

# London Platelet Action Group Newsletter 3 (Winter 2022)

# **Considerations for Platelet ordering - A laboratory perspective**



Platelets are blood components derived from megakaryocytes in the bone marrow. A platelet count, derived from a full blood count, provides a baseline number to check against a recognised range; a normal platelet count in healthy individuals is 150-400x10<sup>9</sup>/L. Platelets circulate in an inactive state and become activated in response to a breach in the lining of a blood vessel wall. Their main function is to stop bleeding at the site of an injury.<sup>1</sup>

Platelet components can be requested for numerous reasons, however there are 3 main indications<sup>1</sup>;

- Prophylactic use to prevent spontaneous bleeding in people with a low platelet count;
- **Pre-emptive use** patients with a low platelet count who are undergoing an invasive procedure;
- **Therapeutic use** to treat active bleeding in patients who have a low platelet count or platelets that do not function properly.

Platelet transfusions are mainly given to increase the patients platelet count, known as 'incrementing' to within the specified 'normal range'.

### What must we consider before issuing platelets to clinicians?

Biomedical Scientists must consider each platelet request to ensure it is appropriate and will achieve the ultimate goal. Key steps are outlined below to ensure the **request** has been managed appropriately.

- 1. We must ask the reason for the request and determine its level of urgency
- Is it urgent or routine? Is the patient bleeding? Are they awaiting an invasive procedure?
- Do they regularly receive platelets?
- Are they likely to use them?
- 2. What is the patients most recent platelet count?
- Is the count within the normal range and was the platelet count taken within the last 24 hours?
- Does the laboratory have any guidance available for BMS's to follow?
- 3. How many units are required?
- If the patient is bleeding do we order more than 1?
- What are the recommended therapeutic doses? Where can I find this information?
- Do I need to inform a SpR/Haematology Consultant if I don't agree with the request?
- 4. What to order Does the patient require any special requirements?
- ABO/D-matched
- Irradiated or CMV negative?
- Apheresis or HLA matched?
- Always make sure the patients special requirements agree with national guidance. (BSH<sup>2</sup>, SaBTO<sup>3</sup>)



- 5. What delivery method do I use?
  - First! Can we seek platelets from a partner site instead of ordering from the blood service direct?
  - Can the request wait until my next delivery?
  - Do I need an adhoc delivery?







# Indications for use<sup>2</sup>

| Prophylactic Use   | Pre-emptive Use   | Therapeutic Use   |  |  |  |  |  |  |
|--|---|---|--|--|--|--|--|--|
| <ul> <li>Certain individuals should receive a transfusion when their platelet count is &lt;10x10<sup>9</sup>/L. These are:</li> <li>Patients with reversible bone marrow failure – for example, those receiving treatment for acute leukaemia;</li> <li>Those with chronic bone marrow failure receiving intensive treatment – for example, who have aplastic anaemia and are receiving an allogeneic stem-cell transplant.</li> <li>Those in intensive care who are critically unwell.</li> <li>In people who have bone marrow failure and additional risk factors for bleeding (for example, sepsis or additional abnormalities of haemostasis), consider a platelet transfusion when the platelet count is 10-20x10<sup>9</sup>/L.</li> <li>Patients with chronic bone marrow failure (for example, myelodysplastic syndrome) who are not receiving intensive treatment, such as intensive chemotherapy or a stem-cell transplant, should not routinely receive a prophylactic platelet transfusion.</li> <li>It is inappropriate to give a platelet transfusion to raise the platelet count in patients with immune thrombocytopenia, disseminated intravascular coagulation (DIC) or platelet dysfunction (whether inherited or acquired).</li> </ul> | The following platelet counts should trigger a transfusion to reduce the risk of bleeding associated with invasive procedures:<br>• Central venous line: <20x10 <sup>9</sup> /L;<br>• Lumbar puncture/spinal anaesthetic: <40x10 <sup>9</sup> /L;<br>• Liver biopsy or major surgery:<50x10 <sup>9</sup> /L;<br>• Epidural anaesthesia: <80x10 <sup>9</sup> /L;<br>• Critical-site surgery (for example, central nervous system or eyes): <100x10 <sup>9</sup> /L.<br>Platelet transfusion is not required before a bone marrow biopsy. | <ul> <li>The following platelet counts should trigger a transfusion to treat active bleeding:</li> <li>Major haemorrhage: &lt;50x10<sup>9</sup>/L;</li> <li>Critical site bleeding; for example, central nervous system or eyes): &lt;100x10<sup>9</sup>/L;</li> <li>Clinically significant bleed: &lt;30x10<sup>9</sup>/L.</li> <li>Transfusion in specific conditions</li> <li>There are also specific conditions or events when a platelet transfusion is indicated:</li> <li>Disseminated intravascular coagulation (DIC) in a patient who is about to under go a procedure or is actively bleeding;</li> <li>Primary immune thrombocytopenia (emergency treatment for life threatening bleeding);</li> <li>Platelet dysfunction;</li> <li>Critical bleeding in a patient on antiplatelet medication (for example, aspirin or clopidogrel) after confirming time of last dose (refer to table VI<sup>2</sup>);</li> <li>Inherited platelet disorders (as directed by a specialist in haemostasis):</li> </ul> |  |  |  |  |  |  |

