NHS
Northampton General Hospital
NHS Trust

Integrating clinical guidelines and patient blood management principles into the transfusion process.

Dr. Alistair McGrann & Joy Murphy RN

Northampton General Hospital

NHS
Northampton General Hospital
NHS Trust

- 700 bed DGH
- Cancer Centre and JACIE accredited.
- Hyper-acute stroke, vascular and renal services (680,000 in catchment area)

Our Challenge of Implementing Guidance

- Patient Blood Management has brought greater focus on the need to implement evidence based practice resulting in increasing clinical guidance from multiple sources that needs disseminating throughout multiple specialties within the trust.

NICE National Institute for Health and Care Excellence

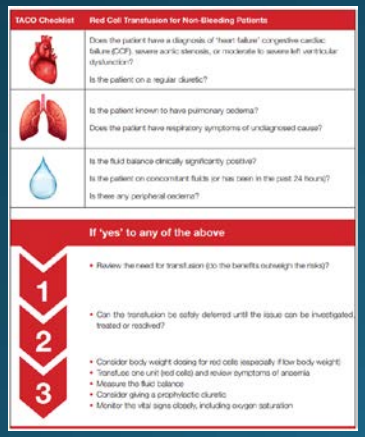
British Society for Haematology
Listening • Learning • Leading

The Association of Anaesthetists
of Great Britain & Ireland

The Challenge of Haemovigilance

- Haemoviligance is continually identifying new safety concerns and re-assessing the prevalence of existing concerns that must be communicated trust wide.

Serious Hazards Of Transfusion SHOT 20 YEARS



SaBTO
Advisory Committee on the Safety of Blood, Tissues and Organs

Recommendations from the expert advisory committee on the Safety of Blood, Tissues and Organs (SaBTO) on measures to protect patients from acquiring hepatitis E virus via transfusion or transplantation

These recommendations were approved by SaBTO on 1 Nov 2016.

The Challenge of communicating the message

- This is at a time where clinicians are in an environment that is rife with competing demands for their continual professional development (for example over **160** new NICE clinical guidelines in the past 10 years).

NICE National Institute for Health and Care Excellence

Royal College of Obstetricians & Gynaecologists

bsg BRITISH SOCIETY OF GASTROENTEROLOGY

Royal College of Surgeons ADVANCING SURGICAL CARE

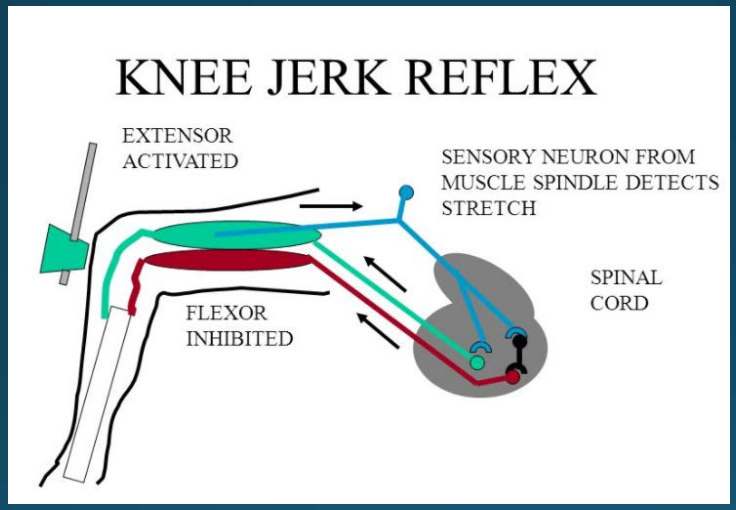
Royal College of Physicians

The Association of Anaesthetists of Great Britain & Ireland

The Royal College of Pathologists Pathology: the science behind the cure

Move away from reflex prescribing without introducing delays.

- Hb 80




Guideline on the Administration of Blood Components
bjh guideline
British Committee for Standards in Haematology Guidelines on the Identification and Management of Pre-Operative Anaemia
bjh guideline
Guidelines for the use of platelet transfusions
bjh guideline
A practical guideline for the haematological management of major haemorrhage
bjh guideline
Guidelines on the management of anaemia and red cell transfusion in adult critically ill patients
bjh guideline
Guideline on the investigation and management of acute transfusion reactions Prepared by the BCSH Blood Transfusion Task Force
NICE National Institute for Health and Care Excellence
Blood
NICE
Guidance for the use of Blood Components
NHS
This guidance is based on the National Blood Transfusion Committee (NBTC) Indication Codes for Transfusion (June 2016)
National Blood Transfusion Committee
Red cell concentrates
Prothrombin complex concentrate
Cryoprecipitate
Platelet concentrates
Fresh frozen plasma (FFP)
Further information on blood transfusion will be available on hospital intranet sites or from the blood transfusion laboratory.
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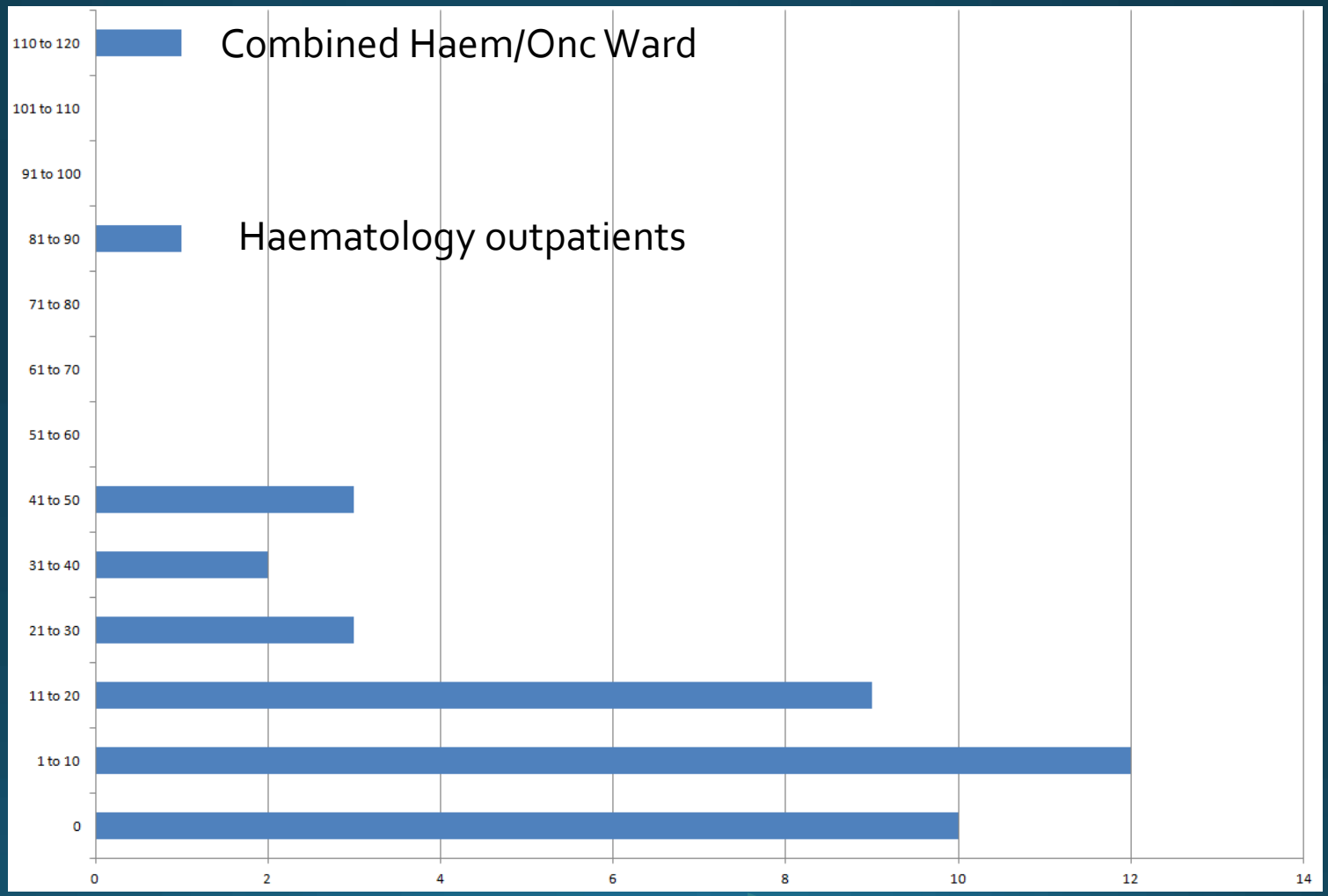
SaBTO
Advisory Committee on the Safety of Blood, Tissues and Organs
CYTOMEGALOVIRUS TESTED BLOOD COMPONENTS
POSITION STATEMENT
ANNUAL SHOT REPORT 2016
ANNUAL SHOT REPORT 2012
ANNUAL SHOT REPORT 2011
Annual Report 2010
SHOT

