Contingency Plan for a Red Cell Shortage

1.0 Introduction

NHS emergency planning requires the development of contingency plans to ensure transfusion support remains available for the patients who need it most, through ensuring the effective use of blood and its components when stocks fall to very low levels.

In 2016 the National Blood Transfusion Committee (NBTC) issued a plan for red cell shortages which has been updated, in March 2020. The plan advised that the hospitals and the NHS Blood and Transplant Service (NHSBT) should work together to reduce the risk of red cell shortages through management of the supply and demand for blood.

The overall objective is to ensure that blood would remain available for essential transfusions and that priority would be given to the most urgent cases.

In the event of a Major Incident being declared by the Trust, a separate procedure applies. This procedure is contained within the Trust Major Incident Plan.

2.0 Aims

NUTH is committed to ensuring all patients receive the blood transfusion treatment that they need in a safe, effective and timely manner.

This procedure is designed to operate at all times even when there is no shortage. Adherence to Patient Blood Management (PBM) core principles should avoid the activation of formal red cell shortages.

The plan also outlines the actions to be taken in the event of a potential or actual red cell shortage, to ensure there is minimum impact on patient treatment.

3.0 Duties (Roles and responsibilities)

3.1 Chief Executive and Trust Board

The Chief Executive and Trust Board have responsibility for the safety and welfare of all Trust patients, visitors and staff. This includes overall responsibility for ensuring effective corporate governance within the organisation.

3.2 Hospital Transfusion Committee (HTC)

The Trust HTC meets three times per year and reports via the HTC Chair to the Patient Safety Group (PSG). The PSG reports to the Trust Quality Committee which reports to the Trust Board.

The HTC is responsible for promoting best practice, reviewing clinical transfusion practice, monitoring performance of the hospital transfusion service, participating in regional and national initiatives and where appropriate communicating with local patient representative groups.

3.3 Emergency Blood Management (EBM) Group

The Trust response will be managed by the EBM group, who will be responsible for assessing the impact of the blood shortage and provide strategic guidance for managing the appropriate use of red cells in each operational phase. The EBM group will also be responsible for ensuring the information is cascaded to all clinical leads and other stakeholders. The EBM group will consist of:

- Medical Director on call
- Chair of the Hospital Transfusion Committee
- Chair of the Trust Clinical Risk Committee
- Deputy Chief Nurse
- Consultant Haematologist on call
- Transfusion Laboratory Manager or Transfusion Section Lead
- Transfusion Practitioner (Routine Hours)
- Clinical Director for Peri-ops and Critical Care at FH
- Clinical Director for Peri-ops and Critical Care at RVI
- Cardiac Surgeon on call
- Orthopaedic Surgeon on call

3.3.1 The following additional members will be invited to join the EBM in the event of the blood shortages leading to the Red phase of the plan being initiated:

- Freeman – Theatre 15 Anaesthetic Consultant, Daytime ITU Consultant, On call Cardiac Anaesthetic Consultant and Paediatric Consultant Anaesthetist.
- RVI - Theatre 6 Leazes wing Anaesthetic Consultant, NVW Level 5 Trauma Theatre 32 Anaesthetic Consultant and Obstetric Anaesthetic Consultant.

3.4 Hospital Transfusion Team (HTT)

The Trust HTT meets monthly and reports to the Trust HTC. The HTT is responsible for actively promoting good transfusion practice through development and implementation of transfusion policies and guidelines.

3.5 Consultant Lead in Blood Transfusion

The Consultant Lead in Blood Transfusion participates in HTC, HTT and Regional Transfusion Committees (RTC) and has responsibility for providing clinical direction within the Trust promoting best transfusion practice through Trust clinical blood transfusion policies and procedures. They work with the Blood Sciences Directorate Manager (DM), Laboratory Managers and the EBM to ensure a collective response in the event of a blood shortage.

3.6 SpR and Duty Biochemist / Medical Officer

Will work with the Consultant Lead in Blood Transfusion and will provide clinical direction to the clinical area during a blood shortage.

