



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

5-IgA deficient

6-Washed

4-HPA Matched

3-HLA matched

7-Apheresis

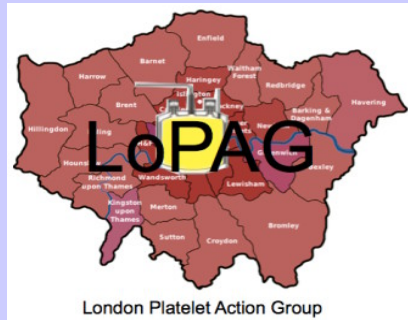
2-CMV -



Platelets:
Special requirements.

Irradiation

Goal of Irradiation is to prevent
TA-GVHD



Platelets: Special requirements.

What type of patients would need irradiated platelets?



Platelets: Special requirements.

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.

**I am at risk of
transfusion-associated
graft-versus-host disease**


If I need to have a blood transfusion,
cellular blood components
(Red Cells and Platelets)
MUST BE GAMMA IRRADIATED

NHS Please inform your
blood transfusion laboratory

NHS
Blood and Transplant

Information for patients needing irradiated blood

Including important patient card and patient record stickers



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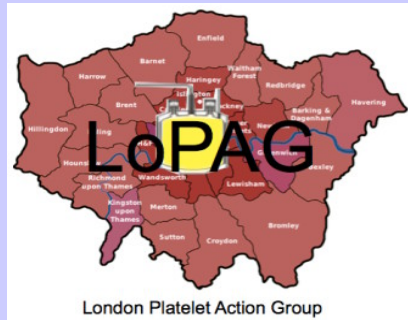
NHS Please inform your
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i **Patient
Information**



Platelets: Special requirements.

What type of patients would need CMV-platelets?



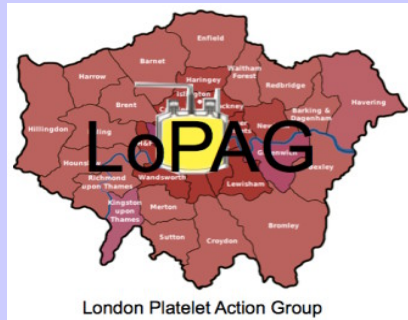
Platelets: Special requirements.

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)

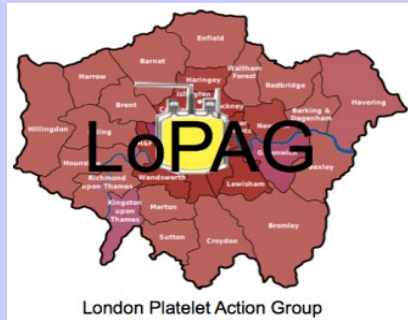


Platelets: Special requirements.

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



Platelets: Special requirements.

So we ensure that

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

are to receive CMV- components.



Platelets:

HPA 1a Special requirements.

HPA 5b

What type of patients would need HPA Matched
platelets?

HPA 5b

HPA 1a



Platelets:

HPA 1a Special requirements.

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*

HPA 5b

HPA 5b

HPA 1a



Platelets: Special requirements.

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.





Platelets: Special requirements.

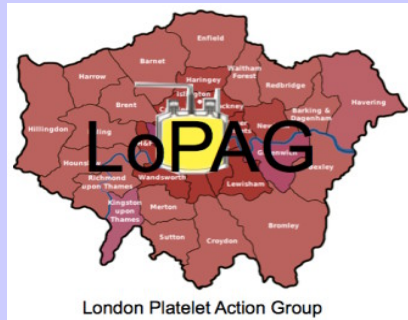
What type of patients would need HLA matched platelets?



Platelets: Special requirements

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.



Platelets: Special requirements.

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.



Platelets:
Special requirements.

Monitoring effectiveness?

Timing of increment?



Platelets: Special requirements.

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

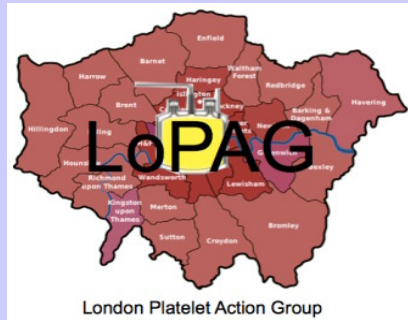
A. To check that the platelet transfusion has been effective.

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.

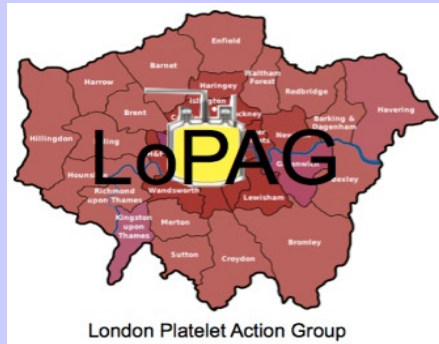
Please ensure that a NHSBT 'Selected Platelets Follow-Up Form' is completed and returned to NHSBT after each HLA matched platelet transfusion.