Islands of reduced transfusion activity

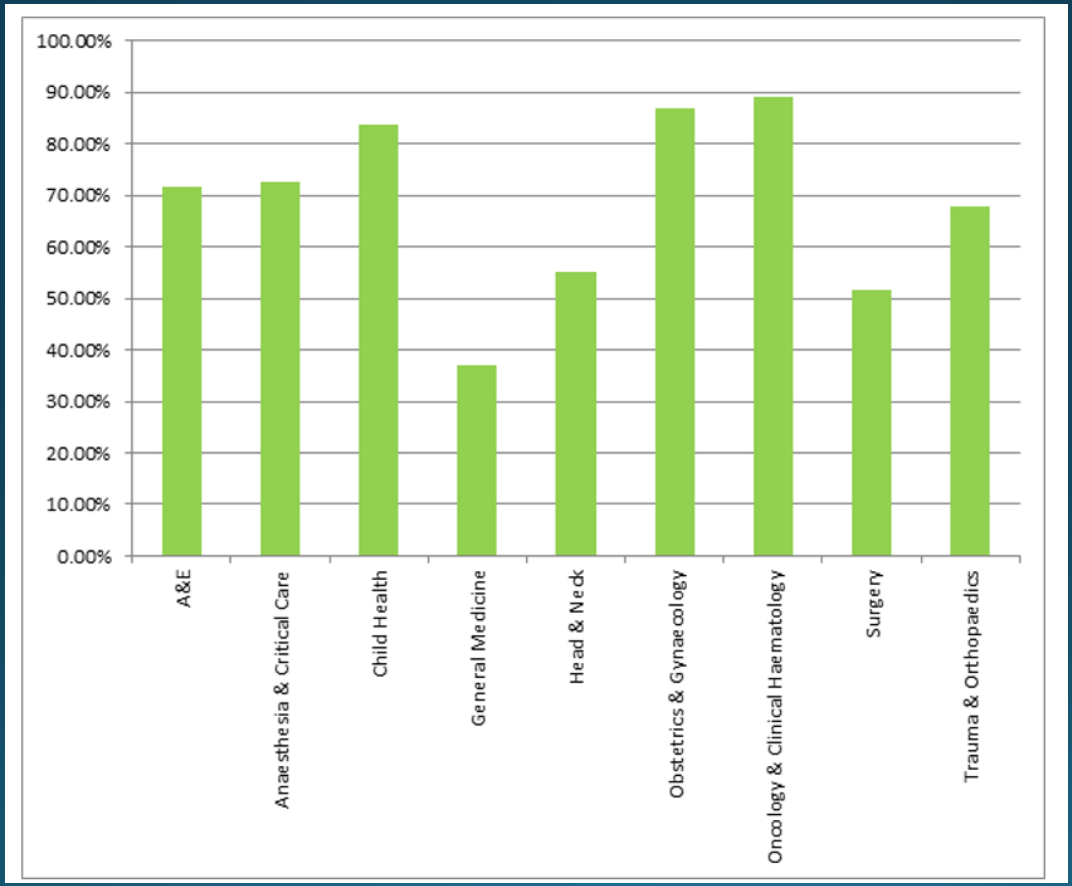
- This communication challenge is compounded by the trend towards sub-specialisation causing islands of reduced transfusion activity in hospitals.
- The top 5 highest use areas accounted for over half of all transfusions.
- This produces areas of reduced familiarity, perceived relevance and reduced engagement.



Numbers of transfusion performed in August 2017

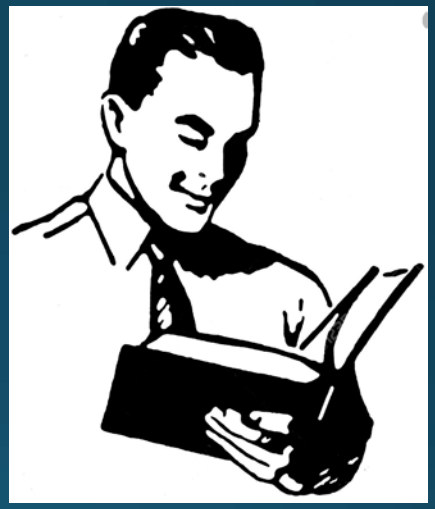
Number of Clinical Areas

Transfusion Training Compliance



- The quality of transfusion practice within an NHS trust is fundamentally dependant on the front line staff involved in the transfusion process.
- The prescription of blood is largely done by junior doctors.
- Staff less frequently involved in transfusion will be harder to engage in the principles if Patient Blood Management.
- Our spread of transfusions is **uneven** across the trust but the spread of SHOT reports is **even**.

