NORTH EAST & YORKSHIRE REGIONAL TRANSFUSION COMMITTEE

NHS Blood and Transplant

Specific Requirements

Presented by the North East & Yorkshire Non-Medical Authorisation working group

Caring Expert Quality

What are specific requirements?

AIMS

Specific requirements your patients have for transfusion and how this is managed

Learning Outcomes

- Classify which patients require:
  - Irradiated components
  - CMV negative components
  - Washed / resuspended components
  - (Phenotype selected components)
  - HLA or HPA selected components
  - HbS Negative
  - Other specifications
- Describe the risks of not requesting special requirements

Why are Specific Requirements important?

- Prevention of transfusion associated Graft versus host disease

  IRRADIATION

- Prevention of CMV infection or reactivation

  CMV NEGATIVE

- Prevention of red cell antibody production

  PHENOTYPE MATCHED

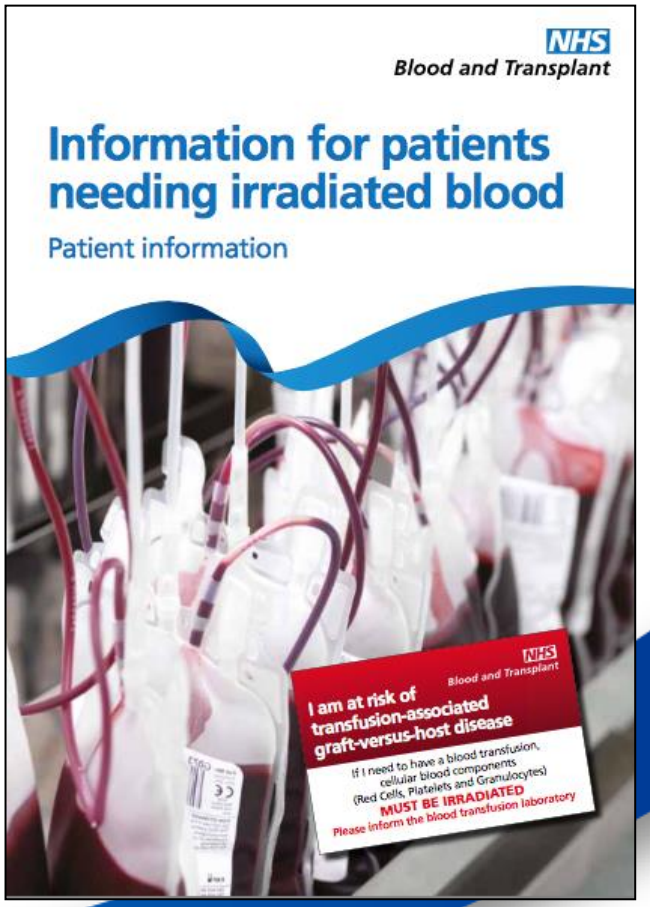
- Increase platelet increments post transfusion

