



Chief Medical Officer's National Blood Transfusion Committee

An integrated Plan for the National Blood Service and Hospitals to address Platelet Shortages

6 September 2006

1.0 Executive summary

- 1.1 The CMO's National Blood Transfusion Committee sub group on contingency planning prepared an integrated plan to address red cell shortages. A summary of the plan was issued to Chief Executives via the NHS gateway in July 2004. (Gateway reference 3344). The sub group has now developed an extension to the red cell plan that lists actions to be taken by both the National Blood Service (NBS) and hospitals in the event of a platelet shortage.
- 1.2 The current plan for managing platelet shortages operates by restricting orders as they are placed, often with a referral to an NBS consultant. The system has a limited effect and may lead to confusion over what action is being taken both within hospitals and the NBS.
- 1.3 The new platelet plan operates in a similar way to the red cell plan describing three phases dependent on NBS stock levels - Green, Amber and Red. As with the red cell plan actions listed in the green phase are focused on preparation of arrangements for shortages and implementing the recommendations of the HSC 2002/09 *Better Blood Transfusion – Appropriate use*.
- 1.4 To help prioritise the patients who should be treated, as shortages become more severe three broad patient categories are identified.
- 1.5 A key set of actions for the NBS is to continually monitor NBS stock levels and take appropriate actions to maintain these. Should stocks begin to fall, the NBS will take extensive action (as it does now) to increase production and if necessary increase collections from donors.
- 1.6 Within hospitals it is expected that the Emergency Blood Management Group established to produce arrangements for, and manage, red cell shortages will also be responsible for producing arrangements for, and managing, platelet shortages.

2.0 Background

- 2.1 In January 2005 the National Blood Transfusion Committee distributed an integrated blood shortage plan for the NBS and hospitals with an effective date of 1st March 2005¹.
- 2.2 It is equally important that an integrated, national plan be available for the management of platelet shortages to ensure the most effective use of this component. This plan has been developed as an extension to the red cell plan.
- 2.3 The NBS currently has a plan for managing such shortages as part of their emergency planning systems but this has not been developed in conjunction with hospitals.
- 2.4 The contingency planning group, which led the development of the blood shortage plan, operates under the auspices of the Chief Medical Officer's National Blood Transfusion Committee (NBTC). This group which includes membership from hospitals and the NBS (see appendix 1) has developed this shortage plan for platelets. The plan has been approved by the National Blood Service's Appropriate Use of blood group, the National Blood Transfusion Committee Executive Working Group and the NBS Executive.
- 2.5 This document provides details of the plan and hospitals are requested to amend their emergency plans accordingly.
- 2.6 All references to providing, counting or tracking of platelets refer to units of platelets rather than individual platelets.

3.0 Planning Principles

- 3.1 As with the blood shortage plan, the platelet shortage plan is designed to ensure that hospitals and the NBS can work within a consistent, integrated framework across England and north Wales, to provide equal access for patients to available units of platelets on the basis of 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. The plan has the following two key aims: -
 - That the national "pool" of platelets is available for all essential transfusions to all patients equally across the country (logistical actions)
 - That overall usage is reduced to ensure the most urgent cases receive the supply that is available (clinical actions).
- 3.2 The number of platelets used in England and north Wales is significantly less than the demand for red cells and very few hospitals routinely hold stocks of units of platelets. Most requests made of the NBS are for specific patients. Consequently, this plan will focus on restricting supplies according to the urgency of treatment required by patient type, rather than a generic reduction in supply and stockholding, as defined for red cell shortages in the blood shortage plan.
- 3.3 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^{2,3}.

- 3.4 In the development of the blood shortage plan hospitals were required to establish Emergency Blood Management Groups to define Emergency Blood Management Arrangements (EBMA's). Hospitals are encouraged to use the same structures when implementing this plan.
- 3.5 Platelet shortages may or may not occur at the same time as red cell shortages. Platelet shortages that occur when there are sufficient blood stocks are only likely to be short-term in nature

4.0 Plan Structure

- 4.1 The plan is structured to provide a framework of actions for the NBS 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 hospital 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 2. This plan should be included in hospital emergency incident plans. The NBS will also develop plans for each phase. The NBS plans will include providing any press statements regarding the shortage and any appeals for blood donors to ensure a consistent message is delivered to the general public.
- 4.3 By ensuring that all hospitals have EBMA's for shortage it is expected that, on declaration of a shortage by the NBS, 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 arrangements for shortage are developed and that platelets are used safely and appropriately.
- 4.5 Hospital actions at Amber and Red phase include actions to stop any stockholding of units of platelets and, where required, to reduce usage.
- 4.6 A chart categorising patient types to support decision-making in hospitals is provided in appendix 3.
- 4.7 A schematic summary of the plan is listed in appendix 4.

