

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Protocol

For Use in:	Norfolk and Norwich University Hospital (NNUH), Cromer Hospital and NCH&C
By:	All staff involved in patient care
For:	Ensuring the appropriate use of red cells, platelets and management of patients when the National Blood Service identifies a serious blood shortage
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Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

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This is a Controlled Document

Printed copies of this document may not be up to date. Please check the hospital intranet for the latest version and destroy all previous versions.

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Contents

1.Introduction.....	4
2.Quick References	4
2.1Schematic of Red Cell Shortage Plan.....	4
2.2Quick Reference Schematic of Platelet Shortage Plan.....	5
3.Purpose.....	5
4.Scope.....	5
5.Definitions.....	6
6.Processes to be followed.....	8
7.Red Cell Shortage.....	9
7.1Green Phase.....	9
7.2Amber Phase.....	10
7.3Red Phase.....	10
8.Platelet Shortage.....	10
9.Effects on Patient Care.....	11
10.Recovery from Shortage.....	11
11.Monitoring compliance.....	11
12.Summary of development and consultation process undertaken before registration and dissemination.....	11
13.References / Source Documents.....	12
Appendix 1 - Indication for Transfusion.....	13
Appendix 2 - Membership of Emergency Blood Shortage Management Group.....	14
Appendix 3 - Platelet Usage Guidance.....	15
Appendix 4a - Email message to staff regarding Red Cell shortage	16
Appendix 4b - Email message to Trust staff regarding platelet shortage.....	17
Appendix 5 - Email message to staff regarding recovery from shortage.....	18
Appendix 6 - Suggested Stock Levels for NNUH.....	19

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

1. Introduction

NHS Emergency planning requires the development of contingency plans to ensure the effective use of available blood and blood components.

Blood shortages are rare in the UK; however it has been known to have shortages of specific blood groups such as Group O RhD negative.

The NHS Blood and Transplant (NHSBT) produced a contingency plan to ensure effective use of available blood when blood stocks have fallen to very low levels.

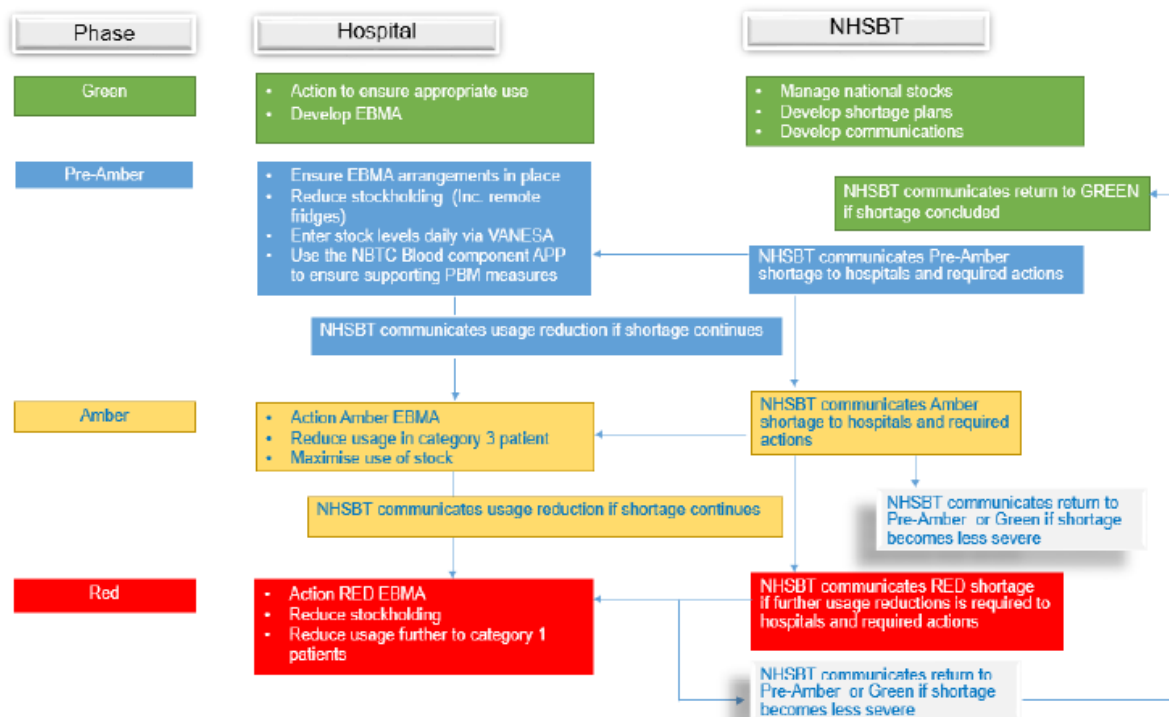
The two main aims of the plan are:

- A reduction in hospital stock level to ensure more of the national 'pool' is available for essential transfusions.
- A reduction in overall blood usage to ensure that those patients with the greatest clinical need are treated.