  HLA/HPA SELECTED

- Prevent anaphylactic reactions

  WASHED

Irradiation



- Gamma or X-ray irradiation
- Usually in NHSBT centres
- Patient may know

Transfusion associated GvHD

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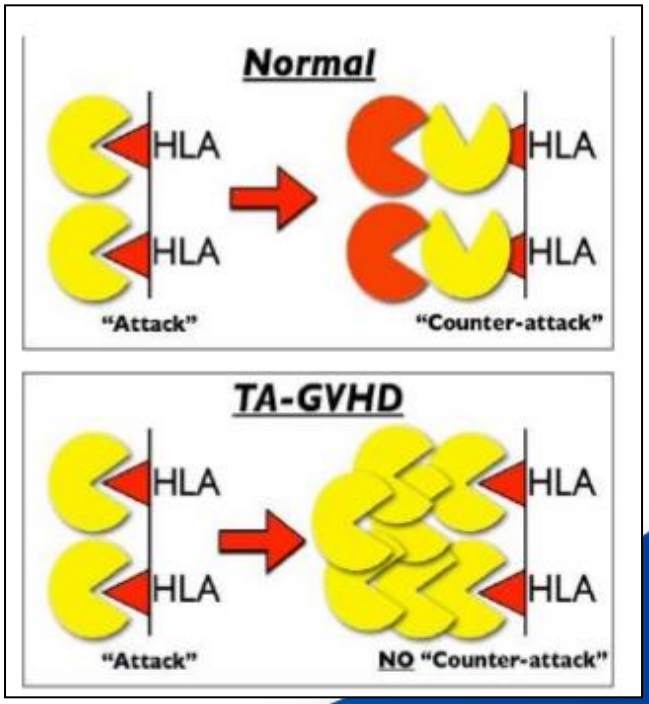
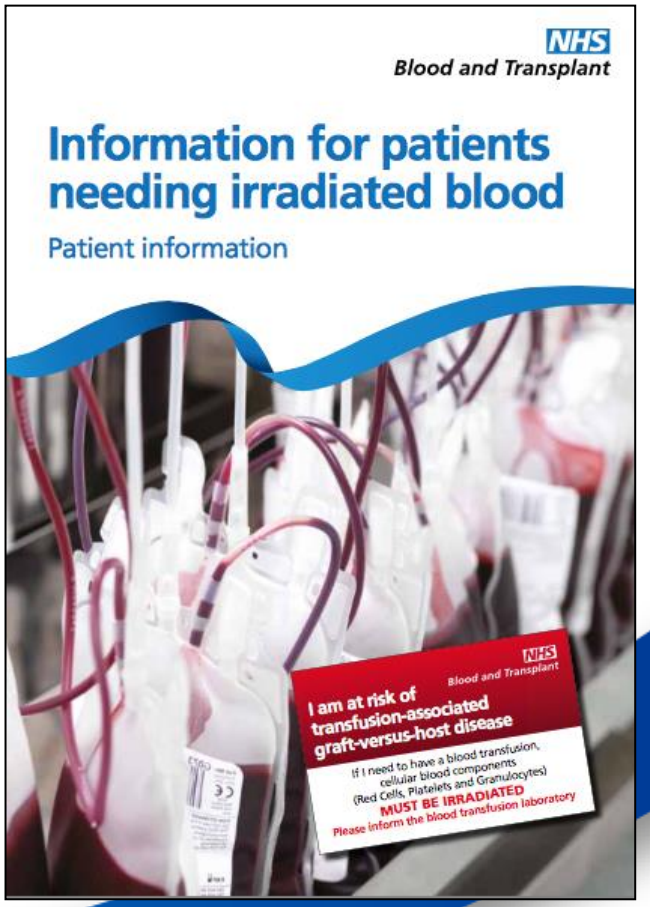


Irradiation



- Who?

Transfusion associated GvHD

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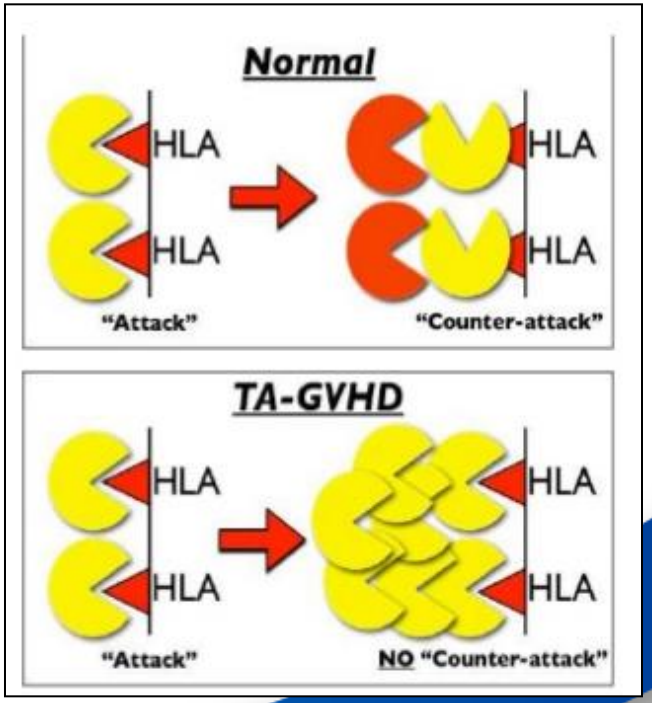
- Immunosuppressed patients
  - Drugs
  - Diseases
  - Procedures
- Most are haem-oncology



