

Special blood requirements



- Patient Blood Transfusion Status forms must be sent to Blood Transfusion **BEFORE** blood products are requested.
- Email to **BT status** (attach a read receipt).
- If faxing ring the laboratory to confirm receipt.
- Print a copy of the form and the **current** copy must be kept in the patients folder.
- Review CMV status if unknown & amend status as soon as known if +ve

UCLH BLOOD TRANSFUSION DEPARTMENT: BLOOD PRODUCT STATUS FORM	
Email form to: BT Status – select from hospital Email address book (attach read receipt & if no computer access Fax to: 020 7 380- 9687 (phone lab to confirm receipt & if no computer access Fax to: 020 7 380- 9687 (phone lab to confirm receipt & if no computer access	
Hospital number	<input type="text"/>
Surname	<input type="text"/>
Forename	<input type="text"/>
Date of birth	<input type="text"/> <input type="text"/> <input type="text"/> Sex <input type="text"/>
Diagnosis	Treatment plan
IF HLA PLATELETS REQUIRED ARRANGED DIRECTLY WITH NATIONAL BLOOD SERVICE AND INFORM LABORATORY EXT.8623/8622	
Irradiated products required <i>(Place X in appropriate box)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No Start date: <input type="text"/>
Indications for irradiated blood products: <ul style="list-style-type: none"> • PBSC/ BMT (Patients & Donors): From 7 days pre harvest for solid organ transplant conditioning. Allogeneic - Discontinue at 6 months post transplant or when immunosuppression tapered. Autologous - Discontinue at 3 months post transplant, although 6 months recommended for TBI. • Hodgkin's disease: irradiate all stages regardless of treatment. • Treatment with purine analogues: Eg. Fludarabine, Deoxycothymidine (DCFT), 2-Chlorodeoxyadenosine (2-CDAA) or treatment with Campath. • Fetal Medicine: I.U.T. and for 1 year post I.U.T. / Exchange transfusion. • Congenital immune deficiency syndrome e.g. Ig A deficiency. • Patients with chronic GVHD, on immunosuppressive therapy. • HLA selected platelet/ Granulocyte or Buffy Coat transfusions • Transfusion from 1st or 2nd degree relative 	
CMV Negative products required <i>(Place X in appropriate box)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No Start date: <input type="text"/>
Indications for CMV negative blood products: <u>If CMV Status unknown update lab as soon as result known.</u> <ul style="list-style-type: none"> • CMV negative PBSC/ BMT organ transplant recipients or potential recipients, <u>until status known.</u> • Fetal Medicine - I.U.T. / Exchange transfusion/ Neonatal transfusion. • H.I.V. • Pregnant women: <u>essential delivery.</u> • Congenital immune deficiencies. 	
Washed products required <input type="checkbox"/> Yes <input type="checkbox"/> No	Start date: <input type="text"/>
Single Donor platelets required <i>(Children < 16 or by arrangement with Transfusion SpR blood 7050)</i> <i>(Place X in appropriate box)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No Start date: <input type="text"/>
Requested by: Designation:	Signature or login code: Date of request:
ENSURE THAT STICKERS ARE ON DRUG CHART. STATUS FORM ONCE SENT <u>MUST</u> BE KEPT IN NURSING FOLDER.	

CMV NEGATIVE COMPONENTS REQUIRED

Sig:

IRRADIATED COMPONENTS REQUIRED

Sig:

IRRAD/CMV NEGATIVE COMPONENTS REQUIRED

Sig:

Does your patient need blood with special requirements?

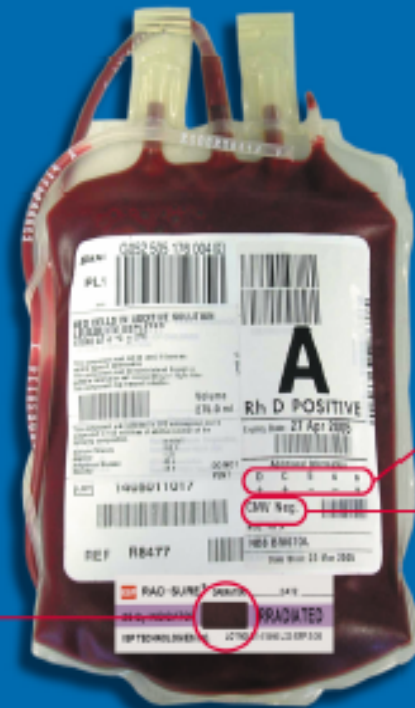
Issued 01/06

- CMV negative blood components help minimise the risk of cytomegalovirus (CMV) transmission
- Irradiated blood components are needed to prevent development of transfusion-associated graft-versus-host disease (TA-GvHD)
- Antigen negative red cells are required to prevent haemolytic transfusion reactions in patients with red cell antibodies