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's 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 Green phase the NBS will continue to develop communications and logistics plans to support hospitals as effectively as possible during shortages.
- 5.1.3 The NBS will take a number of actions to avoid a shortage of platelets. On a daily basis national platelet stock levels are monitored and production levels amended to ensure stock levels are kept at the pre set target stock level. However, if this does not have the desired impact a number of wide ranging actions may be taken. These could include:
- 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 production of platelets
 - Extending the opening times of static clinics for (the collection of platelet donations)
 - Extending opening times of mobile sessions (for the collection of whole blood donations)
 - Increased monitoring and movement of the national platelet stock ensuring units of platelets are distributed according to age and group mix, to ensure wastage is kept to a minimum.

Depending on the actions applied in an individual situation the process may be managed using the NBS emergency planning system.

- 5.1.4 If these actions prove to be unsuccessful, the NBS will declare a shortage and communicate a move to the Amber phase. If stocks fall at one or more centres but the National stock situation is above the pre-determined level then the NBS may ask hospitals to delay platelet transfusions or accept units of platelets of different groups where possible (in line with BCSH adult and paediatric guidelines^{2,3}). This will allow the NBS to initiate stock transfers to balance the platelet stocks rather than declaring an amber shortage.
- 5.1.5 Should the NBS identify a severe, imminent threat to the platelet supply the NBS 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 National NBS stocks fall to a pre-determined level where stocks are not sufficient to ensure supply for the day, the NBS will communicate a move to Amber phase, 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. The information from the NBS will include the nature of the shortage and any actions, which need to be taken by hospitals as part of their EBMA's. At this stage hospitals should activate their EBMA's to confirm any actions to be taken.
- 5.2.3 In the first instance these actions will be to immediately stop all routine stockholding in hospitals. This will be achieved by hospitals ordering only where there is a specific

identified requirement for a platelet transfusion or for a unit of platelets to be on standby to cover a procedure. The impact of this will be to reduce orders from these hospitals as these hospitals use their own stocks. This will ensure the national stock of platelets in the NBS is available to all hospitals.

5.2.4 In addition to this, hospitals will be asked to undertake actions to ensure the available national stock is used to its maximum effect through:

- If the shortage is sufficiently severe that a reduction in usage is required the NBS will inform hospitals that units of platelets will be issued only for use in accordance with identified categories of patient as defined in appendix 3. If a reduction in usage is required at this stage, restrictions to supply will be limited to categories 1 and 2 (Including HLA/HPA matched platelets). At this point all requests for units of platelets from the hospital must be authorised by a named senior Clinician.
- The interchangeable use of apheresis and pooled platelets (except for HLA/HPA matched platelets). Where available children under sixteen will be given apheresis platelets
- Not requesting long dated platelet units
- Accepting platelets of a different ABO group (in line with BCSH adults and paediatric guidelines ^{2,3})
- Accepting leucodepleted platelets instead of CMV negative platelets
- Accepting RhD positive platelet units where RhD negative are not available and administering anti-D where applicable

5.2.5 In shortage the NBS will take appropriate actions to maximise the supply of available platelets. This may include the extension of shelf life to 7 days and importing platelets from other blood services, in addition to the actions taken at green phase to maximise production and increase collection.

5.2.6 The NBS will monitor demand from hospitals. A Department of Health led Blood Supply Management Group will review this information.

5.2.7 If stocks of platelets return to a sustainable level, the NBS will communicate to hospitals that the Amber phase no longer applies and that orders can return to normal. If, however, stocks continue to fall, the NBS 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 NBS 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.

5.3.2 The NBS will communicate as in the Amber phase. The information from the NBS 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 3.

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

following dataset over and above the usual details provided to the NBS when ordering platelets:

- Patient identifier (hospital number or name)
- Indication for transfusion
- Requesting Consultants name
- Patient category (see appendix 3)
- Patient blood group

5.3.3 As the availability of units of platelets will be very low in the Red phase, the NBS will implement a monitoring process which will allow for the tracking of every unit of platelets issued by the NBS. Hospitals will be requested to track closely the fate of each unit of platelets delivered to them. The NBS will request information on each unit of platelets at regular intervals so that, if the unit is not used, it can be retrieved and delivered to an alternative location for use. 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 the NBS will monitor activity and report to a Department of Health led Blood Supply Management Group.

5.4 **Recovery from shortage**

5.4.1 The NBS will send a fax informing the Transfusion Laboratory 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. The EBMG should convene at the earliest opportunity to review the effect of the platelet shortage and amend the platelet shortage arrangements as necessary. Any recommendations should be fed back to the Hospital Transfusion Committee.

6.0 **References**

1. *Development of an integrated blood shortage plan for the National blood Service and hospitals.* January 2005.
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.

Stuart Penny, Email: stuart.penny@nbs.nhs.uk
Assistant Director of Public and Customer Services
National Blood Service

Lucy Frith, Email: lucy.frith@nbs.nhs.uk
Lead Hospital Liaison Manager, Projects
National Blood Service

On behalf of the National Blood Transfusion Committee Contingency Planning Group.