The document is a response to the Chief Medical Officer's National Blood Transfusion Committee documents outlining plans for blood and platelet shortages (originally issued in 2010, updated in 2016), and seeks to set out a framework for the use of blood products in times of shortage.

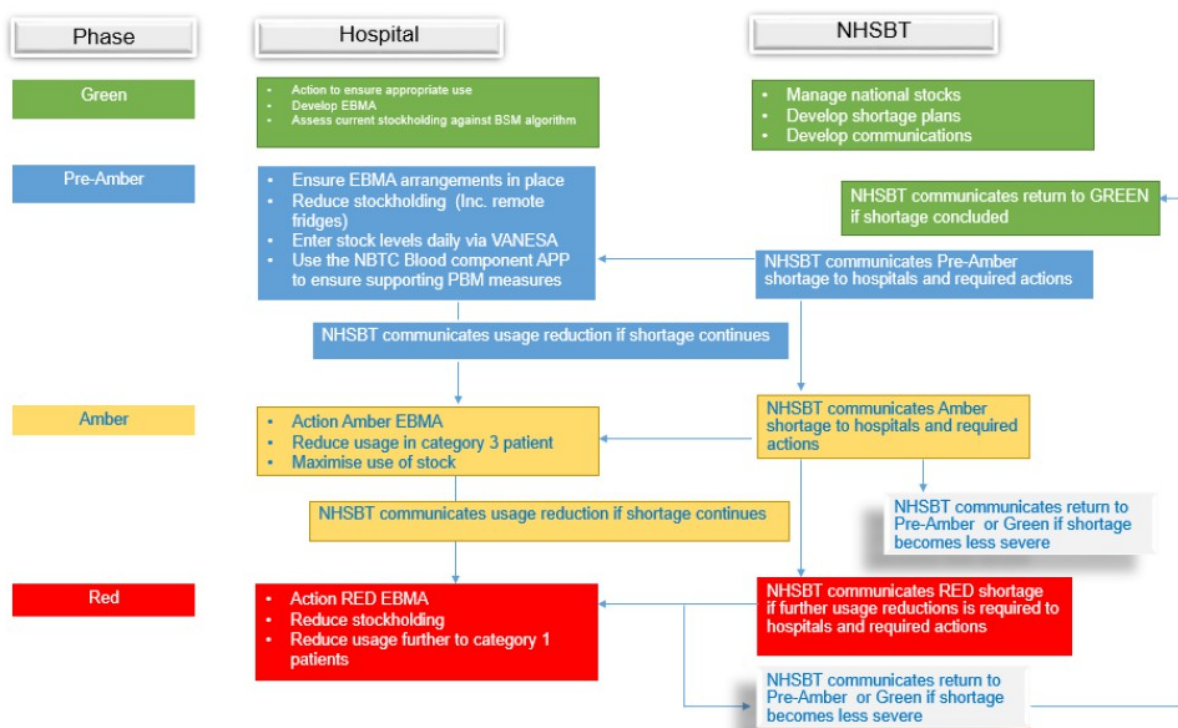
2. Quick References

2.1 Schematic of Red Cell Shortage Plan



Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

2.2 Quick Reference Schematic of Platelet Shortage Plan



3. Purpose

The Department of Health requires that each hospital produces Emergency Blood Management Arrangements (EBMA) in place to ensure that any shortage of blood or platelets are effectively managed, that the Trust continues operating and that patients requiring these products continue to receive them. This document outlines these arrangements for the Norfolk and Norwich University Hospitals NHS Foundation Trust (NNUH) and the hospitals it supplies.

During shortages NHSBT will monitor blood usage in hospitals. If recommended reductions have not been made the consultant haematologist and transfusion laboratory manager will be expected to discuss the hospital arrangements with senior clinical colleagues from NHSBT.

Any adverse incidents in patients during operation of this plan, or with the operation of the plan, will be reported appropriately through the usual EPA and Trust governance routes, nationally through the MHRA incident reporting system SABRE, and through the NHSBT complaints system.

