

# **Integrated Plan for NIBTS and Hospitals to manage Platelet Shortages.**

## **1.0 Executive Summary**

- 1.1 This plan is linked to the integrated plan for management of red cell shortages issued by DHSSPS, September 2006.
- 1.2 The platelet plan operates in a similar way to the red cell plan describing three phases dependent on NIBTS stock levels – Green, Amber and Red. The Green phase describes the normal operation when platelets should only be prescribed according to approved agreed clinical guidelines.
- 1.3 To help prioritise patients who should be treated, as shortages become more severe, three broad patient categories are identified.
- 1.4 A key set of actions for NIBTS is to continually monitor stock levels and take appropriate action to maintain these. Should stocks begin to fall, NIBTS will take action to increase production and if necessary collection from donors.
- 1.5 Within hospitals it is expected the Emergency Blood Management Group established to produce plans for and manage red cell shortages will also be responsible for producing plans for, and managing platelet shortages.

## **2.0 Background**

- 2.1 NIBTS issued between 6,700 and 7,100 platelet doses annually over the last 5 years 03/04 to 08/09 and 70 - 80% of issues are to BHST hospitals with the majority administered to haematology and oncology patients. The remaining 4 HSCTs received between 5 - 7% of platelet issues.
- 2.2 BHSCT hospitals participated in national comparative audit of platelet transfusions and reported 42% inappropriate transfusion rate. Criteria for this audit were drawn from British Committee Standards Haematology (BCSH) guidelines on platelet transfusions. This audit took place in June 2006. Local audit in Haematology service 2007 reported 50% haematology patients with CMV antibody negative components flagged as a special requirement in their transfusion laboratory record which was not appropriate. The requirement to issue CMV antibody negative platelets (approximately 50% of donations) acts as a significant pressure on overall platelet stocks ie CMV antibody not negative platelets expire because they are not substituted for CMV antibody negative platelet requests.

Following the issue of DHSSPS circular integrated plan for management of red cell shortages <sup>1</sup> there was a requirement for Trusts to set up emergency blood management groups (EBMGs) and develop hospital contingency plans for management of red cell shortages. The same group should develop plans for management of platelet shortages.

### **3.0 Planning Principles**

- 3.1 The platelet shortage plan is designed to ensure that hospitals work within a consistent integrated framework to provide equal access for patients to avail of platelets on the basis of clinical need. This will be achieved by making sure that those patients most in need receive the available supply and ensuring that any reduction in usage is made from those patients who will be least affected.
- 3.2 Within this plan there is no formal benchmarking to support actions taken by hospitals to promote appropriate use. However, hospitals are encouraged to ensure that platelets are used only when necessary and usage follows appropriate published guidelines <sup>2,3</sup>.

### **4.0 Plan Structure**

- 4.1 The plan is structured to provide a framework of actions for the NIBTS and hospitals at three phase levels: -
- Green: “Normal” circumstances where supply meets demand
  - Amber: Reduced availability of units of platelets
  - Red: Severe shortage
- 4.2 It is envisaged that each Trust will produce an Emergency Blood Management Arrangement (EBMA) for each of the above stages. Guidance to assist hospitals in actions to be taken in EBMA's can be found in appendix 1. This plan should be included in hospital emergency incident plans.
- 4.3 By ensuring that all hospitals have EBMA's for shortage it is expected that, on declaration of a shortage by NIBTS, all hospitals will invoke these plans at the same time, ensuring a swift response to the shortage.
- 4.4 As the green phase of the plan applies to “normal” circumstances, the plan is, in effect, operating at all times. Actions in this phase will focus on ensuring plans for shortage are developed and that platelets are used safely and appropriately.
- 4.5 Hospital actions at Amber and Red phase include actions to reduce usage.

4.6 A chart categorising patient types to support decision-making in hospital is provided in appendix 2.

## **5.0 Operation of the Plan**

### **5.1 Green Phase**

5.1.1 Hospitals will develop their EBMA's and integrate these within their emergency incident plans. The EBMA will define which members of staff will participate in the shortage management and how a reduction in usage will be achieved.

5.1.2 During the Green phase the NIBTS will continue to develop communication and logistics plans to support hospitals as effectively as possible during shortages.

5.1.3 The NIBTS will take a number of actions to avoid a shortage of platelets. On a daily basis platelet stock levels are monitored and production levels adjusted to ensure stock levels are kept at the pre-set target stock level. This is defined for NIBTS as 20 units platelets to cover 24 hour period and 40 units platelets to cover 48 hour period. The mix of groups is defined as 50% group O and 50% non-group O. Of group O units high titre anti-A, anti-B agglutinin negative, these may be used for non-group O recipients and therefore may be counted in the non-group O total. If adequate stock levels are not maintained additional actions which may be taken are:

- Calling more donors (of all groups, or of a specific group, depending on the nature of the shortage.).
- Increasing the number of whole blood donations collected into packs suitable for platelet production.
- Extending shifts in the processing department to increase the production of platelets.
- Extending the opening times of headquarters clinic for the collection of apheresis platelet donations.
- Extending opening times of mobile sessions for the collection of whole blood donations from which platelets may be produced.