How to engage?



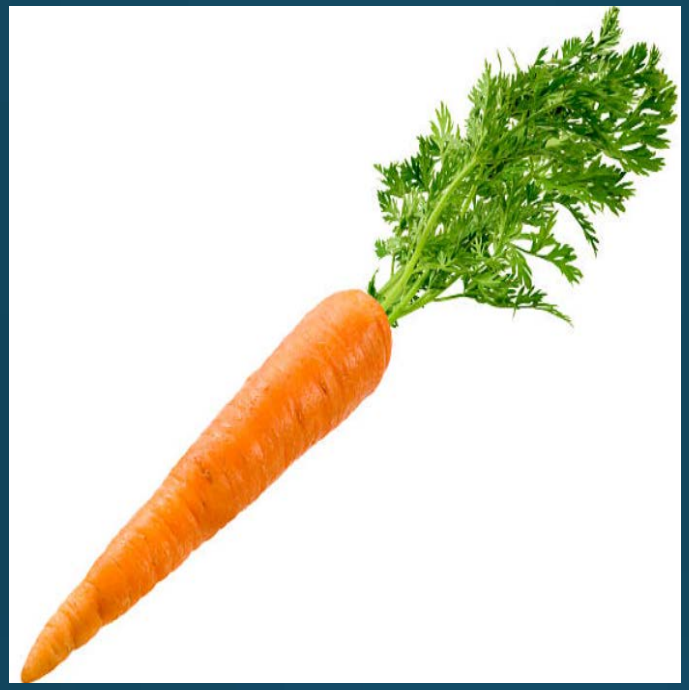
Available tools

- Trust Transfusion policy document
- Transfusion guidelines on trust intranet
  - Engagement ? ? ? ? ?
- Transfusion training
  - Infrequent
  - Achieving 100% training compliance is very challenging particularly in areas of high staff turn over
- Transfusion talk as part of trust inductions

Available tools

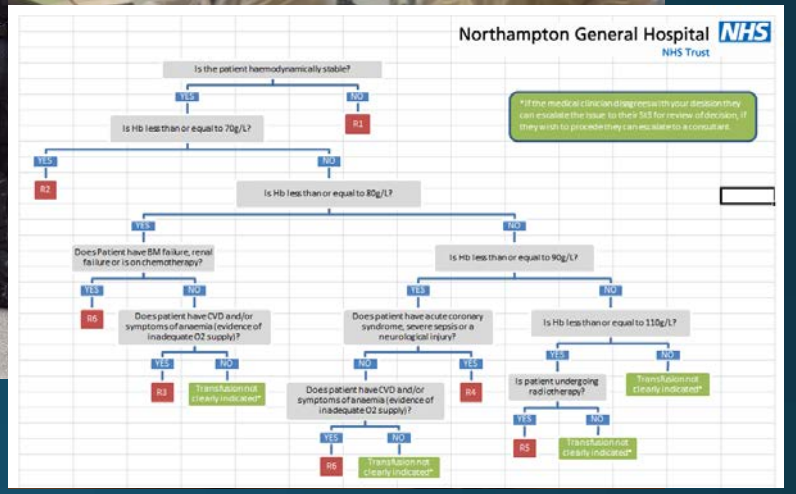
- The blood product prescription and administration record
  - 100% of transfusions have to use this document
  - Clinicians **attention** and recognition of relevance to the current care of their patient is present
  - By integrating PBM principles into the process of prescribing a blood product the clinician using the document effectively updates their training every time they use it.

The right way without delay…



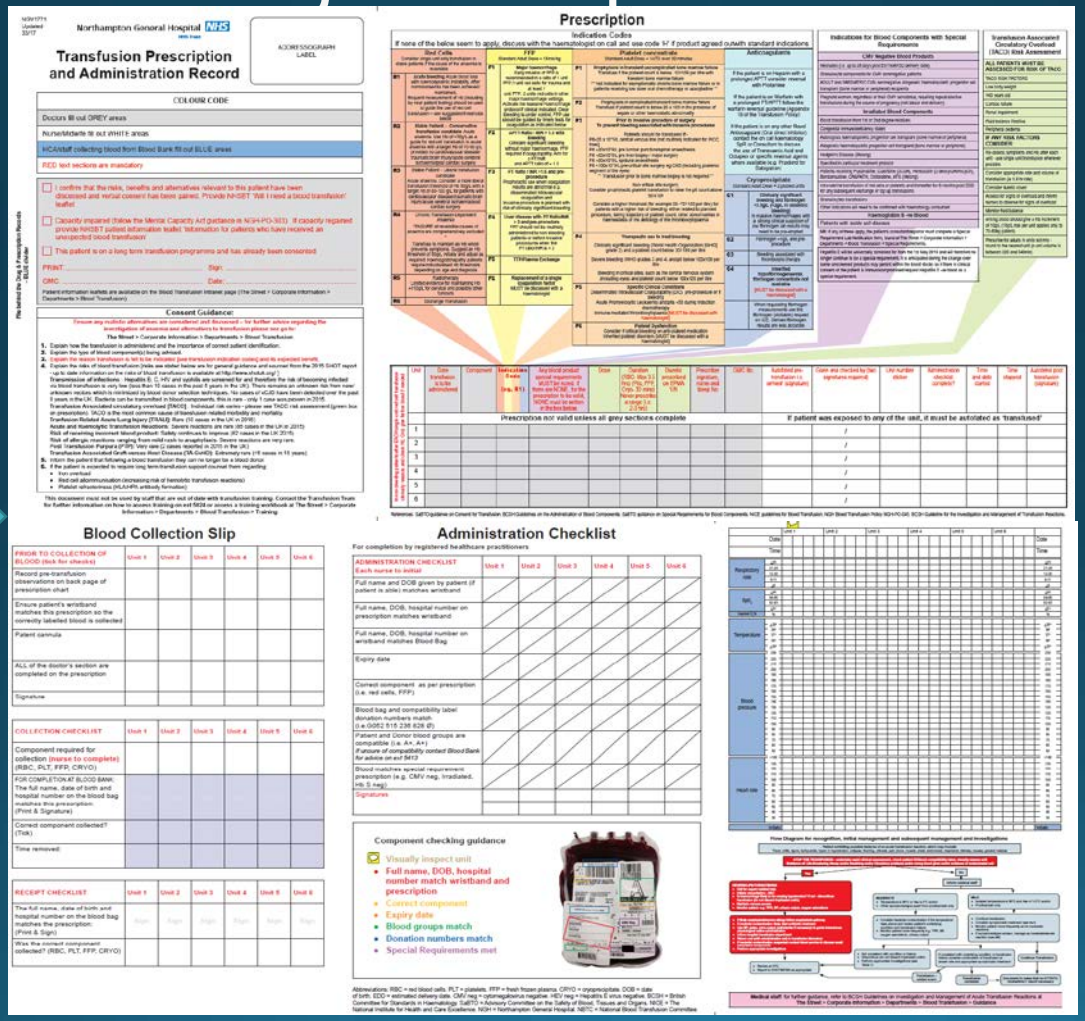
- Ensure the key information relevant to the clinician is clearly available at the time it is needed.