BMS staff should always refer requests to the SpR/Haematology Consultant where they do not feel confident taking the request or the request does not satisfy local or national guidance/policy.

## Key messages to consider<sup>4</sup>

- Don't use 2 when 1 will do! One adult therapeutic dose of platelets is required for prophylaxis.
- CMV negative platelets are rarely needed: Do not order unless clinically required<sup>3</sup>

## **Compatibility table**<sup>4</sup>

ABO non-identical platelets may be given at times of shortage or in an emergency, where no ABO identical platelets are available. They may also be used when specific requirements are necessary, the blood group is unknown or to prevent wastage due to expiry. High Titre (HT) negative platelets are available to reduce the risk of haemolysis. See the compatibility table below for guidance.

| Recipient Group        | Group O         | Group A               | Group B   | Group AB        | Unknown         |
|------------------------|-----------------|-----------------------|-----------|-----------------|-----------------|
| 1 <sup>st</sup> Choice | ο               | Α                     | В         | AB <sup>*</sup> | AB <sup>*</sup> |
| 2 <sup>nd</sup> Choice | A or B          | AB∗                   | AB∗       | A* or B*        | A* or B*        |
| 3 <sup>rd</sup> Choice | AB <sup>*</sup> | B* or O* <sup>‡</sup> | A* or O** | O**             | O**             |

For A or B units transfused into an O patient, or when AB is transfused, high-titre (HT) negative is not required.

 HT negative anti-A and/or anti-B platelets should be selected where available which would lower the risk of haemolysis.

₭ Group O platelets for non-group O neonates and children should be avoided where possible due to the risk of haemolysis.

Due to the population distribution of group AB and its value as a universal plasma donor, stocks may be limited.

<u>Guidance on D selection and anti-D prophylaxis</u>: D negative platelets should be given to D negative patients where possible, particularly to D negative women of childbearing potential, males under 18 years and those who already have anti-D antibodies. D positive may be transfused if D negative unavailable. In the case of women of child-bearing potential, anti-D prophylaxis should be given.

#### References:

1. Cowan K (2017) Strategies to reduce inappropriate use of platelet transfusions. *Nursing Times* [online]; 113: 2, 18-21. https://www.nursingtimes.net/ clinical-archive/haematology/strategiesto-reduce-inappropriate-use-of-platelettransfusions-30-01-2017/

2.Estcourt LJ et al Guidelines for the Use of Platelet Transfusions: A British Society for Haematology Guideline. British Journal of Haematology, 2017,176,365–394

3. Advisory Committee on the Safety of Blood, Tissues and Organs. Cytomegalovirus tested blood components position statement. 2012

4. NHS Blood and Transplant (2020) https://hospital.blood.co.uk/patientservices/patient-blood-management/ platelets/



