Platelet Transfusion – scope to improve practice

Facts and Figures for Healthcare Professionals
Introduction

- Increasing platelet demand causing concern
- Indications for platelet usage
- National Audit data
- Risks of platelet transfusion
- Improving practice
- Educational tools
A steep rise in demand

Moving Annual Total of Platelet Issues to Hospitals - 000s
The contributing factors

- An ageing population
- Changes in medical treatments
  - advances in treatments and options
- The introduction of trauma packs / major haemorrhage packs
- Inappropriate use
- However there is increasing evidence that use could be more tailored to ensure that supply can continue to meet demand. How?........
When are platelet transfusions necessary?

- Platelets are used in 2 distinct situations and both have clear national guidelines for deciding if a transfusion is required
  - Prophylactic to prevent bleeding
  - Therapeutic to treat active bleeding
Indications

• Prophylactic use
• Prophylactic use pre-procedure (except eyes and brain intervention)
• Prophylactic use pre-procedure (pre eye or brain procedure)
• Therapeutic Use

For further information please see the factsheet for doctors and senior nurses: ‘Platelet transfusion: principles, risks, alternatives and best practice’ at http://hospital.blood.co.uk/safe_use/platelet_education_resources/
The Evidence:
Scope for improving practice

• In 2010 a national re-audit of the use of platelets in haematology was undertaken
  – One of the largest known platelet audits in the world
  – A total of 3,296 transfusion episodes were audited

• So what was learnt?
2010 Re-audit of platelet use in haematology

- The main lesson
  - 915 (28%) platelet transfusions out of 3,296 could potentially have been avoided

- Note:
  - Use was audited against the BCSH guidelines for the use of platelet transfusions (2003)
  - Other factors were taken into account before deeming that potentially the transfusion could have been avoided
  - Cost for 915 units in 2010 was £210,806
Audit 2010: Prophylactic transfusions

- 69% of all transfusion episodes were prophylactic
- 34% were considered transfusions that fell outside the guidelines and potentially could have been avoided
- 26% were transfused above guideline thresholds
- 10% were double dose – recent randomised controlled trial has shown no difference in incidence of bleeding between single and double dose transfusions (Slichter SJ, Kaufman RM, Assmann SF, et al., 2010)
Audit 2010: 
Pre-procedure transfusions

- 15% of all transfusion episodes
- 23% were considered inappropriate
  - 14% transfused above threshold
  - 9% transfused prior to a bone marrow aspirate/trephine
- Only 30% of cases had a post transfusion platelet count prior to the procedure
Improving Practice – Pre procedure

- The transfusion should be given close to the procedure to obtain maximum benefit.
- However, time must also be allowed to take a post-transfusion platelet count to assess the response to the transfusion.

**Note:** A platelet count to assess response can be taken 10 minutes after the completion of the transfusion.
Can a platelet transfusion be avoided?

- A platelet transfusion is not required:
  - routinely prior to bone marrow aspiration/trephine
  - prophylactically in stable patients with long term bone marrow failure
  - as a double dose – give one standard adult pack and assess outcome
Don’t double the trouble

Platelets
Don’t use two...

...when one will do

For prophylactic use in a 70kg adult, one adult therapeutic dose (ATD) typically gives an immediate rise in platelet count of

approximately 20 - 40 x 10⁹/l[1]

Do not administer double dose platelets for prophylactic transfusions as this practice does not decrease the risk of bleeding[2].

Request and administer one unit/ATD, then reassess your patient.

A platelet increment can be obtained 10 minutes after completion of the transfusion[3].

References:
Could a platelet transfusion cause harm?

- Yes!

- Platelets should only be given to patients with Thrombotic Thrombocytopenic Purpura (TTP) in life threatening haemorrhage as they may make the condition worse.

- Acute thrombosis could result from platelet transfusion in patients with Heparin Induced Thrombocytopenia (HIT).
What are the risks to the patient?

- Platelets have a higher incidence of certain transfusion reactions which include:
  - A higher risk of TRALI (Transfusion Related Acute Lung Injury) associated with platelets than red cells
  - Allergic reactions are more common with plasma rich components including platelets
  - Febrile reactions are more frequent
- Transfusing platelets can reduce the effectiveness of future transfusion
  - Due to alloimmunisation (the patient makes antibodies to platelet specific antigens)
  - However, even in patients who do not have alloimmunisation the platelet increment reduces as the number of platelet transfusions increase
Weighing up when to transfuse

The benefit of transfusing the patient today

Versus

The benefit of a more effective transfusion in the future
## What are the alternatives?

<table>
<thead>
<tr>
<th>General measures</th>
<th>Specific patient populations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop all anti-platelet agents whenever possible</td>
<td>Liver disease – give vitamin K</td>
</tr>
<tr>
<td>Apply surface pressure after superficial procedures</td>
<td>Uraemia – dialyse, correct Hct to 30%, consider DDAVP</td>
</tr>
<tr>
<td>Treat any surgical cause for bleeding</td>
<td>Inherited platelet function disorders – specialist haematology advice required. Consider DDAVP</td>
</tr>
<tr>
<td>Consider tranexamic acid to treat bleeding</td>
<td>Splenomegaly/hypersplenism – consider splenectomy or splenic irradiation</td>
</tr>
</tbody>
</table>

**Note:** Follow local policy
Reducing demand by reducing wastage

- **Platelets must be stored:**
  - between 20°C and 24°C on a platelet agitator
    - the agitator gently rocks the platelets and prevents aggregation (clumping)

- **Platelets must never be stored:**
  - in any fridge as they will not prevent or stop bleeding if transfused

- If platelets have been ordered for a patient and no longer required please let the laboratory know straightaway to avoid them being wasted

- Adult therapeutic dose (ATD) cost around £230
- HLA selected platelets cost more than £400
Best Practice

- Prior to the platelet transfusion consider:
  - What are the indications for transfusion in this patient?
  - Has the indication been documented in the patient’s record and on the request?
  - Has the patient consented to receive a platelet transfusion?
  - Are there alternatives which could be used in preference to platelet transfusion? Contact your Haematologist for advice
Accessing platelet guidelines the easy way

Prescribing Platelets?

The platelet transfusion mobile site is designed to give quick, easy access to national guidelines on platelet transfusion and is specifically designed for smartphones and tablets.

Features include:
- Platelet transfusion thresholds prior to common procedures
- Reasons why prophylactic threshold can be increased
- Contraindications to platelet transfusions
- A paediatric dose calculator.
Accessing platelet guidelines the easy way

Access Platelet Transfusion guidelines the easy way!

Scan the code below or visit http://goo.gl/s07fh

As this site is specifically designed to work on mobile devices, it may not function correctly in all standard browsers.
References