3.7 Transfusion Laboratory Manager (TLM)

The TLM participates in HTC, HTT and Regional Transfusion Committees and has responsibility for ensuring the blood transfusion section complies with national standards and legislation through development of scientific policy, procedures and the maintenance of the Blood Transfusion Service. The TLM reports to Blood Sciences Clinical Director (CD) or DM on the functioning and effectiveness of the blood transfusion section and works with the Consultant Lead in Blood Transfusion.

3.8 Transfusion Practitioner (TP)

The TP team works within the Blood Transfusion Team and is responsible for providing advice on the use of blood/blood components through education and training of clinical and support staff in the Trust acting as a conduit between the blood transfusion laboratory and clinical areas. The TP team are also responsible for the implementation of regional and national initiatives within the Trust to promote best transfusion practices.

3.9 Hospital Transfusion Laboratory (HTL) Section Leads

The HTL Section Leads are responsible for ensuring that the HTL follow best transfusion practice through compliance with national standards and legislation. Implementing scientific policies and procedures within the HTL and maintaining the Blood Transfusion Service.

4.0 Protocol

4.1 The plan is structured to provide a framework of actions for the NHSBT and hospitals at three phases:

Green: normal circumstances where blood supply meets demand.

Amber: reduced availability of blood for a short or prolonged period.

Red: severe, prolonged shortages.

4.2 During the green phase NHSBT may issue precautionary notification to hospitals informing them of potential supply issues and asking for appropriate action to be taken by the hospitals to prevent the requirement to move to Amber phase.

4.3 If national blood stocks fall below a pre-determined level, the NHSBT will inform the Trust of a need to move to Amber phase. This may apply to either a single blood group or all blood groups.

4.4 If stocks continue to fall, NHSBT may communicate that further action is required to protect the available stock; this may be within the Amber phase or require a move to Red phase. If NHSBT identify a severe, imminent threat to the blood supply then NHSBT may communicate a move directly to the Red phase.

4.5 The NHSBT will notify the TLM, TP and the HTL on each site directly of any blood shortage. The TLM or HTL Section Lead will immediately notify the Consultant lead in Blood Transfusion who will inform the chair of the HTC. Acting under the delegated authority of the Medical Director, the HTC chair will convene a meeting of the EBM group and be responsible for the Trusts response to the shortage. The TLM will inform external clients of the blood stock shortage.

4.6 The TLM will collate details of current blood stocks, existing demand, the type and predicted severity of the shortage and present this data to the EBM group. The Trust response will be managed by the EBM group, who will be responsible initially for assessing the impact of the blood shortage on the ability of the Trust to carry out normal activities. The group will then make decisions regarding non supply of transfusion and ensuring the information is cascaded to all clinical leads and other stakeholders.

4.7 Global communication will be sent to all Trust staff throughout the shortage period, this will be coordinated by the TLM and Consultant Lead in Blood Transfusion via the Blood Sciences CD or DM and Trust Service Desk.

4.8 The NHSBT will notify the TLM, TP and the HTLs on both sites directly when national stocks recover to a level where hospitals can move to Amber or Green phase in line with stock recovery. The TLM or HTL Section Lead will immediately notify the Consultant Lead in Blood Transfusion who will inform the chair of the HTC. Acting under the delegated authority of the Medical Director, the HTC chair may convene a meeting of the EBM group as the hospital moves to the Recovery phase.

4.9 Global communication will be sent to all Trust staff throughout the recovery phase.

4.10 The EBM will continue to prioritise requests for blood transfusion as necessary until normal stocks are achieved.

4.11 On behalf of the EBM group the TLM and the Consultant Lead in Blood Transfusion will provide a report for the Trust on the shortage, the actions taken and the overall impact of the shortage.

5.0 Operation of the Plan

5.1 Green Phase - Normal circumstances: blood supply meets demand

Note: See Appendix 2 for Summary of actions in Green Phase.