**~ 40% of increment
results
are returned
to reference lab**



Platelets: Special requirements.

What type of patients would need Washed platelets?



Platelets: Special requirements.

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.

1. Single donor component.
2. Limits the exposure to HLA and HPA antigens.
3. Children



SHOT report 2012

| Special requirement NOT met | Number of reported incidents | |
|--------------------------------|------------------------------------|--|
| Irradiated* | 82 | 35 treated with Fludarabine or other purine analogue 18 current or historical Hodgkin lymphoma 8 after treatment with antithymocyte globulin 8 treated with Campath® (Alemtuzumab) 3 haemopoietic stem cell transplants (HSCT) 1 case of aplastic anaemia 4 acute leukaemia 1 Intrauterine transfusion |
| Irradiated & CMV-* | 2 | |



Platelets: Special requirements.

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.

Surname
First name
NHS Number
Hospital Number
Date of Birth
Gender
ATTACH ADDRESSOGRAPH OR COMPLETE

BLOOD COMPONENT TRANSFUSION PRESCRIPTION CHART

(Use this to prescribe Red Cells, Platelets, FFP & Cryoprecipitate)

Guy's and St Thomas' **NHS**
NHS Foundation Trust

Does this patient need CMV negative blood? YES / NO
and / or irradiated blood? YES / NO

See guidance overleaf - please inform the lab if the patient has any special transfusion requirements

| Unit | Date | Component / product type | Dose | Duration (Not to exceed 4 hours) | Prescribed by (signature, print name, status & GMC number) | Blood unit number (place sticker from blood/product tag here) | Time started | Time ended | Given / checked by | Signature (if double-independent check used) |
|------|------|--------------------------|------|----------------------------------|--|--|--------------|------------|--------------------|--|
| 1 | | | | | | **Please remember** complete the Red Book complete the tag & return in the Red Box | | | | |
| 2 | | | | | | **Please remember** complete the Red Book complete the tag & return in the Red Box | | | | |
| 3 | | | | | | **Please remember** complete the Red Book complete the tag & return in the Red Box | | | | |
| 4 | | | | | | **Please remember** complete the Red Book complete the tag & return in the Red Box | | | | |
| 5 | | | | | | **Please remember** complete the Red Book complete the tag & return in the Red Box | | | | |

Transfusion Triggers:

Red cells:
Consider transfusion if Hb < 7g/dl (< 8g/dl if co-morbidities present)
FFP:
Bleeding patient with APTT/INR > 1.5
See trust guidelines for further advice

Consent: is this part of an ongoing episode for which consent has already been gained? Yes / No (if no, complete below)

Consent is required for each separate transfusion treatment episode: use a new chart for each new transfusion indication (prescriber to complete)
Please see over for guidance

Reason for transfusion:

| | |
|--|---------------|
| Verbal informed consent gained, and documented in notes? | Yes / NA |
| Transfusion information leaflet given to patient? *see over | Yes / No / NA |
| Clinician signature, print name, status, GMC number and date | - - - - - |



Platelets: special requirements.

BLOOD TRANSFUSION STATUS:
All haematology patients & skin lymphoma patients

Hospital Number:

NHS Number:

First name: Surname:

Date of Birth:/...../..... Gender: M / F

| | |
|----------------------------|--------------|
| Referred patient** | Y / N |
| Referring Hospital** | ** Mandatory |
| Faxed to transfusion lab** | |

IRRADIATED COMPONENTS: YES / NO **

☒ **Tick as appropriate**

BM/PBSC transplant: donors (autologous/family) – for 7 days before harvest

BM/PBSC transplant: recipients (autologous/allogeneic) – indefinitely

Hodgkins – all stages regardless of their disease status – for life

Treatment with purine analogues (e.g. Fludarabine, Cladribine, Pentostatin, Clofarabine, Bendamustine) – indefinitely

All patients receiving Campath (Alemtuzumab) - indefinitely

Congenital immune deficiency & IgA deficiency

Aplastic anaemia patients receiving immunosuppression with ATG

If YES, give patient the NBS irradiated blood info leaflet and alert card

Other e.g. HLA platelets, CMV neg (pregnancy)

Signed: Bleep: Date:

Print name: (Registered Doctor only)

HAVE YOU PLACED ALERT STICKER ON PATIENT'S BLOOD PRESCRIPTION CHART? ☐

PLEASE FAX TO BLOOD TRANSFUSION (Guy's x84783 / STH x84775) WHEN COMPLETED
(Telephone Transfusion Lab on Guy's x84785 or STH x80751 to confirm receipt)
FILE FORM IN PATIENT'S NOTES
NO STATUS WILL BE CHANGED UNTIL A SIGNED FORM IS RECEIVED
NO BLOOD WILL BE ISSUED UNLESS STATUS IS KNOWN BY LAB

July 2012

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