Appendix 1

Participants of the NBS / Hospital Joint Contingency Planning Group - Operational

Stuart Penny	Assistant Director of Public and Customer Services	National Blood Service.
Judith Chapman	Blood Stocks Management Scheme Manager	Blood Stocks Management Scheme
Dr. Heidi Doughty	Consultant Haematologist	National Blood Service/ University Hospital, Birmingham.
Lucy Frith	Lead Hospital Liaison Manager, Projects	National Blood Service
Catharine Harris	Head of PTI Operational Support	National Blood Service
John Hilton	National Transport & Logistics Manager	National Blood Service
Mark Jelly	Lead Issue Specialist – National Stock Manager	National Blood Service
Elaine Addison	Transfusion Laboratory Manager	Royal Victoria Hospital, Blackpool
Carol Cantwell	Transfusion Laboratory Manager	St Mary's Hospital, London
Andrew Clarke	Transfusion Laboratory Manager	North Staffordshire Royal Infirmary
Martin Drury	Transfusion Laboratory Manager	Peterborough District General, Hospital
Steve Elcoate	Transfusion Laboratory Manager	Royal Devon & Exeter Hospital
Chris Elliott	Transfusion Laboratory Manager	Leeds Teaching Hospitals Trust

Proposed generic actions for hospitals at each phase

Green Phase

- The hospital will work towards ensuring the safe and appropriate use of all platelets.
- Ensuring wherever possible that aspirin or other drugs affecting platelet function are stopped prior to surgery in time to allow platelet function to recover.
- Formulation of Emergency Blood Management Arrangements (EBMA) for Green, Amber and Red phase of a platelet shortage to ensure consistent action in hospitals to ensure the patients who require them most receive the available units of platelets.
- Establishing a Hospital Transfusion Team including a Transfusion Specialist.
- Ensuring clinical audit is undertaken against agreed guidelines so that the fate of all units of platelets is understood. This should include feedback to reduce any inappropriate use, implementation of best practice to ensure the appropriate use of platelets and to minimise wastage and re-audit to ensure effectiveness of actions taken.
- Implementing the Hospital Codes for Transfusion as recommended by the National Blood Transfusion Committee to ensure that every request for transfusion clearly states the indication for transfusion.
- Implementation of agreed transfusion protocols/transfusion thresholds for all transfusions.
- Education/training sessions for staff of all levels, including induction and regular updates.
- Transfusion Guidelines formulated and included in the Junior Medical Staff induction.
- Hospital wide education of existence of EBMA
- Participation in the Blood Stock Management Scheme.
- Transfusion Laboratory Manager to develop links with local hospitals with a view to movement of stock between sites.

Amber Phase

- Stop stockholding of units of platelets.
- Maximise the use of available platelet units through:
 - The interchangeable use of apheresis and pooled platelets (except for HLA/HPA matched platelets)
 - Not requesting long dated platelets
 - Accepting platelets of a different ABO group (in line with BCSH guidelines²)
 - Accepting leucodepleted platelets instead of CMV negative platelets
 - Accepting RhD positive platelets where RhD negative are not available and administering anti-D where applicable
- Reduce usage to categories identified in communications from the NBS.
 - Ensure all requests are made by a senior clinician
- Identify possible alternatives to transfusion of platelets
- Monitor outcomes of platelet transfusions to inform further transfusion support required

Red Phase

- As in Amber but usage will be restricted to category 1 patients only.
- Provide an additional dataset for every request from NBS
- Provide information to the NBS 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>Massive haemorrhage & Critical care Massive transfusion for any condition including obstetrics, emergency surgery and trauma, with on-going bleeding, maintain $> 50 \times 10^9/l$. Aim for $>100 \times 10^9/l$ if multiple trauma or CNS trauma</p> <p>Sepsis/acute DIC, maintain $>50 \times 10^9/l$</p>	<p>Critical care Patients resuscitated following massive transfusion with no on-going active bleeding, maintain $> 50 \times 10^9/l$</p> <p>Surgery Urgent but not emergency surgery for a patient requiring platelet support</p> <p>Transfusion triggers for invasive procedures Invasive monitoring or biopsy work, maintain platelet count $> 50 \times 10^9/l$ General surgery –maintain count $> 50 \times 10^9/l$ Operations in critical sites such as brain or eyes maintain $> 100 \times 10^9/l$</p>	<p>Surgery Elective, non-urgent surgery likely to require platelet support for thrombocytopenia or congenital/ acquired platelet defects</p>
<p>Bone marrow failure and immune thrombocytopenia Active bleeding associated with severe thrombocytopenia or functional platelet defects</p>	<p>Bone marrow failure Prophylactic transfusion for thrombocytopenia (platelet count $< 10 \times 10^9/l$) in patients who are not infected and haemodynamically stable. Consider support if platelet count is $<20 \times 10^9/l$ for patients at higher risk of bleeding.</p>	
<p>Neonates For neonatal alloimmune thrombocytopenia or severe thrombocytopenia in an otherwise well neonate, platelet transfusions are required when the platelet count falls to between $20 - 30 \times 10^9/l$. Higher target levels should be maintained if extremely low birth weight or unwell/bleeding or Intra-cranial haemorrhage suspected/confirmed.</p>		

Schematic of platelet shortage plan