Adherence to Patient Blood Management (PBM) core principles:

- **Anaemia management**—detecting anaemia, determining aetiology, and appropriately treating the anaemia.
- **Blood conservation strategies**—performing minimally invasive procedures when possible, minimizing iatrogenic blood loss, using surgical techniques that limit blood loss, detecting and halting blood loss as quickly as possible, and employing intraoperative red cell salvage to reduce requirement for allogeneic transfusion. Utilising NICE approved evidence based transfusion triggers to direct transfusion.
- **Optimization of haemostasis and/or coagulopathy**—appropriately evaluating coagulopathy/haemostasis, determining aetiology of coagulopathy, treating coagulopathy with targeted therapies, and transfusing only when clinically indicated.
- **Patient focused care**— the needs and concerns of the patients should be incorporated into the decision-making process. Patients should be provided with information on PBM-based treatments, the potential risks/benefits/alternatives of different treatment options, and where clinical situation allows should be involved in the formation of the final treatment plan.

5.1.1 Green Phase - Actions

HTC, HTT and HTL will continue efforts to support the PBM core principles.

5.2 Amber Phase - Reduced availability of blood for a short or prolonged period

Note: See Appendix 2 for Summary of actions in Amber Phase.

Stockholding: Stocks will be reduced in line with NHSBT recommendations. (Note: the use of a 24 hour bank means NUTH stocks are already conservative)

5.2.1 Amber Phase - Trauma/MHP activation to continue as normal, HOWEVER:

The HTL will notify the EBM group via on call haematologist of any patients requiring ongoing heavy transfusion (beyond Box 3 of the MHP). Poor prognosis patients with heavy blood use (eg post-op with persistent heavy bleeding and small chance of recovery) should be discussed between the clinician in charge of the patient's care and the EBM group or one of its members, to determine if ongoing supply is appropriate.

5.2.2 Amber Phase - Surgical use of Blood:

- **All non-urgent surgery should be reviewed case by case.** Surgery likely to require 2 or more units of blood will be postponed.
- **Surgery for cancer should be prioritised and other urgent procedures should continue with review on a case by case basis.**
- **Elective surgery where blood transfusion is extremely unlikely to be required should continue with review on a case by case basis.**
- **Post surgical blood use should follow National and Trust policy refer to Medical use of Blood below:**

5.2.3 Amber Phase - Medical use of Blood:

All non surgical blood requests will be strictly monitored by the HTL to ensure adherence to the national indications for transfusion and where appropriate referred to a member of the EBM group for approval.

Transfusion will only be agreed if:

- Acute Bleeding
- Hb ≤70g/L (stable asymptomatic anaemia)
- Hb ≤80g/L with cardiovascular disease and asymptomatic.
- Hb ≤80g/L for patients with Bone Marrow failure or on chronic transfusion regimes, unless clinically compromised. In some cases the use of a lower threshold should be considered.
- Symptomatic anaemia – no predetermined threshold each case to be reviewed individually.

5.2.4 Amber Phase- Actions by Specific Role

NHSBT – The NHSBT will notify the TLM, TP and the HTL on each site directly of any blood shortage.

TLM – Will immediately notify the Consultant lead in Blood Transfusion of any communication received from the NHSBT regarding blood shortages.
- The TLM will collate details of current blood stocks, existing demand, the type and predicted severity of the shortage and present this data to the EBM group.
- The TLM will inform external clients of the blood stock shortage.
- The TLM will work with the Consultant Lead in Blood Transfusion to compile the appropriate information required for all Trust staff. The Blood Sciences CD or DM will then arrange via the Trust Service Desk for this to be sent as a Global communication to all Trust staff.

Consultant Lead in Blood Transfusion – Will inform the chair of the HTC of the communication received from the NHSBT regarding blood shortages.
- The Consultant Lead in Blood Transfusion will work with the TLM to compile the appropriate information required for all Trust staff. The Blood Sciences CD or DM will then arrange via the Trust Service Desk for this to be sent as a Global communication to all Trust staff.