4. Scope

The plan is designed to operate at all times even when there is a modest reduction in the blood supply rather than a shortage. This could occur in times of bad weather or an influenza outbreak.

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

The Trust's Emergency Blood Management Protocol may, depending on the circumstances, be co-ordinated with the Major Incident Response Plan. (Trust docs 10489) In this situation the Hospital Transfusion Committee should not duplicate or contradict the plans of the Major Incident command and control team. The chair should maintain close contact with the Hospital Control Room, and refer to the Major Incident Response Plan for Laboratory Medicine (Trust docs 11305) <http://trustdocs/Doc.aspx?id=11305>

In the event of an infection outbreak, flu pandemic or major incident the Trust recognises that it may not be possible to adhere to all aspects of this document. In those circumstances, all possible action should be taken to maintain on-going patients and staff safety.

5. Definitions

Blood Products	Blood Products are defined as packed red cells (commonly referred to as units of blood) or platelets
National Health Service Blood and Transplant (NHSBT)	The NHSBT is the body that manages blood supplies in England. In times of shortage they will notify the Trust's Blood Transfusion Laboratory of an alert phase
Alert Phases	<p>There are four phases of the plan for blood and platelet shortages. These are defined and declared by the NHSBT:</p> <ul style="list-style-type: none">• Green: Normal circumstances where supply meets demand• Pre-Amber: reduced availability of blood for short or prolonged period• Amber: Reduced availability of blood for a short or prolonged period with impact on clinical activity• Red: Severe, prolonged shortage or imminent threat to the blood supply
Patient categories	The NHSBT defines 3 categories of patient who may need blood product support. This is to assist hospitals prioritise patients to achieve the required reduction in red cell usage. Clinical judgement is an essential part of decision making, and further explanation can be found in Appendix 1.
Laboratory Staff	Competence assessed Biomedical Scientists (BMS), Associate Practitioner (AP) and Medical Laboratory Assistant (MLA) staff, Transfusion Practitioners (TP), Haematology Medical Team. Laboratory SOP ETN-P-031 Emergency Blood Plan should be used.

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

6. Processes to be followed

- 6.1 NHSBT will notify blood transfusion of a blood shortage by fax or e-mail or telephone, where appropriate. This communication will include the required reductions to stock holding or usage. The most senior member of the laboratory transfusion team will be informed when such a communication arrives. NB this should not happen 'out-of-hours' as activation of the EBP will be a planned decision by NHSBT who are constantly tracking blood stocks.
- 6.2 The EPA Network Transfusion Manager, or deputy, will then notify the consultant haematologist with responsibility for blood transfusion, if available, or contact the consultant haematologist carrying the DECT phone 6744.
- 6.3 The EPA Network Transfusion Manager, or deputy, will then call a meeting of the Emergency Blood Shortage Management Group (EBMG) (see Appendix 2 for membership). This meeting must be held on the day the alert has been received within the Trust or the morning after to ensure a timely response to the alert. The purpose of the meeting is to agree the plan in response to the alert and how it should be communicated within the Trust, and whether further meetings are required.
- 6.4 The EPA Network Transfusion Manager will ensure that James Paget University Hospital (JPUH) and at Queen Elizabeth Hospital (QEH) have received the alert and are implementing their respective Emergency Blood Management Arrangements. JPUH & QEH will implement and be responsible for their Emergency Blood Management Arrangements, including reviewing these arrangements after recovery from the shortage.
- 6.5 If required, because the alert impacts blood provision to them, the EPA Network Transfusion Manager will also notify Spire Hospital Norwich, Priscilla Bacon Lodge (PBL) and East Anglian Air Ambulance (EAA).
 - At **Spire Norwich** inform: the Hospital Director and the Matron/Head of Clinical Services. They will inform the staff member in charge of theatres and the staff member in charge of the wards.
 - At **PBL** inform: the Lead Palliative Care Consultant or the doctor on call for that day and the Specialist Palliative Care Matron.
 - At **EAAA** inform them by email operations@eaaa.org.uk
- 6.6 Following authorisation from the EBMG the EPA Network Transfusion Manager, or deputy, will:
 - Inform the Operations Centre team by emailing the alert to the site matrons, site practitioners and the Trust Emergency planning team; sitemanagers2@nnuh.nhs.uk
 - sitepractitioners@nnuh.nhs.uk
 - Epr@nnuh.nhs.uk
 - Also phone the site team on ext 6357 (externally 01603 646537)