Indications for Irradiation

- Drugs
  - Fludarabine (lifelong)
  - Other purine analogues / antagonists (lifelong)
  - Campath* (lifelong)
  - ATG* (lifelong)
- Diseases
  - Hodgkins Lymphoma
  - Severe T-lymphocyte deficiency syndromes
  - Di George – depends**
- Procedures
  - Stem cell transplants
    - Auto – 7d pre-collection to 3 months (6 mos if TBI)
    - Allo – from conditioning until lymphocytes >1.0 and off IS, no GvHD
  - CAR-T (as autos)
  - IUT
  - Neonatal transfusions if previous IUT
  - Directed donations

*Not for SOT conditioning or rejection, or MS

**Check out the new BSH Guidelines

Irradiation

- Who doesn't need it?
  - Top ups for neonates / infants
  - HIV / AIDS
  - Routine cardiac patients
  - Chemo patients generally (except those drugs mentioned)

- Whose responsibility?

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Irradiation

- What needs irradiating?
  - YES:
    - Red cells
    - Platelets
    - Granulocytes
  - NO:
    - Plasma
    - Cryoprecipitate
    - PCC / clotting factors
    - IVIg / albumin

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CMV Negative

- Type of herpes virus
- 50-60% of population have been exposed to virus without symptoms and therefore CMV positive
- Transmission of CMV in blood components can lead to a primary infection or reactivation

CMV Negative

- SaBTO Position Statement (2012) changed the recommended indications
- Provide CMV neg red cells and platelets for:
  - Fetal or neonatal transfusions to 28d post EDD
  - Pregnant patients (except in delivery)
  - Granulocytes to CMV neg allo recipients
- **Must be weighed against risk of delayed transfusion**
- Infections should be reported to SHOT/SABRE

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CMV Negative applies to which blood components?

Cellular Components

CMV Case Study

- A pregnant woman (gestation 19 weeks) was having a liver transplant.
- The red cells requested and transfused were not CMV negative because the blood transfusion laboratory was unaware the patient was pregnant.
- The requestor did not select CMV negative or indicate that the patient was currently pregnant on the request form.
- This was discovered when documented on the second request form after the initial red cells had already been administered.
- There was no historical record in the transfusion laboratory for this patient.

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Phenotyped Red Cells

- Antigen matched
- Helps prevents development of antibodies
- Helps prevents transfusion reactions
- Different levels of matching depending on patient type

- Usually decided by lab

Who requires phenotyped blood?

- Patients with red cell antibodies – to prevent a transfusion reaction
- Sickle cell disease and thalassaemias – to reduce the risk of alloantibody production
- It can be considered in other chronic transfusion patients (bone marrow failure / MDS mainly)

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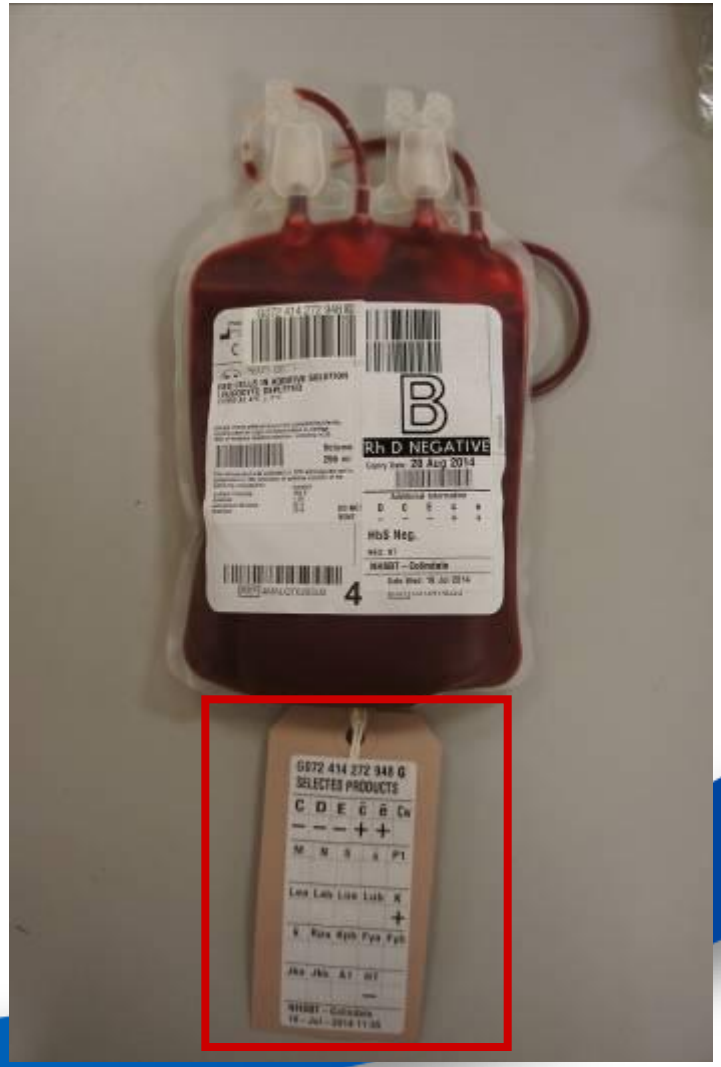
Where to find this information on a red cell unit?



