Platelets and their Special requirements?

Brian Robertson
Platelets:
Special requirements.

What special requirements are there that are associated with platelets?
Platelets
Special requirements.

What special requirements are there that are associated with platelets?

1- Irradiated
2- CMV -
3- HLA matched
4- HPA Matched
5- IgA deficient
6- Washed
7- Apheresis
Platelets:
Special requirements.

Irradiation
Goal of Irradiation is to prevent TA-GVHD
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What type of patients would need irradiated platelets?
Who Needs Irradiated Cellular Products?

1. Immune suppressed patients with deficient cellular immunity.
2. Congenital T-cell deficiencies syndromes (DiGeorge’ syndrome, Wiskott-Aldrich)
3. Stem cell/bone marrow transplantation
4. Intrauterine or exchange transfusions for premature neonate transfusions
5. Treatment with purine analogues, like fludarabine
6. Premature infants (weighing <1200 grams)
Patient empowerment.
Platelets:
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What type of patients would need CMV-platelets?
Platelets: Special requirements.

SaBTO recommendations:
Universal Leucodepletion was implemented by all four UK Blood Services in 1999. The UK specification for Leucodepletion of $<5 \times 10^6$ white cells per unit is generally accepted as the level which renders components “CMV safe”

(Vamvakas, 2005; Lipson et al, 2001; Drew & Roback, 2007)
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However...........
CMV can also cause serious problems if a woman has her first CMV infection during pregnancy, as the infection can spread to the unborn baby (known as congenital CMV).

Congenital CMV can cause serious problems such as hearing loss and learning difficulties.
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So we ensure that

• Pregnant women
• Intra-uterine transfusions
• Neonate post 28 days from expected date of delivery.

are to receive CMV- components.
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What type of patients would need HPA Matched platelets?
Who would need HPA matched platelets?

1. Platelet refractoriness after multiple transfusions
2. Post-transfusion Purpura
3. Neonatal alloimmune thrombocytopenic Purpura (NATP)
4. Drug induced platelet antibodies
5. Idiopathic thrombocytopenic Purpura (ITP)
6. Multiply transfused patients, who become refractory to random donor platelet transfusion
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REPORTING TIME

In 90% of cases NHSBT: results for platelet immunology, within **five working days** from receipt of the samples in the laboratory.

A longer turnaround time may apply to other investigations.

HLA specific antibody test reports for patients refractory to platelet transfusion will normally be issued within **seven working days**, but preliminary reports of HLA antibody positivity may be available sooner upon discussion with the local laboratory.
Patient empowerment.
What type of patients would need HLA matched platelets?
Lymphocytotoxic antibody directed against HLA-A or -B antigens.

The presence of anti-HLA antibodies has been correlated with a poor post-transfusion platelet increase.
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If HLA matched Platelets are needed.
- If known patient and urgent it takes on average 30 minutes to find Platelets (based on HLA type) but then time is needed to allocate them for patient and sent to Issues for Irr etc.

If new patient it will take 1/2 day to test the patient, if urgent. If not urgent then turn around is 5 days.
Transfusion of cellular blood products containing any platelets can induce a recall of a previously formed alloantibody against platelet specific antigen's between 5-10 days post-transfusion.

1. **Post-transfusion Purpura** (PTP) can occur in patients who have been previously sensitized to platelets by transfusion or through pregnancy.

2. **Platelet refractoriness:**
   In thrombocytopenic patients with multiple platelet transfusions, due to formation of HLA-A, HLA-B or less commonly ABO antibodies that destroy transfused platelets.
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Special requirements.

Monitoring effectiveness?

Timing of increment?
Q. Why is a platelet count required after every HLA matched platelet transfusion?

A. To check that the platelet transfusion has been effective.

A platelet count to determine increment can be obtained ten minutes after completion of the transfusion.

Informing NHS Blood and Transplant (NHSBT) of the patient’s platelet count in this way helps ensure that the most effective platelets are selected for subsequent transfusions.

Please ensure that a NHSBT ‘Selected Platelets Follow-Up Form’ is completed and returned to NHSBT after each HLA matched platelet transfusion.
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What type of patients would need Washed platelets?
Indications for Washing

IgA Deficiency (classic example)

1. Some IgA deficient patients develop IgE anti-IgA; exposure to normal plasma (which contains IgA) leads to anaphylactic transfusion reaction

2. Severe allergic reactions to transfusion
   Some patients have a repeated severe allergic reactions to plasma.
LOPAG SpR educational day:
Special requirements.

Who would need Apheresis platelets?
Platelets:
Special requirements.


2. Limits the exposure to HLA and HPA antigens.

3. Children
## SHOT report 2012

<table>
<thead>
<tr>
<th>Special requirement NOT met</th>
<th>Number of reported incidents</th>
<th>35 treated with Fludarabine or other purine analogue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irradiated*</td>
<td>82</td>
<td>18 current or historical Hodgkin lymphoma</td>
</tr>
<tr>
<td>Irradiated &amp; CMV-*</td>
<td>2</td>
<td>8 after treatment with antithymocyte globulin</td>
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<td>8 treated with Campath® (Alemtuzumab)</td>
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<td>3 haemopoietic stem cell transplants (HSCT)</td>
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<td>1 case of aplastic anaemia</td>
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<td>4 acute leukaemia</td>
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<td>1 Intrauterine transfusion</td>
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The number of non-irradiated units transfused ranged from 1 to 26 units given.

3 patients received over 18 units before the error was detected.

2 of these patients had history of Hodgkins lymphoma which was not flagged.

The third was a child who was under shared care treatment between 2 hospitals over a 6 month period. Confusion by contradictory discharge summaries with no mention of the special requirement needs.
Platelets:
Special requirements.

How can we ensure the patient component treatment is maintained across the NHS?

Can the requirements be added to the prescription process?

Communicating shared care?
Platelets:
Special requirements.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Date</th>
<th>Component / product type</th>
<th>Dose</th>
<th>Duration (Red 4 hours)</th>
<th>Prescribed by (signature, print name, status &amp; GMC number)</th>
<th>Blood unit number (place sticker from blood product tag here)</th>
<th>Time started</th>
<th>Time ended</th>
<th>Given / checked by (if blood, hospital check used)</th>
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Transfusion Triggers:
- Consent: is this part of an ongoing episode for which consent has already been gained? Yes / No (if no, complete below)

Does this patient need CMV negative blood? YES / NO
and / or irradiated blood? YES / NO
Platelets: special requirements.

Shared care on special requirements
Platelets: Special requirements.

Communication to the lab on…..

- Other centres of care for the patient
- Prescription of any purine analogues or other
- Patients medical history (Hodgkins etc)
- History of patient special requirements
- HLA requests 1’ request need to be from clinical team

Is certainly a good start.
Platelets:
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Thank you for your participation