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

- Inform Trust Management by forwarding the fax to (9) 287547
 - Inform key members of the Trust through the Emergency Blood Plan Escalation Group email (Appendix 4)
 - Verbally inform all laboratory staff on duty, the transfusion practitioners (TPs), laboratory Chief of Service and the EPA Network Manager.
- 6.7 Each day of the shortage one Consultant Haematologist will be designated as consultant for discussion of surgical and medical requests. The TPs will assist as required. This may mean cancelling fixed commitments at short notice.
- 6.8 The following information will be collected by the most senior BMS on duty in transfusion and presented to the designated consultant on a daily basis:
- Surgical Requests: The most senior member of the transfusion staff on duty will collect all the crossmatch requests for surgery the following day. All this information must be viewed by the designated consultant haematologist who will discuss with relevant colleagues the withdrawal of transfusion support.
 - Medical Requests: The most senior member of the transfusion staff on duty must collect the requests for planned 'top-up' transfusions for anaemia and take these requests to the designated haematology consultant for review.
 - All emergency requests will be processed as normal but the designated consultant haematologist must be informed of all potential massive bleeds immediately
- 6.9 The designated consultant will decide on the level of withdrawal of transfusion support, following the guidelines shown in appendix 1, dependant on the information contained in the NHSBT communication.
- 6.10 All blood transfusion staff will follow the Consultant Haematologist's instructions for processing requests as they arrive into the laboratory.

7. Red Cell Shortage

7.1

Green Phase

Even during a period of good supply blood should be transfused **ONLY** when it is **clinically indicated** using the principles of Patient Blood Management (PBM). The aim of good clinical practice will be the avoidance of blood transfusion where possible by the following means:

- Pre-operative planning – correct any anaemia if possible
- Pharmaceutical blood saving interventions e.g. stopping NSAIDs prior to surgery, giving anti fibrinolytics
- Use of erythropoietin where appropriate
- Maximising the use of Intra-operative Cell Salvage (ICS)

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

- Adherence to Trust transfusion guidelines especially regarding transfusion triggers

7.2 Amber Phase

If NHSBT stocks fall to a pre-determined level NHSBT will communicate a move to AMBER phase. This may apply to either a single blood group or to all blood groups.

This information may be communicated by fax, e-mail and/or telephone, where appropriate. The information from NHSBT will include the nature of the shortage and the actions which need to be taken. This no longer includes a need to reduce the stock levels of blood on site; however it does demand **a reduction in blood use** achieved through activation of the EBMA.

If the shortage is caused by a short term reduction in donor availability reducing use in hospitals may be sufficient to manage the shortage. If stocks return to a sustainable level NHSBT will communicate to hospitals that they can return to normal.

If stocks continue to fall then NHSBT will declare a RED level shortage.

7.3 Red Phase

A RED level shortage will be declared if there is a severe, prolonged shortage of blood or an imminent threat to the blood supply.

NHSBT will communicate as per the AMBER alert, above, and will include information on the nature of the shortage and the actions which need to be taken by the hospital. This will include **a reduction in stock holding and a reduction in usage** by percentage, based on normal use, achieved through activation of the EBMA.

8. Platelet Shortage

The plan to deal with platelet shortages focuses on restricting supply according to the urgency of treatment, rather than a generic reduction in supply and stockholding. Platelet stock will be considered as a whole i.e. substitution across ABO groups may be required.

The current use of platelets is governed by the Trust guideline on clinical use of blood and blood products. At present the majority of platelet requests for non-haematological patients are directed to a haematology consultant for vetting and appropriateness. The Trust also carries one unit of A D neg platelets as stock in case of emergency need as the hospital is over 60 miles from the NHSBT issue centre in Cambridge. In the event of a platelet shortage the following will occur:

- **All** requests for platelets for non-haematology patients will continue to be directed to a haematology consultant for vetting. In many cases platelet transfusion may be unnecessary or an alternative form of support may be appropriate e.g. steroids, tranexamic acid etc.
- Elective surgery requiring platelet support should be deferred.

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

- Haematology patients requiring platelets will be reviewed on a daily basis and no advance ordering of platelets will occur. The platelet levels of $10 \times 10^9/L$ in stable patients and $20 \times 10^9/L$ in febrile/bleeding patients should be adhered to.
- Stock platelets will not be available. Platelet requests will be on an ad hoc basis and if not urgent should be compiled by the blood bank staff and delivered using as few journeys as possible.
- Emergency requests for “blue-light” deliveries should be reserved for life-threatening bleeding only and should be reviewed by haematology staff first.