5.1.4 If these actions prove unsuccessful, NIBTS will declare a shortage and communicate a move to the amber phase. NIBTS may ask Trusts to delay platelet transfusion or accept units of platelets of different groups where possible (in line with BCSH adult and paediatric guidelines<sup>2,3</sup>). This will allow NIBTS to balance the platelet stocks rather than to declare an amber shortage.

5.1.5 Should NIBTS identify a severe, imminent threat to the platelet supply NIBTS may communicate a move directly to the red phase of the plan and request that only patients in category 1 are treated.

## 5.2 **Amber Phase**

- 5.2.1 If platelet stocks fall to pre-determined level where stocks are not sufficient to ensure a supply for the day, NIBTS will communicate a move to the Amber phases, in most circumstances. This may apply to either a single blood group or to all blood groups.
- 5.2.2 This information will be communicated by fax, email and/or telephone, where appropriate to hospital blood banks. At this stage hospitals should activate their EBMA's to confirm any action to be taken.
- 5.2.3 Hospitals will order only where there is a specific identified requirement for an immediate platelet transfusion or for a unit of platelets to be on standby to cover a procedure, which cannot be deferred. These actions will conserve NIBTS stock of platelets available to all hospitals.
- 5.2.4 In addition, hospitals will be asked to undertake the following actions as appropriate
- If the shortage is sufficiently severe that a reduction in usage is required NIBTS will inform hospitals that units of platelets will be issued only for use in accordance with identified categories of patient as defined in appendix 2. If a reduction in usage is required at this stage, restrictions to supply will be limited to categories 1 and 2. At this point all requests for units of platelets from the hospital must be authorised by a named senior hospital doctor.
  - Hospitals will be asked to accept pooled platelets substituted for apheresis platelets depending upon balance of stocks. Where available children under sixteen will be given apheresis platelets.
  - NIBTS will effect strict stock rotation and hospitals will not be permitted to request long dated platelet units.
  - Hospitals will be asked to accept platelets of a different ABO group (in line with BCSH adults and paediatric guidelines <sup>2,3</sup>).
  - Hospitals will be asked to accept leucodepleted platelets substituted for CMV antibody negative platelets.
  - Hospitals will be asked to accept RhD positive platelet units where RhD negative are not available and administer anti-D immunoglobulin prophylaxis where applicable.
  - NIBTS will move to routine extension of shelf life to 7 days and in extreme cases importing platelets if these are available from other UK services, in addition to the actions taken at the green phases to maximise production and increase collection.
- 5.2.5 NIBTS will monitor demand from hospitals

5.2.6 If stocks of platelets return to a sustainable level, the NIBTS will communicate to hospitals that the Amber phases no longer applies and that orders can return to normal. If, however, stocks continue to fall, the NIBTS may communicate that a greater reduction in usage is required which necessitates the declaration of a red phase.

### 5.3 **Red Phase**

5.3.1 The NIBTS will declare a Red phase shortage if there is a severe shortage of platelets or, if an imminent severe threat to the supply of platelets is identified. This is specified as 6 units of platelets to cover 24-hour period and 12 units of platelets to cover 48-hour period. The stock should be 50% group O and 50% non-group O. Of Group O units high titre anti-A, anti- B agglutinin negative, these may be used for non group O recipients and therefore may be counted in the non group O total.

5.3.2 NIBTS will communicate as in the amber phase. The information from NIBTS will include the nature of the shortage and any actions that need to be taken by hospitals as part of their EBMA's. Actions will include all actions taken under the Amber phase accompanied by a further reduction in usage such that usage will be restricted to patients in category 1 of Appendix 2.

At this point all requests for units of platelets in the hospital must be made via a named senior hospital doctor, such as a Consultant Haematologist. Requests to NIBTS will be referred to an NIBTS Consultant who may discuss the requirement with the hospital. Request for units of platelets from hospital must be accompanied by the following dataset:

- Patient identifier (first name, last name, date of birth, identification number).
- Clinical indication for transfusion.
- Requesting Consultant's name.
- Patient category (see appendix 2).
- Patient ABO blood group and RhD type.

5.3.3 As the availability of units of platelets will be very low in the red phase, the NIBTS will implement a monitoring system, which will allow for the tracking of every unit of platelets final fate/disposition declared. Hospitals will be requested to track closely the fate of each unit of platelets delivered to them. The NIBTS will request information on each unit of platelets at regular intervals so that, if the unit is not used, it can be recalled and reissued to an alternative hospital as appropriate. This will ensure that wastage of platelet units is kept to a minimum and the most urgent cases are supported.

5.3.4 As in the Amber phase NIBTS will monitor demand from hospitals.

## **5.4 Recovery from shortage**

- 5.4.1 The NIBTS will communicate via fax, email and/or telephone to hospital blood banks that stocks have risen to a level where hospitals can move to amber or green phase.
- 5.4.2 The Transfusion Laboratory Manager or deputy will disseminate the information as above.
- 5.4.3 The EBMG should convene at the earliest opportunity to review the effect of the platelet shortage and amend the platelet shortage arrangements as necessary.
- 5.4.4 A formal post shortage review report should be prepared for the Hospital Transfusion Committee.

