

Guideline for the Management of Blood and Blood Product Transfusions in Adults Undergoing or Following Chemotherapy Treatment for a Malignancy

Version History

Version	Date Issued	Brief Summary of Change
2.0	10.10.08	Endorsed following change in title to include adults following chemotherapy
2.1	16.05.11	Circulated to NSSG and discussed at NSSG meeting
2.2	07.06.11	With comments from Yasmin Hasan and Mathew Lumley
2.2	27.06.11	Reformatted by Mandy Wilson
2.3	08.07.11	With comments from Yasmin Hasan
2.4	11.07.11	Reviewed and updated by Guidelines Sub Group. Resent to YH re the irradiated blood product section (19.07.11).
3.0	28.07.11	Updated and reviewed by YH and approved by Guidelines Sub Group

Date Approved by Network Governance	July 2011
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Date for Review	July 2014
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Changes made during the review process in 2011

- Indications for irradiated blood products updated using recent British Committee for Standards in Haematology guidelines⁵.
- Reference to compatibility slips removed.
- Indications for fresh frozen plasma added.
- Platelet indications updated.

1. Scope of the Guideline

This guidance has been produced to support the following:

- The decisions around prescribing blood and blood product transfusions in adults undergoing treatment for a malignancy.
- The administration of blood and blood product transfusions in adults undergoing treatment for a malignancy.

2. Guideline Background

This document aims to combine up to date legislation, research, current thinking, and local expert opinion to generate Network Guidelines.

Guideline Statements

3. All patients

- 3.1 Local Trust policy for blood transfusion must be followed.
- 3.2 In all anaemic patients the cause should be established in order that effective alternatives may be given where they exist. For example, in the treatment of iron deficiency, megaloblastic and auto-immune haemolytic anaemia.
- 3.3 The reason for transfusion must be documented in the patient's medical case notes, following a clinical decision.
- 3.4 Patients must be given verbal information about the risks and benefits of transfusion. In addition written information must be available and offered to patients as required, according to local policies. Patients may refuse transfusion, but signed consent is not required.

4. Those administering the transfusion must ensure that

- a) The prescription/infusion record is completed.
- b) Patient /blood product bag checks are performed.
- c) The patient is wearing an identity wristband or equivalent means of identification prior to transfusion.
- d) Pulse, temperature and blood pressure are documented prior to transfusion of blood products, and repeat temperature and pulse after 15 minutes as well as on completion of each unit. Blood pressure should be repeated at end of transfusion if the patient is unconscious and all observations should be carried out at any time the patient becomes unwell.

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- e) The number of the unit given is recorded according to local protocol. Records may be using a blood register or sending a return slip to the laboratory. A full audit trail of all blood components must be kept for 30 years.
- f) Infusions are administered via a blood or platelet administration set as appropriate and according to the guidelines outlined in the Royal Marsden Hospital Manual of Clinical Nursing Procedures².
- g) Blood administration sets are replaced every 12 hours or 4 units, whichever is the shortest time.
- h) The first 25ml is infused over 15 minutes and if the patient and their observations are satisfactory the infusion can be increased to 2ml/kg/hr.
- i) The infusion rate is reduced to 1ml/kg/hr for patients with compromised cardiopulmonary disease, adding frusemide cover 20mg po/iv repeated after 2-3 units transfused.
- j) Each unit of blood is infused completely within 4 hours of removal from the blood bank fridge. Infusion should be started within 30 minutes of blood leaving the fridge.
- k) Platelets are stored on an agitator at room temperature until immediately prior to administration.
- l) Following transfusion all documentation should be completed, including adverse events.
- m) For outpatients: patient's perception of their clinical response should be recorded at follow-up.
- n) All relevant staff should be aware of what to do in the event of an adverse reaction as per SHOT⁴ guidelines, and follow Trust and local policies in these circumstances.

5. Red cell transfusion

- 5.1 The trigger for red cell transfusion or target haemoglobin (Hb) should be guided by:
 - a) Rate of Hb fall
 - b) Symptoms and signs
 - c) Age
 - d) Cardiorespiratory state
 - e) Ongoing treatment and clinical judgement
 - f) Risk of further blood loss or myelosuppression
- 5.2 Transfusion may be indicated when the Hb falls below 10g/dl, and almost always when the Hb falls below 7g/dl.
- 5.3 Blood should be transfused when the Hb falls below 8g/dl in patients on myelosuppressive chemotherapy, or receiving monoclonal antibodies.

5.4 Erythropoietin predictor assessment should be considered where appropriate, for example in those opposed to receiving blood products, those difficult to group or match or for patients for whom it is difficult to obtain suitable blood.

5.5 **CMV negative** blood products are required for those patients who may progress to allogeneic bone marrow transplant as they await serology.