9. Effects on Patient Care

Incident forms on DATIX must be completed for any incidents relating to reduced supply of blood product, by the department where the incident has occurred. These incidents will be reviewed by the EMBG after the recovery from shortage.

10. Recovery from Shortage

- NHSBT will contact the laboratory with the information that stocks have risen to a level where the status can be moved to a better phase. There must be a phased return to normal stock levels and to normal hospital activity levels so that immediate demand does not return NHSBT stocks to below critical levels. Particularly, elective surgery backlogs should not be compressed into the immediate post recovery period.
- The EPA Network Transfusion Manager, or deputy, will notify the consultant haematologist and this information will be disseminated to the key members of the Trust through the Emergency Blood Plan Escalation Group email (Appendix 5) as appropriate.

11. Monitoring compliance

Monitoring the Green phase of the plan will take place through the Hospital Transfusion Committee, by ensuring participation in regular national audits in the laboratory and in clinical areas to ensure good transfusion practice.

If there is a need to enact the Amber or Red phases of the plan, a review meeting of the Emergency Blood Shortage Management Group (EBMG) will take place once the emergency is over to identify any lessons that can be learned. The use of blood during these phases, the impact on surgery, medicine and patient outcomes are all auditable and necessary to ensure patient safety is maintained.

If the EBMG recommends any action after an Amber or Red phase they will report this to the Hospital Transfusion Committee, and changes in practice / lessons learned will be circulated as appropriate through the organisation.

12. Summary of development and consultation process undertaken before registration and dissemination

The author listed above drafted this guideline on behalf of NNUH Hospital Transfusion Committee who has agreed the final content. During its development it has been

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

circulated for comment to: Haematology laboratory; Hospital Transfusion Committee; Clinical Guidelines Committee; Emergency Planning, Resilience, Response & Business Continuity Lead; Divisional Clinical Services Director and Divisional Governance Manager for Clinical Support Services Division.

The protocol was disseminated to Consultant haematologists, senior transfusion laboratory staff and Divisional Triumvirates. It will also be published to the Trust intranet.

This version has been endorsed by the Clinical Guidelines Assessment Panel.

13. References / Source Documents

NBTC Red Cell Shortage Plan: July 2022

NBTC Platelet Shortage Plan: July 2022

Trust Major Incident Response Plan:

Laboratory Medicine Major Incident Departmental Plan:

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Appendix 1 - Indication for Transfusion

To simplify the management of patients in a general red cell shortage a traffic light system has been created using three broad patient categories. This is to assist hospitals with prioritising patients to achieve the required reduction in red cell usage. It is recognised that clinical judgement and context of the shortage are essential parts of decision-making.

Category 1 These patients will remain highest priority of transfusion	Category 2 These patients will be transfused in the amber but not the red phase	Category 3 These patients will not be transfused in the amber phase
Resuscitation Resuscitation of life-threatening /on-going blood loss including trauma		
Surgical support Emergency surgery* including cardiac and vascular surgery**, and organ transplantation Cancer surgery with the intention of cure	Surgery/obstetrics Cancer surgery (palliative) Symptomatic but not life- threatening post-operative or post-partum anaemia Urgent*** surgery	Surgery Elective surgery which is likely to require donor blood support
Non-surgical anaemias Life-threatening anaemia including patients requiring in-utero support and high dependency care/SCBU Stem cell transplantation, or chemotherapy **** Severe bone marrow failure Transfusion-dependent anaemias including thalassaemia and myelodysplasia Sickle cell disease (SCD) patients on regular transfusion programmes for prevention of complications of SCD Organ transplant	Non-surgical anaemias Symptomatic but not life-threatening anaemia	

* Emergency – patient likely to die within 24 hours without surgery

** With the exception of poor risk aortic aneurysm patients who rarely survive but who may require large volumes of blood

*** Urgent – patient likely to have major morbidity if surgery not carried out

**** Planned stem cell transplant or chemotherapy may be deferred if possible

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Appendix 2 - Membership of Emergency Blood Shortage Management Group

Consultant Haematologist or deputy

EPA Network Transfusion Manager or deputy

Divisional Management representation – Chief of Division, Divisional Operations Director, Divisional Clinical Services Director, Deputy Divisional Operations Director

Other members may be co-opted depending on the nature of the alert and the areas of the Trust it may affect.

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Appendix 3 - Platelet Usage Guidance

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.