## **6.0 References**

1. Integrated plan for red cell shortages, DHSSPS circular HSS(MD)39/2006.
2. British Committee for Standards in Haematology (2003) Guidelines for the use of platelet transfusions. British Journal of Haematology **122**:10-23.
3. British Committee for Standards in Haematology (2004) Transfusion guidelines for neonates and older children. British Journal of Haematology **124**:433-453.

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## **Proposed generic action for hospital at each phase**

### **Green Phase**

- The hospitals will work towards ensuring the safe and appropriate use of all platelets.
- Formulation of Emergency Blood Management Arrangements (EBMA) for Green, Amber and Red phase of a platelet shortage to ensure consistent action in hospitals conserving platelets for those patients most in need.
- Ensuring clinical audit is undertaken against agreed guidelines with a focus on appropriate use. Detailed action plans and re-audit to ensure effectiveness of all action taken is required. Consideration should be given to implementing clinical indication codes for platelet transfusion.
- Written institutional protocols of transfusion thresholds for all platelet transfusions should be developed.
- Education/training sessions for staff at all levels, including induction and regular updates on appropriate platelet transfusion practice.
- Hospital wide education of existence of EBMA.
- Participation in the Blood Stock Management Scheme (BSMS).
- Where Trusts administer more than one local hospital and service more than one local blood bank, arrangements should be developed for the movement of stock between blood bank sites.

### **Amber Phase**

- Maximise the use of available platelets through:
  - Substituting pooled platelets for apheresis platelets.
  - Where available children under 16 will be given apheresis platelets.
  - No requesting of long dated platelets.
  - Accepting platelets of a different ABO group (in line with BCSH guidelines<sup>2,3</sup>)
  - Accepting leucodepleted platelets instead of CMV antibody negative platelets.
  - Accepting RhD positive platelets where RhD negative are not available and administering anti-D immunoglobulin prophylaxis where applicable.
- Reduce usage to categories identified in communications from NIBTS
  - Ensure all requests are made by a senior hospital doctor.
  - Identify possible alternatives to transfusion of platelets.
  - Monitor outcomes of platelet transfusions to inform transfusion support required.

## **Red Phase**

- As in Amber usage will be restricted to category 1 patients only.
- Provide an additional dataset for every request from NIBTS.
- Provide information to the NIBTS to assist with tracking of units of platelets.

### **Categorisation of patient types**

The following chart provides general guidance for the use of platelet transfusions in the context of reduced availability. Category 1 patients are those with the greatest clinical need for platelet support and therefore should be given priority when considering allocation of platelets. Category 2 and 3 patients should be given lower priority.

The use of platelets should be considered as one element in the overall management of these patients. Use should be guided by the clinical condition of the patient and laboratory/near patient testing. Additional measures should be considered in patients with, or at risk of, massive bleeding including aprotinin - and recombinant VIIa.

Category 1 (Patients to be treated in Red Phase)	Category 2 (Patients to be treated in Red and Amber Phases)	Category 3
<p><b>Massive haemorrhage &amp; Critical care</b> Massive transfusion for any condition including obstetrics, emergency surgery and trauma, with on-going bleeding, maintain <math>&gt; 50 \times 10^9/l</math>. Aim for <math>&gt; 100 \times 10^9/l</math> if multiple trauma or CNC trauma</p> <p>Sepsis/acute DIC, maintain <math>&gt; 50 \times 10^9/l</math></p>	<p><b>Critical Care</b> Patients resuscitated following massive transfusion with no ongoing active bleeding, maintain <math>&gt; 50 \times 10^9/l</math></p> <p><b>Surgery</b> Urgent but not emergency surgery for a patient requiring platelet support</p> <p><b>Transfusion triggers for invasive procedures</b> Invasive monitoring or biopsy work, maintain platelet count. <math>&gt;50 \times 10^9/l</math> General surgery – maintain count <math>&gt; 50 \times 10^9/l</math> Operations in critical sites such as brain or eyes maintain <math>&gt; 100 \times 10^9/l</math></p>	<p><b>Surgery</b> Elective, non-urgent surgery likely to require platelet support for thrombocytopenia or congenital/acquired platelet defects</p>
<p><b>Bone marrow failure and immune thrombocytopenia</b> Active bleeding associated with severe thrombocytopenia or functional platelet defects</p>	<p><b>Bone marrow failure</b> Prophylactic transfusion for thrombocytopenia (platelet count , <math>&lt; 10 \times 10^9/l</math>) in patients who are not infected and haemodynamically stable. For haemorrhage - e.g. sepsis, consider support if <math>&lt; 20 \times 10^9/l</math></p>	
<p><b>Neonate</b> For neonatal alloimmune thrombocytopenia or severe thrombocytopenia in an otherwise well neonate, platelet transfusions are required when the platelet count falls to between <math>20 - 30 \times 10^9/l</math>. Higher target levels should be maintained if extremely low birth weight or unwell/bleeding or intracranial haemorrhage suspected/confirmed.</p>		