Chair of HTC- Acting under the delegated authority of the Medical Director, the HTC chair will convene a meeting of the EBM group and be responsible for the Trusts response to the blood shortage.

EBM group – Will be responsible initially for assessing the impact of the blood shortage on the ability of the Trust to carry out normal activities.
- The group will then make decisions regarding non supply of transfusion and ensuring information is cascaded to all clinical leads and other stakeholders.

TP - Transfusion practitioners will work with the HTL to vet any requests for blood that deviate from the guidance above. The TPs will act under the supervision of the Consultant Lead in Blood Transfusion and the EBM group.

HTL - The HTL will notify the EBM group of any patients requiring ongoing heavy transfusion as per section 5.2.1.
- Will strictly monitor all non surgical blood requests to ensure adherence to the national indications for transfusion and where appropriate refer requests to a member of the EBM group for approval.
- Will use the standard telephone request forms to document requests however the decision making flowchart will not be used in favour of the medical use of blood guidance listed above (section 5.2.3).

5.3 Red Phase - Severe, prolonged shortages

Note: See Appendix 2 for Summary of actions in Red Phase.

- **Only requests for blood transfusion made by Consultant level clinicians will be accepted** and where appropriate these will be vetted by the Consultant Lead in Blood Transfusion/Haematologist on call.

- **Requests will be agreed for emergency surgery, for potentially curative cancer surgery, and for anaemia with serious or life threatening symptoms.**

- **More widespread use of erythropoietin,** where appropriate (e.g. ITU patients, urgent pre operative patients with moderate anaemia) will be permitted.

- **Depending on the degree of the shortage, emergency operations with poor risk of patient survival and likely high usage of blood products e.g. emergency aortic aneurysms may need to be stratified according to likelihood of long term survival.** In such a situation a decision on operation would be made after consultation between the appropriate Surgeon, Anaesthetist and Haematologist on call. Where there is disagreement as to the best course of action a Medical Director Representative may be involved.

5.3.1 Red Phase - Actions by Specific Role

NHSBT – The NHSBT will notify the TLM, TP and the HTL on each site directly of a severe blood shortage and instruct hospitals to move to the Red phase of the plan.

TLM – Will immediately notify the Consultant lead in Blood Transfusion of any communication received from the NHSBT regarding severe blood shortages.
- The TLM will work with the Consultant Lead in Blood Transfusion to compile the appropriate information required for all Trust staff. The Blood Sciences CD or DM will then arrange via the Trust Service Desk for this to be sent as a Global communication to all Trust staff.

Consultant Lead in Blood Transfusion – Will inform the chair of the HTC of the communication received from the NHSBT regarding severe blood shortages.
- The Consultant Lead in Blood Transfusion will work with the TLM to compile the appropriate information required for all Trust staff. The Blood Sciences CD or DM will then arrange via the Trust Service Desk for this to be sent as a Global communication to all Trust staff.

Chair of HTC- Acting under the delegated authority of the Medical Director, the HTC chair will convene a meeting of the EBM group (including the additional members detailed in section 3.3.1) and be responsible for the Trusts response to the blood shortage.

EBM group – Will be responsible initially for assessing the impact of the blood shortage on the ability of the Trust to carry out normal activities.

- The group will then make decisions regarding non supply of transfusion and ensuring information is cascaded to all clinical leads and other stakeholders.

TP - Transfusion practitioners will work with the HTL to vet any requests for blood that deviate from the guidance above.

- The TPs will act under the supervision of the Consultant Lead in Blood Transfusion and the EBM group.

HTL - The HTL will notify the EBM group of any patients requiring ongoing heavy transfusion as per section 5.2.1.

- Will strictly monitor all non surgical blood requests to ensure adherence to the national indications for transfusion and where appropriate refer requests to a member of the EBM group for approval.
- Will use the standard telephone request forms to document requests however the decision making flowchart will not be used in favour of the guidance in section 5.3.