Label before
irradiation

To show the
blood
product has
been
irradiated,
the 'NOT'
part of the
label will
disappear



Additional
blood group
information
is detailed
here

If the blood
product is
CMV
Negative it
will be
stated here



The Cost of Blood Products

- **Standard red cells £131.80**
- **Platelets £216.87**
- **Premium for HLA matched + £142.88**
- **Premium for CMV Neg + £6.61**
- **Standard FFP £34.67 (£138.68 4 bags)**
- **Pooled Cryoprecipitate £227**



IRRADIATED BLOOD

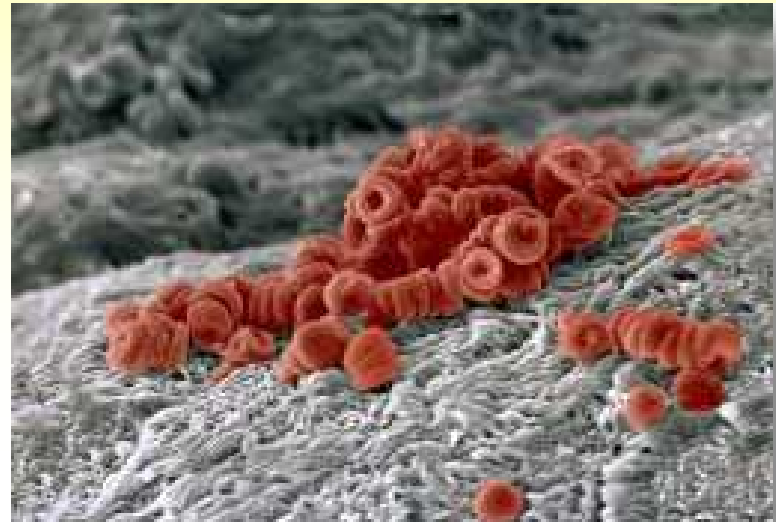
- **In TA-GVHD viable lymphocytes engraft and proliferate in the patient – rather like if an unmatched bone marrow transplant were given.**
- **Interaction between between donor T lymphocytes and recipient cells results in cellular damage.**
- **Major targets include: skin, thymus, gastrointestinal tract, liver, spleen and bone marrow.**
- **Since onset of clinical features is delayed for 1-2 weeks after transfusion, a high index of suspicion is necessary.**



IRRADIATED BLOOD

- **Classic early features of TA-GVHD are fever, maculo-papular skin rash, diarrhoea and hepatitis (with or without jaundice). Bone marrow involvement produces severe hypoplasia with profound pancytopenia.**

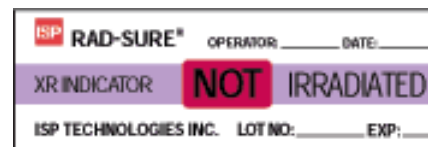
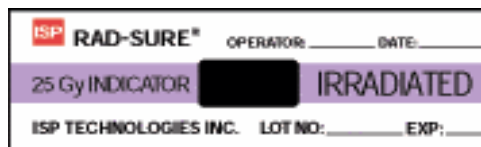
- **May cause rejection of transplanted donor marrow.**
- **Likely to be fatal**





SPECIAL REQUIREMENTS

- Irradiated blood has a small purple and white label on it which indicates that it has been irradiated.
- You will note that the expiry date is altered, irradiation reduces the self life of blood as may only be stored for 14 days once it has been irradiated.





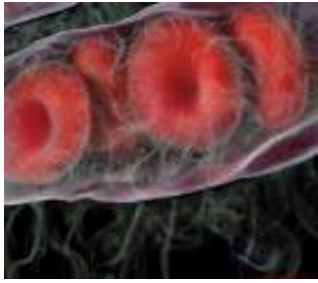
SPECIAL REQUIREMENTS: IRRADIATION

- **Allogeneic bone marrow / peripheral blood stem cell patients from 7 days prior to transplantation, and until immunosuppression therapy stopped or six months, whichever is the latest (or until lymphocyte count is $> 1 \times 10^9/l$)**
- **Donors of allogeneic bone marrow / peripheral blood stem cells who receive a transfusion up to 7 days prior to or during the harvest.**
- **Autologous bone marrow / peripheral blood stem cell patients.**
- **Within 7 days of bone marrow / peripheral blood stem cell harvest.**
- **From 7 days prior to conditioning therapy until three months after return of autologous marrow / peripheral blood stem cells until three months after (six months if part of conditioning therapy consisted of total body irradiation).**