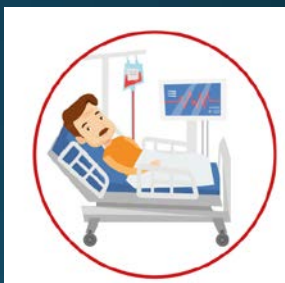
- Ensure the application of this information by redefining what a valid blood prescription must contain:
  - Consent and consideration of transfusion alternatives
  - **Indication**
  - **Component type**
  - TACO risk assessment to inform **volume and rate**
  - Special Requirements
  - Date to be administered
  - Review after each unit



- Nurses are **not** authorised to put up a blood product that has not got a fully completed prescription.
- The Lab has challenge algorithms based around the NBTC indication codes.

Integrate the relevant guidance into the process of prescribing and administrating blood products.





NGV1771
Updated
03/17

Northampton General Hospital NHS
NHS Trust

Transfusion Prescription and Administration Record

ADDRESSOGRAPH LABEL

COLOUR CODE
Doctors fill out GREY areas
Nurse/Midwife fill out WHITE areas
HCA/staff collecting blood from Blood Bank fill out BLUE areas
RED text sections are mandatory

☐ I confirm that the risks, benefits and alternatives relevant to this patient have been discussed and verbal consent has been gained. Provide NHSBT 'Will I need a blood transfusion' leaflet

☐ Capacity impaired (follow the Mental Capacity Act guidance in NGH-PO-303). If capacity regained provide NHSBT patient information leaflet 'Information for patients who have received an unexpected blood transfusion'

☐ This patient is on a long term transfusion programme and has already been consented

PRINT: ..... Sign: .....

GMC: ..... Date: .....

Patient information leaflets are available on the Blood Transfusion Intranet page (The Street > Corporate Information > Departments > Blood Transfusion)

File behind the Drug & Prescription Records – BLUE divider

Consent Guidance:

Ensure any realistic alternatives are considered and discussed – for further advice regarding the investigation of anaemia and alternatives to transfusion please see go to:

The Street > Corporate Information > Departments > Blood Transfusion

1. Explain how the transfusion is administered and the importance of correct patient identification.
2. Explain the type of blood component(s) being advised.
3. Explain the reason transfusion is felt to be indicated [see transfusion indication codes] and its expected benefit.
4. Explain the risks of blood transfusion [risks are stated below are for general guidance and sourced from the 2015 SHOT report - up to date information on the risks of blood transfusion is available at http://www.shotuk.org/]
   Transmission of infections : Hepatitis B, C, HIV and syphilis are screened for and therefore the risk of becoming infected via blood transfusion is very low (less than 10 cases in the past 5 years in the UK). There remains an unknown risk from new/ unknown vectors which is minimized by blood donor selection techniques. No cases of vCJD have been detected over the past 8 years in the UK. Bacteria can be transmitted in blood components, this is rare - only 1 case was proven in 2015.
   Transfusion Associated circulatory overload [TACO] : Individual risk varies - please see TACO risk assessment (green box on prescription). TACO is the most common cause of transfusion related morbidity and mortality.
   Tranfusion Related Acute Lung Injury [TRALI]: Rare (10 cases in the UK in 2015)
   Acute and Haemolytic Transfusion Reactions: Severe reactions are rare (88 cases in the UK in 2015)
   Risk of receiving incorrect blood product: Safety continues to improve (82 cases in the UK 2015)
   Risk of allergic reactions ranging from mild rash to anaphylaxis: Severe reactions are very rare.
   Post Transfusion Purpura (PTP): Very rare (2 cases reported in 2015 in the UK)
   Transfusion Associated Graft-versus-Host Disease (TA-GvHD): Extremely rare (<5 cases in 15 years)
5. Inform the patient that following a blood transfusion they can no longer be a blood donor.
6. If the patient is expected to require long term transfusion support counsel them regarding:
   - Iron overload
   - Red cell alloimmunisation (increasing risk of hemolytic transfusion reactions)
   - Platelet refractoriness (HLA/HPA antibody formation)

This document must not be used by staff that are out of date with transfusion training. Contact the Transfusion Team for further information on how to access training on ext 5024 or access a training workbook at The Street > Corporate Information > Departments > Blood Transfusion > Training

Prescription

Indication Codes

If none of the below seem to apply, discuss with the haematologist on call and use code 'H' if product agreed outwith standard indications

Red Cells

Consider single unit only transfusion in stable patients if the cause of the anaemia is reversible

R1	**Acute bleeding** Acute blood loss with haemodynamic instability. After normovolaemia has been achieved/ maintained, frequent measurement of Hb (including by near patient testing) should be used to guide the use of red cell transfusion – see suggested thresholds below
R2	**Stable Patient – Conservative transfusion candidate** Acute anaemia. Use Hb of <70g/L as a guide for red cell transfusion in acute anaemia with a target Hb of 70-90 g/L provided no cardiovascular disease/ traumatic brain injury/acute cerebral ischaemia/post cardiac surgery
R3	Stable Patient – Liberal transfusion candidate Acute anaemia. Consider a more liberal transfusion threshold of Hb 80g/L with a target Hb of 80-100 g/L for patients with cardiovascular disease/traumatic brain injury/acute cerebral ischaemia/post cardiac surgery
R4	Chronic Transfusion Dependent Anaemia "ENSURE all reversible causes of anaemia are comprehensively excluded " Transfuse to maintain an Hb which prevents symptoms. Suggest an Hb threshold of 80g/L initially and adjust as required. Haemoglobinopathy patients require individualised Hb thresholds depending on age and diagnosis
R5	Radiotherapy Limited evidence for maintaining Hb >110g/L for cervical and possibly other tumours
R6	Exchange Transfusion