6.0 Recovery Phase

6.1 When a shortage is deemed to have ended the NHSBT will inform the TLM, TP and the HTLs on both sites. The TLM will inform the Consultant Lead in Blood Transfusion who will inform the chair of the HTC and EBM group.

6.2 Throughout the recovery of stocks, the EBM group will continue to prioritise requests for blood transfusion where necessary until normal stock levels are achieved.

6.3 Global communication will be sent to all Trust staff informing of a return to stock levels.

7.0 Impact and Monitoring of shortage

The TLM will compile a report on behalf of the HTC and EBM detailing the red cell shortage, the actions taken throughout and the overall impact the shortage had on service provision as well as the effect of the measures implemented to reduce blood usage.

Appendix 1: NBTC Indication for transfusion in a red cell shortage guidance

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.

Appendix 2: Summary of actions for hospitals at each phase.

NOTE: For further details on each phase of the plan refer to the full policy.

Green Phase - Normal circumstances: blood supply meets demand

Adherence to Patient Blood Management (PBM) core principles:

- **Anaemia management**.
- **Blood conservation strategies.**
- **Optimization of haemostasis and/or coagulopathy**.
- **Patient focused care**.

Green Phase - Actions

HTC, HTT and HTL will continue efforts to support the PBM core principles.

This area has been intentionally left blank.

Amber Phase- Reduced availability of blood for a short or prolonged period

Amber Phase - Trauma/MHP - as normal, however any ongoing heavy transfusion will be highlighted by the HTL for review to determine if ongoing supply is appropriate.

Amber Phase - Surgical use of Blood (For an overview refer to Appendix 1):

- **All surgery should be reviewed on a case by case basis. Non-urgent cases which are likely to require transfusion should be deferred. Surgery for Cancer and other urgent cases should continue where possible.**
- **Post surgery blood request should be reviewed as a 'Medical use of Blood'.**

Amber Phase - Medical use of Blood - All non surgical blood requests will be monitored by the HTL to ensure adherence to this guidance, where appropriate referred to a member of the EBM group for approval.

Transfusion will only be agreed if:

- Acute Bleeding
- Hb ≤70g/L (stable asymptomatic anaemia)
- Hb ≤80g/L with cardiovascular disease (asymptomatic)/ Bone Marrow failure / on chronic transfusion regimes, unless clinically compromised.
- Symptomatic anaemia each case to be discussed individually.

Amber Phase - Summary Actions by Specific Role

NHSBT – Notify the TLM, TP and the HTL on each site directly of any blood shortage.

TLM –Notify the Consultant Lead in Blood Transfusion of the NHSBT blood shortages.
- Collate details of current blood stocks, demand, type and severity of the shortage to present to the EBM group.
- Inform external clients of the blood stock shortage.
- Collaborate with the Consultant Lead in Blood Transfusion to compile global communication information for the Blood Sciences CD or DM to arrange to be sent out to all Trust staff.

Consultant Lead in Blood Transfusion –Inform chair of the HTC of blood shortages.
- Collaborate with the TLM to compile global communication information for the Blood Sciences CD or DM to arrange to be sent out to all Trust staff.

Chair of HTC- Convene a meeting of the EBM group and be responsible for the Trusts response to the blood shortage.

EBM group – Assess the impact of the blood shortage for the Trust.
- Make decisions on the non supply of transfusion and cascade to all clinical leads.

TP - Vet requests for blood that deviate from the guidance above. Acting under the supervision of the Consultant Lead in Blood Transfusion and the EBM group.

HTL – Notify the EBM group of ongoing heavy transfusion.
- Strictly monitor all non surgical blood requests and where appropriate refer requests to the EBM group for approval.
- Use the standard telephone request forms to document requests however the decision making flowchart will not be used in favour of the use of blood guidance for Amber Phase.