Category 1 (Patients to be treated in Red Phase)	Category 2 (Patients to be treated in Red and Amber Phases)	Category 3
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 Bleeding in the presence of sepsis/acute DIC, maintain $> 50 \times 10^9/L$.	Critical care Patients resuscitated following massive transfusion with no on-going active bleeding, maintain $> 50 \times 10^9/L$ Surgery Urgent but not emergency surgery for a patient requiring platelet support Transfusion triggers for invasive procedures According to BCSH guideline	Surgery Elective, non-urgent surgery likely to require platelet support for thrombocytopenia or congenital/ acquired platelet defects
Bone marrow failure Active bleeding associated with severe thrombocytopenia or functional platelet defects Immune thrombocytopenia if serious/life-threatening bleeding	Bone marrow failure All other indications except those in category 1 or 3	*Bone marrow failure Prophylactic transfusion of stable patients following autologous stem cell transplant.
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.		

*prophylactic transfusion category should include WHO grade 1 & 2 bleeding (as in TOPPS trial). Exclusions – previous WHO \geq grade 3 bleed, inherited haemostatic or thrombotic disorder, requirement for therapeutic doses of anticoagulation, acute promyelocytic leukaemia, prior to surgery/invasive procedure

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Appendix 4a - Email message to staff regarding Red Cell shortage

NNUHFT has been informed by the National Blood Service that there is a national shortage of red blood cells available for blood transfusion

The Trust's Emergency Blood Shortage Management Group (EBMG) has met to activate the appropriate processes within the '**Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage**' available on the intranet to ensure the best use of blood products.

Staff requesting blood products must include information so that the patient can be assigned to one of the three nationally recognised patient categories. This helps to assess the urgency for blood transfusion support – see table below.

Major surgical procedures that require blood to be cross matched will be affected, and therefore Surgical Speciality Teams **MUST** contact the blood bank on ext. 2905/2906

ALL patients requiring medical transfusion will have the number of units issues reviewed and reduced if necessary

A further email will follow when the shortage has ended

Patient Categories:

Category 1	Category 2	Category 3
Active major bleeding		
Emergency surgery	Urgent surgery	Elective surgery with >20% chance of 2 unit transfusion
Curative cancer surgery	Palliative cancer surgery	
Life-threatening anaemia	Symptomatic anaemia	

Circulation list for this email:

Emergency Blood Shortage Management Group members
Chief of Divisions
Divisional Operations Directors
Deputy Nursing Directors
Divisional Operations Managers

It may be decided at the EBMG meeting to communication with other specific departments.

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Appendix 4b - Email message to Trust staff regarding platelet shortage

NNUHFT has been informed by the National Blood Service that there is a national shortage of platelets available for platelet transfusion

The Trusts Emergency Blood Shortage Management Group (EBMG) has met to activate the appropriate processes within the '**Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage**' available on the intranet to ensure the best use of blood products.

Please note:

- All requests for platelet transfusions **must** be discussed with a Consultant haematologist.
- Requests for platelets to cover elective surgical procedures may not be possible and the procedure may have to be deferred
- Provision of platelets for urgent transfusion may be delayed due to limit stocks in NNUH blood bank. Platelets may need to be couriered from the National Blood Service, Cambridge.

A further email will follow when the shortage has ended

Circulation list for this email:

Emergency Blood Shortage Management Group members
Chief of Divisions
Divisional Operations Directors
Deputy Nursing Directors
Divisional Operations Managers

It may be decided at the EBMG meeting to communication with other specific departments.

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Appendix 5 - Email message to staff regarding recovery from shortage

NNUH has been informed by the National Blood Service that stocks have risen to a level where thealert has been removed.

Please ensure a phased return to normal hospital activity levels so that immediate demand does not return NHSBT stocks to below critical levels. Particularly, elective surgery backlogs should not be compressed into the immediate post recovery period.

Circulation list for this email:

Emergency Blood Shortage Management Group members

Chief of Divisions

Divisional Operations Directors

Deputy Nursing Directors

Divisional Operations Managers

It may be decided at the EBMG meeting to communication with other specific departments.

Trust Protocol for the Management of Emergency Red Cell shortage and Emergency Platelet shortage

Appendix 6 - Suggested Stock Levels for NNUH

Status	O Pos	O Neg	A Pos	A Neg	B Pos	B Neg	AB Pos	AB Neg
Green	60	20	50	15	10	6	6	4
Amber	Reduction from green level – percentage as directed by NHSBT							
Red	Reduction from green level – percentage as directed by NHSBT							