6. Irradiated blood products

6.1 Irradiated blood products are given to prevent transfusion associated graft versus host disease (GVHD). Irradiated blood products are required for following groups:

- a) Recipients of allogeneic transplant, from conditioning until GVHD prophylaxis discontinues (usually 6 months), or until lymphocyte count reaches $>1 \times 10^9/l$.
- b) Continued immunosuppression / chronic GVHD - irradiated blood products may be needed indefinitely.
- c) Donors of marrow or blood stem cells, if transfusion is necessary 7 days or less prior to, or during, a harvest.
- d) Patients undergoing marrow or peripheral stem cell collection for future autologous transplant (irradiated blood products are required 7 days prior to the harvest).
- e) During bone marrow transplantation:
 - For post autologous transplant - 3 months of irradiated products, or 6 months if the patient had TBI conditioning.
 - During and six months post treatment with alemtuzumab.
 - Patients with Hodgkin's disease require irradiated blood products indefinitely.
- f) Those receiving purine analogue chemotherapy e.g. cladribine, fludarabine, deoxycoformicin, require irradiated blood products for life.
- g) Those receiving bendamustine or clofarabine require irradiated blood products for life.
- h) Those receiving anti-thymocyte globulin require irradiated blood products indefinitely, until further information is available.

6.2 Patients receiving HLA selected platelets or donations from a 1st or 2nd degree relative FFP and cryoprecipitate do not need to be irradiated.

6.3 Patients should receive written information regarding the need for irradiated blood products.

7. Platelet transfusion

- 7.1 The trigger or target platelet count should be considered by clinical situation and patient risks factors for bleeding.
- 7.2 In asymptomatic patients, platelet transfusion is usually indicated when the platelet count is less than 10×10^9 .
- 7.3 If haemorrhage, sepsis or coagulopathy is present then platelets should be maintained at least above $20 \times 10^9/l$. Consideration should be given to clinical symptoms of bleeding.
- 7.4 Transfusion of platelets should be given when platelets are below $50 \times 10^9/L$ prior to surgical intervention e.g. insertion of central line, intrathecal administration of chemotherapy.
- 7.5 HLA selected platelets may be indicated in patients with repeated poor response to platelets and platelet antibodies. The patients will require their post transfusion platelet counts to be returned to the local National Blood Service H&I laboratory.
- 7.6 Transfusion should be given when platelets are below $100 \times 10^9/l$ prior to brain biopsy.
- 7.7 Tranexamic Acid alternative should be considered where appropriate e.g. those opposed to blood products, or refractory to transfusion, or in addition to platelets in haemorrhagic situation (contra-indicated in haematuria).
- 7.8 If the rise in platelet count is less than predicted, or bleeding continues the patient should be discussed with the haematologist.
- 7.9 Platelets are issued in adult therapeutic doses (ATD) – Each ATD contains a platelet dose of at least 240×10^9 each. - One ATD is usually sufficient however further doses may be indicated in sick patients.
- 7.10 All cellular components including platelets are leucodepleted during production at the National Blood Service. Bedside filters are not required.
- 7.11 Patients should be infused as soon as possible after platelets have been retrieved from bloodbank, via a new blood or a platelet administration set, over 20 - 30 minutes. **Platelets are stored at room temperature. Do not put platelets into a fridge.**

8. Fresh frozen plasma – follow local policy for authorisation and administration

Indications in patients with malignancies/on chemotherapy include use in bleeding due to DIC in sepsis, and for coagulation disturbances in acute promyelocytic leukaemia. Adult dose is 12-15ml/kg

Administration of fresh frozen plasma (FFP):

- a. FFP must be given rapidly, once thawed, it is ready for immediate use and the transfusion should commence as soon as possible to preserve the maximum activity of the coagulation factors.
- b. It is infused through a standard, blood component transfusion set containing an in-line filter.
- c. The duration of infusion is 30 minutes for one unit of FFP.
- d. Offer cryoprecipitate if fibrinogen is less than 1.0g/dl.

9. Blood product administration and disposal

As per Trust Policy and Serious Hazards of Transfusion Guidelines. (SHOT)⁴.

Monitoring of the Guideline

Implementation of the guidance will be considered as a topic for audit by the NSSG in 2011/2012.

References:

1. British Committee for Standards in Haematology Guidelines for Red Cell and Platelet Transfusions.
(http://www.bcsghguidelines.com/4_HAEMATOLOGY_GUIDELINES.html?dpage=1&dtype=Transfusion&sspage=0&ipage=0)
2. Dougherty L, Lister S, 2004. The Royal Marsden Manual of Clinical Nursing Procedures 8th edition. Blackwell Science, London.
3. BCSH Guidelines on the insertion and management of central venous access devices. BJHaem 1997; 98; 1041-1047.
4. SHOT guidelines: Stainsby D, Cohen H et al, Nov 2005 'Annual Report of Committee on Serious Hazards of Transfusion 2004'.
5. Guidelines on the use of irradiated blood components prepared by the British Committee for Standards in Haematology blood transfusion task force BJHaem-2010 152, 35-51.