SPECIAL REQUIREMENTS: IRRADIATION

- **Patients with chronic Graft versus Host Disease (GvHD) who are receiving immunosuppression therapy.**
- **Lymphoma Patients:**
- **All patients with Hodgkins Disease, regardless of disease stage or treatment history.**
- **Patients treated with purine analogues (see below) or Campath.**
- **Purine Analogues.**
- **All patients who are receiving (or have received) purine analogues, including Fludarabine, Deoxycoformycin, and 2 chlorodeoxyadenosine.**



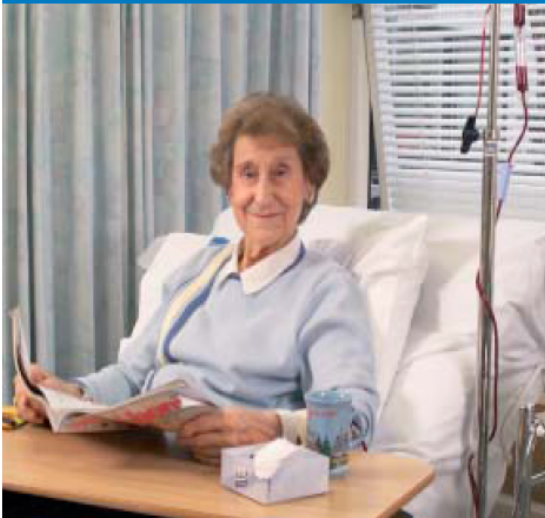
SPECIAL REQUIREMENTS: IRRADIATION

- **Any transfusion from first or second-degree relatives, even when the patient is immunocompetent.**
- **All HLA selected platelets, even when the patient is immunocompetent.**
- **Patients with specific types of congenital immune deficiency or IgA deficiencies.**
- **Intra-uterine transfusions (IUT) and exchange transfusions (ET) - blood is irradiated within 5 days of collection, and given within 24 hours of irradiation.**

Patient information

NHS

Receiving a blood transfusion

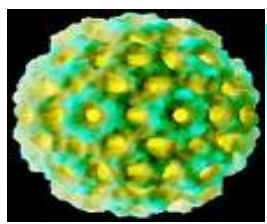


IMPORTANT PATIENT INFORMATION



Information for
patients needing
irradiated blood

NHS



CMV

- Cytomegalovirus (CMV) is a virus that many people acquire during childhood or adolescence. The virus is widely distributed in populations, with increasing prevalence & lower age of infection in poorer socioeconomic conditions.
- Although a serious infection in immunocompromised individuals, CMV causes a largely asymptomatic infection in immunocompetent individuals, rarely with any significant long-term sequelae.
- The problem of transfusion-transmitted cytomegalovirus (CMV) infection differs from that for other transfusion-transmitted infections in that only patients who are immunocompromised require CMV-free blood or components. The virus is cell-associated and transmission appears to be due to reactivation of latent virus in white blood cells. As a herpes virus, CMV can be responsible for primary infections, reactivations or reinfections in humans.
- The risk of transmission is reduced with leucodepletion.



SPECIAL REQUIREMENTS: CMV

- CMV antibody negative blood components are indicated in the following groups of patients irrespective of the mother's CMV status:
 - Patients requiring intrauterine transfusions (IUTs) or exchange transfusions (ETs)
 - Neonatal transfusions
- CMV negative patients in the following patient groups:
 - Bone marrow and peripheral blood stem cell recipients
 - Organ transplant recipients *(not all hospitals)*
 - Potential candidates for transplant
 - Patients with HIV infection *(not all hospitals)*
 - Patients with specific congenital immune deficiencies
 - Pregnant women (except at delivery)



Washed Red Cells

Red cells, washed

- Red cells from a single donor from which most of the plasma has been removed by washing, resuspended in 0.9% saline.
- Specific clinical indications: History of recurrent and/or severe allergic reactions or febrile reactions to transfusion.
- Washed red cells should be used in IgA deficient patients with anti-IgA antibodies and/or reactions to standard red cells or other plasma containing products (if red cells from IgA deficient donors are not available).
- Storage and handling: As in general information, except that shelf life is limited to 24 hours if produced in an open system and suspended in saline, or longer (according to the validation of the system) if an automated closed production system and additive solution is used.



