016.pdf
- ***Consent to Medical Treatment: Patient Information.*** SCHN Policy http://chw.schn.health.nsw.gov.au/o/documents/policies/policies/2013-9025.pdf (Coversheet to MoH PD2005_406: http://www0.health.nsw.gov.au/policies/PD/2005/pdf/PD2005_406.pdf)
- ***(Neonatal) Exchange Transfusion***. Royal Hospital for Women Protocol: http://www.seslhd.health.nsw.gov.au/rhw/Newborn_Care/Guidelines/Medical/X-changeTransfusion-2012.pdf
- ***Interpreter Services*****.** SCHN Policy http://chw.schn.health.nsw.gov.au/o/documents/policies/policies/2014-9057.pdf
- ***Waste Management***. Randwick Hospitals Campus/SESLHD policy: http://www.seslhd.health.nsw.gov.au/Policies_Procedures_Guidelines/Corporate/Waste_Management/Documents/SESLHDPD140-WasteManagement.pdf

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Appendix I:

Guidelines for the Transfusion of Red Blood Cells in Children

- These guidelines are intended to apply to the child who presents with anaemia with a sub-acute or chronic onset. They DO NOT apply to children on the chronic red cell transfusion programme (e.g. *thalassaemia* and *sickle cell anaemia*) and children with other co-existing clinical factors as described below e.g. patients who are bleeding acutely and those with acute intravascular haemolysis. Generally in these groups of children, the threshold for transfusion is higher than the threshold for a child who has a chronic anaemia.
- In children who present with anaemia, correctable factors should be tested for and treated e.g. iron, vitamin B12 and folate deficiencies.
- Co-existing clinical factors may influence the decision as to whether to transfuse the anaemic child and what level of Hb to transfuse the at, e.g.
    - Bleeding
    - Infection/septicaemia
    - Disseminated intravascular coagulation
    - Oxygen dependency/respiratory support
    - Recent or impending surgical procedures
    - Impending apheresis procedures
    - Bone marrow transplantation
    - Parvovirus induced aplastic crisis in a child with an underlying haemolytic anaemia
    - Presence or absence of a reticulocyte response
    - For an oncology patient on chemotherapy: the time elapsed from the start of the last cycle of chemotherapy needs to be considered.
        - If the child is in the recovery phase then the Hb may be expected to rise spontaneously.
        - If the patient is entering the pancytopenic phase and the blood count is falling, it is likely transfusion will be indicated, especially if the haemoglobin is below 70gm/L.
- In general terms, and bearing in mind the presence or absence of co-existing clinical factors
    - If the Hb is ≥ 80 gm/L, transfusion is unlikely to be indicated
    - If the Hb is 61-79 gm/L, the decision to transfuse will generally depend on the presence or absence of co-existing clinical factors and the clinical state of the patient

- If the Hb is 40-60 gm/L, transfusion is highly likely to be indicated. If the decision is made not to transfuse, then the patient must be closely monitored, the Hb rechecked at a defined interval and the decision regularly reviewed.
- If the Hb is ≤ 40 gm/L, transfusion is virtually always indicated because of the risk of tissue hypoxia.
- If the decision is made not to transfuse when the Hb is < 61, the case must be discussed with the consultant in charge of the patient and then the patient must be closely monitored, the Hb rechecked at a defined interval and the decision regularly reviewed.

- Every time a child is transfused with a human derived blood product, consideration must be given as to whether the child requires the product to be irradiated and/or cytomegalovirus (CMV) negative (see: Section 3.4)

Appendix II:

Guidelines for the Transfusion of Platelets in Children

- These guidelines are intended to apply to the child who presents with thrombocytopenia without bleeding.
- These guidelines DO NOT apply to:
  - babies with neonatal allo-immune thrombocytopenia
  - children with qualitative platelet defects
  - children with idiopathic thrombocytopenic purpura (ITP)
  - children with thrombocytopenia due to any other cause who are bleeding, because in this situation a platelet transfusion is highly likely to be indicated.
- In children who present with thrombocytopenia, the cause of the low platelet count should be determined so the correct treatment strategy can be used e.g. a child with acute ITP may be best managed with IVIG or steroids and usually does not warrant a platelet transfusion.
- Co-existing clinical factors may influence the decision as to whether to transfuse the thrombocytopenic child because their presence may increase the risk of bleeding, e.g.
  - Fever/infection/septicaemia
  - Coagulopathy e.g. disseminated intravascular coagulation
  - Liver failure; renal failure
  - Recent or impending surgical procedures including lumbar puncture
  - Intracranial haemorrhage/neurosurgery
  - Newly diagnosed leukaemia e.g. acute promyelocytic leukaemia
  - Bone marrow transplantation
  - Systemic hypertension
- In oncology patients on chemotherapy, the time elapsed from the start of the last cycle of chemotherapy needs to be considered.
  - If the child is in the recovery phase then the platelet count may be expected to rise spontaneously.
  - If the patient is entering the pancytopenic phase and the blood count is falling, it is likely transfusion will be indicated, especially if the platelet count is below 10 x 10^9/L (see below).
  - Bone marrow transplant patients who have not engrafted are routinely transfused when the platelet count falls below 20 x 10^9/L.
- The thresholds at which platelet transfusions are indicated in any given clinical situation are controversial. In general terms, in the child who is not bleeding:

- If the platelet count is ≥ 100 x 109/L, transfusion is not indicated. (unless the child has a qualitative platelet defect).
- If the platelet count is ≥ 50-99 x 109/L, transfusion is usually not indicated and the decision to transfuse or not will generally depend on the presence or absence of co-existing clinical factors e.g. need for surgery.
- If the platelet count is ≥ 11-49 x 10^9/L, transfusion may be indicated, especially if other coexisting clinical factors are present and the child is judged to be at increased risk of bleeding without transfusion. e.g. newly diagnosed *acute promyelocytic leukaemia*.
- If the platelet count is ≤ 10 x 10^9/L, regardless of the presence or absence of co-existing clinical factors, in the oncology patient, transfusion is usually indicated. Transfusion is highly likely to be indicated if any of the above coexisting clinical factors are present. If the decision is made not to transfuse, then the patient must be closely monitored, the platelet count rechecked at a defined interval and the decision reviewed regularly.
- If a child has a platelet count < 20 x109/L, the decision to transfuse or not must be discussed with the consultant in charge of the child.

- The child's previous response to platelet transfusions and the presence of anti-platelet antibodies may need to be taken into account e.g. in a patient undergoing surgery who has a known poor platelet increment with platelet transfusion, the platelets should be infused at the time of induction of anaesthesia in theatre.

Appendix III:

Guide to Informed Consent

For updated information on residual rates of transfusion transmitted infection and non viral risks follow the following link: http://www.transfusion.com.au/node/115

Residual Risk Estimates for Transfusion-Transmitted Infections

In terms of viral safety, Australia has one of the safest blood supplies in the world. The risks of transfusion transmitted infection calculated on Australian Red Cross Blood Service data are outlined below:

Agent and testing standard	Window period	Estimate of residual risk 'per unit'
HIV (antibody + NAT)	5.6 days	Less than 1 in 1 million
HCV (antibody + NAT)	3.1 days	Less than 1 in 1 million
HBV (HBsAg + NAT)	23.9 days	Approximately 1 in 538,000
HTLV 1 & 2 (antibody)	51 days	Less than 1 in 1 million
vCJD [No testing]		Possible, not yet reported in Australia
Malaria (antibody)	7–14 days	Less than 1 in 1 million
Notes: vCJD=variant Creutzfeldt-Jakob Disease; (a) The risk estimates for HIV, HCV and HBV are based on Blood Service data from 1 January 2011 to 31 December 2012. The HTLV estimates are based on data for the period 1 January 2010 to 31 December 2012. OBI risk function (ref 4) estimated on data from 1 January 2012 to 14 March 2013.		

- these risks are very small compared to risks of everyday living: chance of being killed in a road accident is about 1 in 1,000 to 1 in 10,000
- the most common types of reactions are not serious and include for example headache, mild fever, itching & hives
- ABO incompatibility remains one of the most common fatal complications of blood transfusion & most are due to avoidable errors (such as patient / sample identification errors)
- other serious risks associated with transfusion based on overseas estimates are outlined below (degree of recognition / reporting of events results in the variable incidences- many are under estimated)

Per unit transfused unless specified		***Morbidity***	
Bacterial sepsis:	Red Cells	1: 500,000	
	Platelets	1: 1000–1: 3000 apheresis platelets, 1: 200–600 pooled platelets	
Haemolytic reactions:	Acute	1: 12,000 to 77,000	
	Delayed	1:2,500-11,000	
Anaphylaxis *- IgA deficiency*		1: 20,000 to 50,000	
Fluid overload / cardiac failure		<1: 100	
TRALI[#]		1: 1,200 to 190,000	
TA-GVHD[*]		rare	

[#] TRALI, Transfusion Related Acute Lung Injury
[*] TA-GVHD, Transfusion Associated Graft Versus Host Disease

Informed Consent: Blood & Blood Products

Consent is a process - not a piece of paper

Some of the important elements of informed consent:

- **Explain**

  The diagnosis and the reason for considering blood product transfusion

  E.g. risk of bleeding due to thrombocytopenia; side-effects of severe anaemia

  Nature of the proposed transfusion therapy - what is involved

  Benefits of transfusion

  Risks of transfusion – common, rare and serious

  Alternatives - including the risk of not transfusing

- **Ask**

  Is there anything else you would like to know?
  Is there anything you do not understand?

- **Document**

  the consent process -as per hospital/health service policy

  Give written information or use diagrams where appropriate

Use a competent interpreter when the patient is not fluent in English

Note: the transfusion of autologous blood is not without risk (such as getting the wrong blood back & bacterial contamination of the unit)
- the same indications for transfusion of homologous blood apply

More Info? Ask your transfusion service provider or visit:
www.donateblood.com.au/ & http://www.nhmrc.gov.au/ & www.anzsbt.org.au

Appendix IV: Time Limits for Infusion Duration

Blood Component	Temperature range and conditions	Start Infusion	Complete Infusion
Whole Blood/Red Cells	2° to 6°C	Within 30minutes	Within 4 Hours or less
Platelet	20° to 24°C	Immediately within 30 minutes	Within 30 – 60 minutes
Frozen Plasma	At or below -25°C. Once thawed, can be stored at 2-6°C for up 24 hours	Within 30minutes After thawing	Within 4 Hours or less
Cryoprecipitate	At or below -25°C	Within 30minutes After thawing	Within 4 Hours or less
Albumin	Below 30°C Must not be frozen	Use immediately after opening the bottle	Within 4 hours or less