FFP

Standard Adult Dose = 15mls/kg

F1	**Major haemorrhage** Early infusion of FFP is recommended in a ratio of 1 unit FFP:1 unit red cells for trauma and at least 1 unit FFP: 2 units red cells in other major haemorrhage settings. Activate the Massive Haemorrhage protocol if clinical indicated. Once bleeding is under control, FFP use should be guided by timely tests for coagulation as indicated below
F2	**APTT Ratio / INR > 1.5 with bleeding** Clinically significant bleeding without major haemorrhage. FFP required if coagulopathy. Aim for a PT/INR and APTT ratio of < 1.5
F3	**PT Ratio / INR >1.5 and pre-procedure** Prophylactic use when coagulation results are abnormal e.g. disseminated intravascular coagulation and invasive procedure is planned with risk of clinically significant bleeding
F4	**Liver disease with PT Ratio/INR > 2 and pre-procedure** FFP should not be routinely administered to non-bleeding patients or before invasive procedures when the PT ratio/INR is < 2
F5	**TTP/Plasma Exchange**
F6	**Replacement of a single coagulation factor** MUST be discussed with a haematologist

Platelet concentrate

Standard Adult Dose = 1ATD over 30 minutes

P1	**Prophylaxis in transient uncomplicated bone marrow failure** Transfuse if the platelet count is below 10×109 per litre with transient bone marrow failure ** Not indicated for asymptomatic chronic bone marrow failure or in patients receiving low dose oral chemotherapy or azacytadine **
P2	Prophylaxis in complicated transient bone marrow failure Transfuse if platelet count is below 20 x 109 in the presence of sepsis or other haemostatic abnormality
P3	**Prior to invasive procedure of surgery** **To prevent bleeding associated with invasive procedures** Platelets should be transfused if:- Plt<20 x 10^9/L central venous line [not routinely indicated for PICC lines] Plt <40x10^9/L pre lumbar puncture/spinal anaesthesia Plt <50x10^9/L pre liver biopsy / major surgery Plt <80x10^9/L epidural anaesthesia Plt <100x10^9/L pre-critical site surgery eg CNS (including posterior segment of the eyes) ** Transfusion prior to bone marrow biopsy is not required ** Non-critical site surgery: Consider prophylactic platelet transfusion to raise the plt count above 50 x109 Consider a higher threshold (for example 50–75×109 per litre) for patients with a higher risk of bleeding either related to planned procedure, falling trajectory of platelet count, other abnormalities in haemostasis or the aetiology of the thrombocytopaenia
P4	**Therapeutic use to treat bleeding** Clinically significant bleeding (World Health Organization [WHO] grade 2) and a platelet count below 30×109 per litre Severe bleeding (WHO grades 3 and 4) and plt below 100x109 per litre Bleeding in critical sites, such as the central nervous system (including eyes) and platelet count below 100x109 per litre
P5	**Specific Clinical Conditions** Disseminated Intravascular Coagulopathy (DIC) pre-procedure or if bleeding Acute Promyelocytic Leukaemia and plts <50 during induction chemotherapy Immune mediated thrombocytopaenia [MUST be discussed with haematologist]
P6	**Platelet Dysfunction** Consider if critical bleeding on anti-platelet medication Inherited platelet disorders [MUST be discussed with a haematologist]

Anticoagulants

If the patient is on Heparin with a prolonged APTT consider reversal with Protamine

If the patient is on Warfarin with a prolonged PT/APTT follow the warfarin reversal guideline (Appendix 18 of the Transfusion Policy)

If the patient is on any other Novel Anticoagulant (Oral direct inhibitor) contact the on call haematology SpR or Consultant to discuss the use of Tranexamic Acid and Octaplex or specific reversal agents where available (e.g. Praxbind for Dabigatran)

Cryoprecipitate

Standard Adult Dose = 2 pooled units

C1	**Clinically significant bleeding and fibrinogen <1.5g/L (<2g/L in obstetric bleeding)** In massive haemorrhages with a strong clinical suspicion of low fibrinogen lab results may need to be pre-empted
C2	Fibrinogen <1g/L and pre-procedure
C3	Bleeding associated with thrombolytic therapy
C4	**Inherited hypofibrinogenaemia, fibrinogen concentrate not available** [MUST be discussed with a haematologist]
	When requesting fibrinogen measurements use the fibrinogen (clottable) request on ICE. Derived fibrinogen results are less accurate

Indications for Blood Components with Special Requirements

CMV Negative Blood Products

- Neonates (i.e. up to 28 days post ESTIMATED delivery date)
- Granulocyte components for CMV seronegative patients
- ADULT and PAEDIATRIC CMV seronegative allogeneic haematopoietic progenitor cell transplant (bone marrow or peripheral) recipients
- Pregnant women, regardless of their CMV serostatus, requiring repeat elective transfusions during the course of pregnancy (not labour and delivery)

Irradiated Blood Components

- Blood transfusion from 1st or 2nd degree relatives
- Congenital immunodeficiency states
- Autologous haematopoietic progenitor cell transplant (bone marrow or peripheral)
- Allogeneic haematopoietic progenitor cell transplant (bone marrow or peripheral)
- Hodgkin's Disease (lifelong)
- Specified in particular treatment protocol
- Patients receiving Fludarabine, Cladribine (2CDA), Pentostatin (2 deoxycoformycin), Bendamustine, CAMPATH, Clofarabine, ATG (lifelong)
- Intra-uterine transfusion of red cells or platelets and thereafter for 6 months post EDD for any subsequent exchange or top up transfusions
- Granulocytes transfusions
- Other indications will need to be confirmed with haematology consultant

Haemoglobin S -ve Blood

- Patients with sickle cell disease

NB: If any of these apply, the patient's consultant/registrar must complete a Special Requirement Lab Notification form, found at The Street > Corporate Information > Departments > Blood Transfusion > Special Requirements.

Hepatitis E will be universally screened for from the 1st May 2016 and will therefore no longer continue to be a special requirement. It is anticipated during the change over some unscreened products may persist within the blood stocks so if there is clinical concern or the patient is immunocompromised request Hepatitis E -ve blood as a special requirement.

Transfusion Associated Circulatory Overload (TACO) Risk Assessment

ALL PATIENTS MUST BE ASSESSED FOR RISK OF TACO

TACO RISK FACTORS

- Low body weight
- >60 years old
- Cardiac failure
- Renal impairment
- Fluid balance Positive
- Peripheral oedema

IF ANY RISK FACTORS CONSIDER:

- Re-assess symptoms and Hb after each unit - use single unit transfusion wherever possible
- Consider appropriate rate and volume of transfusion (ie 3.5 hr rate)
- Consider diuretic cover
- Assess for signs of overload and inform nurses to observe for signs of overload
- Monitor fluid balance

4ml/kg blood should give a Hb increment of 10g/L (10g/L rise per unit applies only to 70-80kg patient)

Prescribe for adults in units not mls - round to the nearest unit (a unit volume is between 220 and 340mls)

In non-bleeding patients after EACH single unit/not cost transfusion clinically reassess and check Hb. Only give further blood if needed.