Phenotype Case Study

- A child with sickle cell disease received 2 units of red cells that were compatible but not phenotyped matched, and a further 2 units 6 years later, again not phenotype matched.
- Six months later following a further request it was noted that the patient had developed anti-C.
- Further testing identified the patient as C-negative (R0r=cDe/cde) and that she had initially been transfused a C-positive unit.
- The BMS had failed to follow the standard operating procedure (SOP) to have a phenotype performed in the first instance prior to red cell issue

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HLA/HPA Platelets

- Selected platelets to patients HLA/HPA type
- Most commonly used for patients that have poor response to platelet transfusions due to antibodies
- Should be used for patients with inherited platelet defects i.e. Glanzmanns Thrombasthenia
- Neonatal alloimmune thrombocytopenia – antibodies from mothers circulation bind to babies platelets and remove from circulation
- Single donor (apheresis)

Washed Components

- Indicated for patients with recurrent or severe allergic or febrile reactions to red cells
- Severely IgA-deficient patients with anti-IgA antibodies and previous reactions, for whom red cells from an IgA deficient donor are not available

Other requirements

- HbS negative in sickle cell patients
- Octaplas for TTP PEx

Which requirements need authorising?

- All of them!
- Don’t rely solely on the laboratory – the authoriser also has responsibility for this

Risk of delayed transfusion

- Risks of not meeting special requirements can almost always be outweighed by clinical urgency in certain circumstances
  - Major haemorrhage
  - Profound anaemia with clinical concern
  - Urgent / emergency surgery

- Often some sort of compromise will be found by the lab
- Never let a patient die waiting for special requirements to be fulfilled

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SHOT Recommendation
Incorrect Blood Component Transfused

- It is vital that all healthcare professionals involved with transfusion have an awareness of specific transfusion requirements, and patient cohorts where these requirements are relevant
- Specific requirements for transfusions must be documented in patient records (manual and/or electronic) and be easily accessible.
- Effective processes for communication of specific requirements between the clinical area and laboratory increase the likelihood of safe transfusions occurring.
- There are opportunities to identify the correct specific requirements at several steps in the transfusion process. Staff in both clinical and laboratory areas should remain vigilant and raise any suspected omission with requesting clinicians
- Where failures to meet specific requirements occur, these incidents should be thoroughly investigated, and appropriate improvement actions taken
- Healthcare professionals should comply with duty of candour to ensure transparency and partnership with patients

Case 1

* 34-year-old sickle cell patient is admitted to A&E with painful crisis.
* 28/40 pregnant
* She requires oxygen, fluids and IV morphine
* Hb comes back at 38g/L with a baseline of 70g/L
* She is reviewed by the haematologist who suggests giving 2u of red cells.

* What should you ask for?
  * CMV Negative
  * HbS Negative

Case 2

* 68 year old man admitted to A&E with sepsis
* Background: CLL, HTN, OA
* Wife attends with him and says he is getting drip chemo on the day unit at a teaching hospital in a neighbouring city
* Not sure what – 2 drips every month
* FBC: WCC 0.9, neuts 0.2, Plts 9, Hb 65

* Would you give blood products? If so what special requirements might you ask for?
  * Irradiation