Red Phase - Severe, prolonged shortages (For an overview refer to Appendix 1)

- Only requests for blood transfusion made by Consultant level clinicians will be accepted and where appropriate these will be vetted by the Consultant Lead in Blood Transfusion/Haematologist on call.

- Requests will be agreed for emergency surgery, for potentially curative cancer surgery, and for anaemia with serious or life threatening symptoms.

- **More widespread use of erythropoietin,** where appropriate will be permitted.

- Depending on the degree of the shortage, emergency operations with poor risk of patient survival and likely high usage of blood products may need to be stratified according to likelihood of long term survival. In such a situation a decision would be made after consultation between the appropriate Surgeon, Anaesthetist and Haematologist on call. Where there is disagreement as to the best course of action a Medical Director Representative may be involved.

Red Phase - Summary Actions by Specific Role

NHSBT – Notify the TLM, TP and the HTL on each site directly of a severe blood shortage and instruct hospitals to move to the Red phase of the plan.

TLM – Notify the Consultant lead in Blood Transfusion of the NHSBT severe blood shortages.
- Collaborate with the Consultant Lead in Blood Transfusion to compile global communication information for the Blood Sciences CD or DM to arrange to be sent out to all Trust staff.

Consultant Lead in Blood Transfusion – Inform the chair of the HTC of the severe blood shortages.
- Collaborate with the TLM to compile global communication information for the Blood Sciences CD or DM to arrange to be sent out to all Trust staff.

Chair of HTC- Convene a meeting of the EBM group (including the additional members detailed in section 3.3.1 of the full policy) and be responsible for the Trusts response to the blood shortage.

EBM group – Assess the impact of the blood shortage for the Trust.
- Make decisions on the non supply of transfusion and cascade to all clinical leads.

TP - Vet requests for blood that deviate from the guidance above. Acting under the supervision of the Consultant Lead in Blood Transfusion and the EBM group.

HTL - Notify the EBM group of ongoing heavy transfusion.
- Strictly monitor all non surgical blood requests and where appropriate refer requests to the EBM group for approval.
- Use the standard telephone request forms to document requests however the decision making flowchart will not be used in favour of the use of blood guidance for Red Phase.

Recovery Phase

When a shortage is deemed to have ended the NHSBT will inform the TLM, TP and the HTLs on both sites. The TLM will inform the Consultant Lead in Blood Transfusion who will inform the chair of the HTC and EBM group.

Throughout the recovery of stocks, the EBM group will continue to prioritise requests for blood transfusion where necessary until normal stock levels are achieved.

Global communication will be sent to all Trust staff informing of a return to stock levels.

Impact and Monitoring of shortage

The TLM will compile a report on behalf of the HTC and EBM detailing the red cell shortage, the actions taken throughout and the overall impact the shortage had on service provision as well as the effect of the measures implemented to reduce blood usage.

Summary Actions by Specific Role

NHSBT – Notify the TLM, TP and the HTL on each site directly of a return to normal blood stocks.

TLM – Notify the Consultant lead in Blood Transfusion of the NHSBT return to normal blood stocks.
- Collaborate with the Consultant Lead in Blood Transfusion to compile global communication information for the Blood Sciences CD or DM to arrange to be sent out to all Trust staff.

Consultant Lead in Blood Transfusion – Inform the chair of the HTC of the return to normal blood stocks.
- Collaborate with the TLM to compile global communication information for the Blood Sciences CD or DM to arrange to be sent out to all Trust staff.

Chair of HTC- Inform the EBM group of the return to normal stocks.

EBM group – Assess the impact of the blood shortage and the recovery period for the Trust.
- Make decisions regarding prioritising requests during the recovery phase where necessary and cascade to all clinical leads.

TP - Vet requests as necessary during the recovery phase. Acting under the supervision of the Consultant Lead in Blood Transfusion and the EBM group.

HTL - Use the standard telephone request forms to document requests following the decision making flowchart to guide safe and appropriate use of blood. Refer any requests as guided by the flowchart.