	Unit	Date transfusion is to be administered	Component	Indication Code (eg. R1)	Any blood product special requirements MUST be noted. If there are NONE, for the prescription to be valid, NONE must be written in the box below.	Dose	Duration (RBC- Max 3.5 hrs) (Plts, FFP, Cryo- 30 mins) Never prescribe a range (i.e. 2-3 hrs)	Diuretic prescribed on EPMA Y/N	Prescriber signature, name and bleep No	GMC No.	Autofated pre-transfusion i.e. 'arrived' (signature)	Given and checked by (two signatures required)	Unit number sticker	Administration checklist complete?	Time and date started	Time stopped	Autofated post transfusion (signature)
	Prescription not valid unless all grey sections complete										If patient was exposed to any of the unit, it must be autofated as 'transfused'						
1												/					
2												/					
3												/					
4												/					
5												/					
6												/					

References: SaBTO guidance on Consent for Transfusion. BCSH Guidelines on the Administration of Blood Components. SaBTO guidance on Special Requirements for Blood Components. NICE guidelines for Blood Transfusion. NGH Blood Transfusion Policy NGH-PO-045. BCSH Guideline for the Investigation and Management of Transfusion Reactions.

Blood Collection Slip

PRIOR TO COLLECTION OF BLOOD (tick for checks)	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Record pre-transfusion observations on back page of prescription chart						
Ensure patient's wristband matches this prescription so the correctly labelled blood is collected						
Patent cannula						
ALL of the doctor's section are completed on the prescription						
Signature						

COLLECTION CHECKLIST	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Component required for collection (nurse to complete) (RBC, PLT, FFP, CRYO)						
FOR COMPLETION AT BLOOD BANK: The full name, date of birth and hospital number on the blood bag matches this prescription: (Print & Signature)	Sign	Sign	Sign	Sign	Sign	Sign
Correct component collected? (Tick)						
Time removed:						

RECEIPT CHECKLIST	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
The full name, date of birth and hospital number on the blood bag matches the prescription: (Print & Sign)	Sign	Sign	Sign	Sign	Sign	Sign
Was the correct component collected? (RBC, PLT, FFP, CRYO)						

Administration Checklist

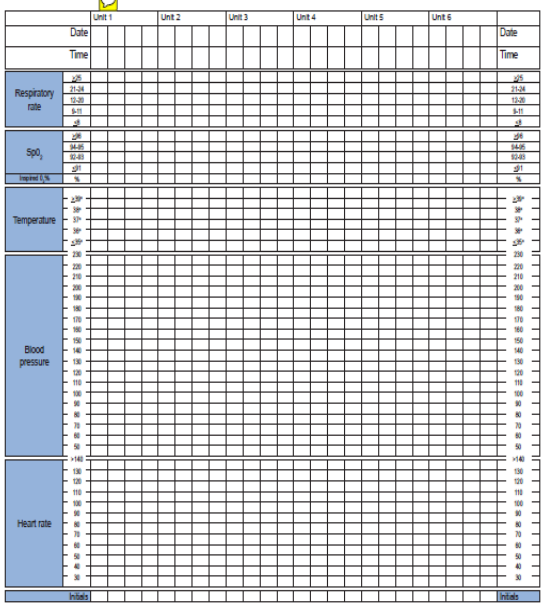
For completion by registered healthcare practitioners

ADMINISTRATION CHECKLIST Each nurse to initial	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Full name and DOB given by patient (if patient is able) matches wristband						
Full name, DOB, hospital number on prescription matches wristband						
Full name, DOB, hospital number on wristband matches Blood Bag						
Expiry date						
Correct component as per prescription (i.e. red cells, FFP)						
Blood bag and compatibility label donation numbers match (i.e.G052 515 236 828 Ø)						
Patient and Donor blood groups are compatible (i.e. A+, A+) *If unsure of compatibility contact Blood Bank for advice on ext 5413*						
Blood matches special requirement prescription (e.g. CMV neg, Irradiated, Hb S neg)						
Signatures						

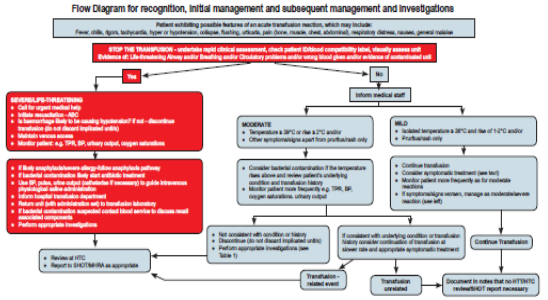
Component checking guidance

- Visually inspect unit
- Full name, DOB, hospital number match wristband and prescription
- Correct component
- Expiry date
- Blood groups match
- Donation numbers match
- Special Requirements met

Abbreviations: RBC = red blood cells. PLT = platelets. FFP = fresh frozen plasma. CRYO = cryoprecipitate. DOB = date of birth. EDD = estimated delivery date. CMV neg = cytomegalovirus negative. HEV neg = Hepatitis E virus negative. BCSH = British Committee for Standards in Haematology. SaBTO = Advisory Committee on the Safety of Blood, Tissues and Organs. NICE = The National Institute for Health and Care Excellence. NGH = Northampton General Hospital. NBTC = National Blood Transfusion Committee.



Flow Diagram for recognition, initial management and subsequent management and investigations



Self explanatory to use

NGV1771
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Transfusion Prescription and Administration Record

ADDRESSOGRAPH LABEL

COLOUR CODE
Doctors fill out GREY areas
Nurse/Midwife fill out WHITE areas
HCA/staff collecting blood from Blood Bank fill out BLUE areas
RED text sections are mandatory

Consent

- Application of SABTO guidance and SHOT reports data on risk in a quick to use tick box format.
- Highlights the need to give out NHSBT information leaflets.
- **Highlights the location on hospitals intranet of anaemia investigation algorithms, anticoagulant reversal and alternatives to transfusion such as IV iron.**

☐ I confirm that the risks, benefits and alternatives relevant to this patient have been discussed and verbal consent has been gained. Provide NHSBT 'Will I need a blood transfusion' leaflet

☐ Capacity impaired (follow the Mental Capacity Act guidance in NGH-PO-303). If capacity regained provide NHSBT patient information leaflet 'Information for patients who have received an unexpected blood transfusion'

☐ This patient is on a long term transfusion programme and has already been consented

PRINT: ..... Sign: .....

GMC: ..... Date: .....