Platelets

HLA Matched Platelets

- Specifically matched donor selected to donate platelets by apheresis, which are considered a suitable match.
- Specific clinical indication: thrombocytopenic bleeding in a patient refractory to random platelets due to HLA alloimmunisation.
- *N.B. HLA matched platelet concentrates will be gamma irradiated by the NBS prior to issue.*
- **At UCH HLA platelets are requested from the NBS by medical staff – Please inform the Blood Bank if a request has been initiated.**

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Platelets

- ☀ **HLA matched platelets:** From 1 April 2005 HLA-selected platelets will be issued by the NBS only for patients who have demonstrable HLA-antibodies and who are unresponsive to at least two transfusions of fresh (<3 days old) ABO identical random platelets (pools/apheresis).
- ☀ **If platelet refractoriness is suspected,** refer a sample for HLA typing and antibody screening. In exceptional circumstances selected platelets will be supplied for refractory patients until HLA antibody results are available. Patients with Inherited platelet function disorders will however continue to receive HLA matched platelets first line to prevent alloimmunisation.



Platelets

- Rh D negative platelet concentrates should be given to Rh D negative patients where possible, particularly to pre-menopausal females. If Rh D positive platelets are given to pre-menopausal females, 250 IU anti-D immunoglobulin should be given **subcutaneously**, as stated in the manufacturer's data sheet. It should not be administered intramuscularly in thrombocytopenic patients or patients with platelet function defects. This dose is sufficient to cover 5 adult therapeutic doses of Rh D positive platelets over a 6-week period.
- It is not necessary to administer anti-D immunoglobulin to Rh D negative males or post-menopausal females who receive Rh D positive platelet concentrates (8).



Platelets

- **Platelets from IgA deficient donors**
- Platelets from IgA deficient donors may be obtained on special request and advance notification is required.
- They are specifically indicated for transfusion into IgA deficient patients with anti-IgA antibody. Also recommended for IgA deficient patients without anti-IgA if they are transfusion-dependant and time allows.
- Standard components may be used for non-regularly transfused patients if absence of anti-IgA has been demonstrated and patients do not have a history of a severe anaphylactic reaction.
- In an emergency or if IgA deficient platelets are not available, platelets resuspended in platelet additive solution should be used.



Platelets

- **Compatibility**
- ABO and Rh D identical units should be used as far as possible.
- ABO non-identical units may be given, especially at times of shortage or in emergency situations, where no ABO identical platelets are immediately available or when HLA matched platelets are required. Some studies demonstrate a poorer increment or recovery and therefore the assessment of clinical and platelet count response (by measurement of post-transfusion count) is recommended.



Platelets

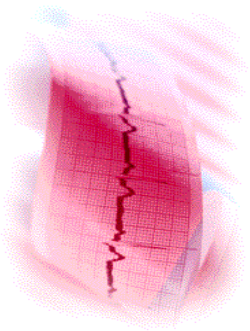
- Only units marked as negative for high titre anti-A, B antibodies should be transfused into ABO non-identical but ABO compatible recipients e.g. O into A, B or AB, A into AB or B into AB. Measurement of high titre antibodies is, however, a guide only, and caution should be observed if large volumes of Group O platelets are transfused to non-group O recipients (particularly infants and children) as clinically significant haemolysis may ensue - the use of group O platelets for non-O patients should be avoided as much as possible for this reason.



Complications of Transfusion

- **Potentially fatal reactions:**

- ▶ Acute haemolysis: ABO incompatibility
- ▶ Bacterial infection / toxin
- ▶ Anaphylaxis
- ▶ Transfusion related acute lung injury
- ▶ Transfusion associated graft versus host disease
- ▶ Viral and protozoal infections
- ▶ Post transfusion purpura
- ▶ Heart failure



ACUTE HAEMOLYTIC REACTION ABO INCOMPATIBILITY

- **If red cells are mistakenly infused into the wrong patient, the chance of ABO incompatibility is about 1:3. The reaction is usually most severe if group A is given to group O. In a conscious patients symptoms may appear after only a few mls.**
- **The complement pathway is activated, which damages red cell membranes and breaks down the red cells. Haemoglobin released from the damaged red cells is toxic to the kidney, while fragments of the cell membrane activates blood clotting pathways.**
- **The result leads to shock, renal failure and disseminated intravascular coagulation (D.I.C.).**



Complications of Transfusion

- **Transfusion related acute lung injury:**
- 103 (6.3% of all reports) reported to SHOT 2001/2002. Rapid onset breathlessness with non-productive cough.
- Stop transfusion. Inform medical team. Monitor patient. Give 100% Oxygen, treat as ARDS. The patient may well require mechanical ventilation. Treat as ARDS.
- Chest X-ray typically shows bilateral infiltrates described as 'white out'. Normal CVP.
- Usually found, - donor plasma (normally from a parous woman) contains antibodies which react strongly with the patients leucocytes causing an immune mediated response in the lung.
- Inform blood bank. Give Saline washed Red cells in future.

Complications of Transfusion

'White Out' ARDS



Policy For Issue Of Blood Products To Bone Marrow Transplant Recipients