Patient information leaflets are available on the Blood Transfusion Intranet page (The Street > Corporate Information > Departments > Blood Transfusion)

Consent Guidance:

Ensure any realistic alternatives are considered and discussed – for further advice regarding the investigation of anaemia and alternatives to transfusion please see go to:

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2. Explain the type of blood component(s) being advised.
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4. Explain the risks of blood transfusion [risks are stated below are for general guidance and sourced from the 2015 SHOT report - up to date information on the risks of blood transfusion is available at http://www.shotuk.org/]
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   Transfusion Associated circulatory overload [TACO] : Individual risk varies - please see TACO risk assessment (green box on prescription). TACO is the most common cause of transfusion related morbidity and mortality.
   Tranfusion Related Acute Lung Injury [TRALI]: Rare (10 cases in the UK in 2015)
   Acute and Haemolytic Transfusion Reactions: Severe reactions are rare (86 cases in the UK in 2015)
   Risk of receiving incorrect blood product: Safety continues to improve (82 cases in the UK 2015)
   Risk of allergic reactions ranging from mild rash to anaphylaxis: Severe reactions are very rare.
   Post Transfusion Purpura (PTP): Very rare (2 cases reported in 2015 in the UK)
   Transfusion Associated Graft-versus-Host Disease (TA-GvHD): Extremely rare (<5 cases in 15 years)
5. Inform the patient that following a blood transfusion they can no longer be a blood donor.
6. If the patient is expected to require long term transfusion support counsel them regarding:
   - Iron overload
   - Red cell alloimmunisation (increasing risk of hemolytic transfusion reactions)
   - Platelet refractoriness (HLA/HPA antibody formation)

Doctors Prescription

In non-bleeding patients after EACH single-unit red cell transfusion, clinically reassess and check Hb. Only give further blood if needed.

Unit	Date transfusion is to be administered	Component	**Indication Code (eg. R1)**	Any blood product special requirements MUST be noted. If there are NONE, for the prescription to be valid, NONE must be written in the box below.	Dose	Duration (RBC- Max 3.5 hrs) (Plts, FFP, Cryo- 30 mins) Never prescribe a range (i.e. 2-3 hrs)	Diuretic prescribed on EPMA Y/N	Prescriber signature, name and bleep No	GMC No.
	Prescription not valid unless all grey sections complete								
1									
2									
3									
4									
5									
6									

Prescription

Indication Codes

If none of the below seem to apply, discuss with the haematologist on call and use code 'H' if product agreed outwith standard indications

Red Cells

Consider single unit only transfusion in stable patients if the cause of the anaemia is reversible

R1	**Acute bleeding** Acute blood loss with haemodynamic instability. After normovolaemia has been achieved/ maintained, frequent measurement of Hb (including by near patient testing) should be used to guide the use of red cell transfusion – see suggested thresholds below
R2	**Stable Patient – Conservative transfusion candidate** Acute anaemia. Use Hb of <70g/L as a guide for red cell transfusion in acute anaemia with a target Hb of 70-90 g/L provided no cardiovascular disease/ traumatic brain injury/acute cerebral ischaemia/post cardiac surgery
R3	Stable Patient – Liberal transfusion candidate Acute anaemia. Consider a more liberal transfusion threshold of Hb 80g/L with a target Hb of 80-100 g/L for patients with cardiovascular disease/traumatic brain injury/acute cerebral ischaemia/post cardiac surgery
R4	Chronic Transfusion Dependent Anaemia *ENSURE all reversible causes of anaemia are comprehensively excluded * Transfuse to maintain an Hb which prevents symptoms. Suggest an Hb threshold of 80g/L initially and adjust as required. Haemoglobinopathy patients require individualised Hb thresholds depending on age and diagnosis
R5	Radiotherapy Limited evidence for maintaining Hb >110g/L for cervical and possibly other tumours
R6	Exchange Transfusion

FFP

Standard Adult Dose = 15mls/kg

F1	**Major haemorrhage** Early infusion of FFP is recommended in a ratio of 1 unit FFP:1 unit red cells for trauma and at least 1 unit FFP: 2 units red cells in other major haemorrhage settings. Activate the Massive Haemorrhage protocol if clinical indicated. Once bleeding is under control, FFP use should be guided by timely tests for coagulation as indicated below
F2	**APTT Ratio / INR > 1.5 with bleeding** Clinically significant bleeding without major haemorrhage. FFP required if coagulopathy. Aim for a PT/INR and APTT ratio of < 1.5
F3	**PT Ratio / INR >1.5 and pre-procedure** Prophylactic use when coagulation results are abnormal e.g. disseminated intravascular coagulation and invasive procedure is planned with risk of clinically significant bleeding
F4	**Liver disease with PT Ratio/INR > 2 and pre-procedure** FFP should not be routinely administered to non-bleeding patients or before invasive procedures when the PT ratio/INR is < 2
F5	**TTP/Plasma Exchange**
F6	**Replacement of a single coagulation factor** MUST be discussed with a haematologist

Platelet concentrate

Standard Adult Dose = 1ATD over 30 minutes

P1	**Prophylaxis in transient uncomplicated bone marrow failure** Transfuse if the platelet count is below 10×109 per litre with transient bone marrow failure ** Not indicated for asymptomatic chronic bone marrow failure or in patients receiving low dose oral chemotherapy or azacytadine **
P2	Prophylaxis in complicated transient bone marrow failure Transfuse if platelet count is below 20 x 109 in the presence of sepsis or other haemostatic abnormality
P3	**Prior to invasive procedure of surgery** **To prevent bleeding associated with invasive procedures** Platelets should be transfused if:- Plt<20 x 10*9/L central venous line [not routinely indicated for PICC lines] Plt <40x10*9/L pre lumbar puncture/spinal anaesthesia Plt <50x10*9/L pre liver biopsy / major surgery Plt <80x10*9/L epidural anaesthesia Plt <100x10*9/L pre-critical site surgery eg CNS (including posterior segment of the eyes) ** Transfusion prior to bone marrow biopsy is not required ** Non-critical site surgery: Consider prophylactic platelet transfusion to raise the plt count above 50 x109 Consider a higher threshold (for example 50–75×109 per litre) for patients with a higher risk of bleeding either related to planned procedure, falling trajectory of platelet count, other abnormalities in haemostasis or the aetiology of the thrombocytopaenia
P4	**Therapeutic use to treat bleeding** Clinically significant bleeding (World Health Organization [WHO] grade 2) and a platelet count below 30×109 per litre Severe bleeding (WHO grades 3 and 4) and plt below 100x109 per litre Bleeding in critical sites, such as the central nervous system (including eyes) and platelet count below 100x109 per litre
P5	**Specific Clinical Conditions** Disseminated Intravascular Coagulopathy (DIC) pre-procedure or if bleeding Acute Promyelocytic Leukaemia and plts <50 during induction chemotherapy Immune mediated thrombocytopaenia [MUST be discussed with haematologist]
P6	**Platelet Dysfunction** Consider if critical bleeding on anti-platelet medication Inherited platelet disorders [MUST be discussed with a haematologist]

Anticoagulants

If the patient is on Heparin with a prolonged APTT consider reversal with Protamine

If the patient is on Warfarin with a prolonged PT/APTT follow the warfarin reversal guideline (Appendix 18 of the Transfusion Policy)

If the patient is on any other Novel Anticoagulant (Oral direct inhibitor) contact the on call haematology SpR or Consultant to discuss the use of Tranexamic Acid and Octaplex or specific reversal agents where available (e.g. Praxbind for Dabigatran)

Cryoprecipitate

Standard Adult Dose = 2 pooled units

C1	**Clinically significant bleeding and fibrinogen <1.5g/L (<2g/L in obstetric bleeding)** In massive haemorrhages with a strong clinical suspicion of low fibrinogen lab results may need to be pre-empted
C2	Fibrinogen <1g/L and pre-procedure
C3	Bleeding associated with thrombolytic therapy
C4	**Inherited hypofibrinogenaemia, fibrinogen concentrate not available** [MUST be discussed with a haematologist]
	When requesting fibrinogen measurements use the fibrinogen (clottable) request on ICE. Derived fibrinogen results are less accurate

Indications for Blood Components with Special Requirements

CMV Negative Blood Products
Neonates (i.e. up to 28 days post ESTIMATED delivery date)
Granulocyte components for CMV seronegative patients
ADULT and PAEDIATRIC CMV seronegative allogeneic haematopoietic progenitor cell transplant (bone marrow or peripheral) recipients
Pregnant women, regardless of their CMV serostatus, requiring repeat elective transfusions during the course of pregnancy (not labour and delivery)
Irradiated Blood Components
Blood transfusion from 1st or 2nd degree relatives
Congenital immunodeficiency states
Autologous haematopoietic progenitor cell transplant (bone marrow or peripheral)
Allogeneic haematopoietic progenitor cell transplant (bone marrow or peripheral)
Hodgkin's Disease (lifelong)
Specified in particular treatment protocol
Patients receiving Fludarabine, Cladribine (2CDA), Pentostatin (2 deocycoformcycin), Bendamustine, CAMPATH, Clofarabine, ATG (lifelong)
Intra-uterine transfusion of red cells or platelets and thereafter for 6 months post EDD for any subsequent exchange or top up transfusions
Granulocytes transfusions
Other indications will need to be confirmed with haematology consultant
Haemoglobin S -ve Blood
Patients with sickle cell disease

NB: If any of these apply, the patient's consultant/registrar must complete a Special Requirement Lab Notification form, found at The Street > Corporate Information > Departments > Blood Transfusion > Special Requirements.

Hepatitis E will be universally screened for from the 1st May 2016 and will therefore no longer continue to be a special requirement. It is anticipated during the change over some unscreened products may persist within the blood stocks so if there is clinical concern or the patient is immunocompromised request Hepatitis E -ve blood as a special requirement.

Transfusion Associated Circulatory Overload (TACO) Risk Assessment

ALL PATIENTS MUST BE ASSESSED FOR RISK OF TACO
TACO RISK FACTORS
Low body weight
>60 years old
Cardiac failure
Renal impairment
Fluid balance Positive
Peripheral oedema
IF ANY RISK FACTORS CONSIDER:
Re-assess symptoms and Hb after each unit - use single unit transfusion wherever possible
Consider appropriate rate and volume of transfusion (ie 3.5 hr rate)
Consider duretic cover
Assess for signs of overload and inform nurses to observe for signs of overload
Monitor fluid balance
4ml/kg blood should give a Hb increment of 10g/L (10g/L rise per unit applies only to 70-80kg patient)
Prescribe for adults in units not mls - round to the nearest unit (a unit volume is between 220 and 340mls)

In non-bleeding patients after EACH single-unit red cell transfusion, clinically reassess and check Hb. Only give further blood if needed.

	Unit	Date transfusion is to be administered	Component	**Indication Code (eg. R1)**	Any blood product special requirements MUST be noted. If there are NONE, for the prescription to be valid, NONE must be written in the box below.	Dose	Duration (RBC- Max 3.5 hrs) (Plts, FFP, Cryo- 30 mins) Never prescribe a range (i.e. 2-3 hrs)	Diuretic prescribed on EPMA Y/N	Prescriber signature, name and bleep No	GMC No.
	Prescription not valid unless all grey sections complete									
1										
2										
3										
4										
5										
6										

Nursing Documentation

Autofated pre-transfusion i.e. 'arrived' (signature)	Given and checked by (two signatures required)	Unit number sticker	Administration checklist complete?	Time and date started	Time stopped	Autofated post transfusion (signature)
If patient was exposed to any of the unit, it must be autofated as 'transfused'						
	/					
	/					
	/					
	/					
	/					
	/					

Checklists!

Pre blood collection check list

Blood Collection Slip

PRIOR TO COLLECTION OF BLOOD (tick for checks)	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Record pre-transfusion observations on back page of prescription chart						
Ensure patient's wristband matches this prescription so the correctly labelled blood is collected						
Patent cannula						
ALL of the doctor's section are completed on the prescription						
Signature						

Collection check List

COLLECTION CHECKLIST	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Component required for collection (nurse to complete) (RBC, PLT, FFP, CRYO)						
FOR COMPLETION AT BLOOD BANK: The full name, date of birth and hospital number on the blood bag matches this prescription: (Print & Signature)	Sign	Sign	Sign	Sign	Sign	Sign
Correct component collected? (Tick)						
Time removed:						

Receipt of Blood checklist

RECEIPT CHECKLIST	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
The full name, date of birth and hospital number on the blood bag matches the prescription: (Print & Sign)	Sign	Sign	Sign	Sign	Sign	Sign
Was the correct component collected? (RBC, PLT, FFP, CRYO)						

Administration of blood checklist

Administration Checklist

For completion by registered healthcare practitioners

ADMINISTRATION CHECKLIST Each nurse to initial	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Full name and DOB given by patient (if patient is able) matches wristband						
Full name, DOB, hospital number on prescription matches wristband						
Full name, DOB, hospital number on wristband matches Blood Bag						
Expiry date						
Correct component as per prescription (i.e. red cells, FFP)						
Blood bag and compatibility label donation numbers match (i.e.G052 515 236 828 Ø)						
Patient and Donor blood groups are compatible (i.e. A+, A+) *If unsure of compatibility contact Blood Bank for advice on ext 5413*						
Blood matches special requirement prescription (e.g. CMV neg, Irradiated, Hb S neg)						
Signatures						

Component checking guidance

Visually inspect unit

Full name, DOB, hospital number match wristband and prescription

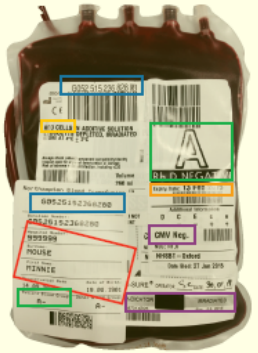
Correct component

Expiry date

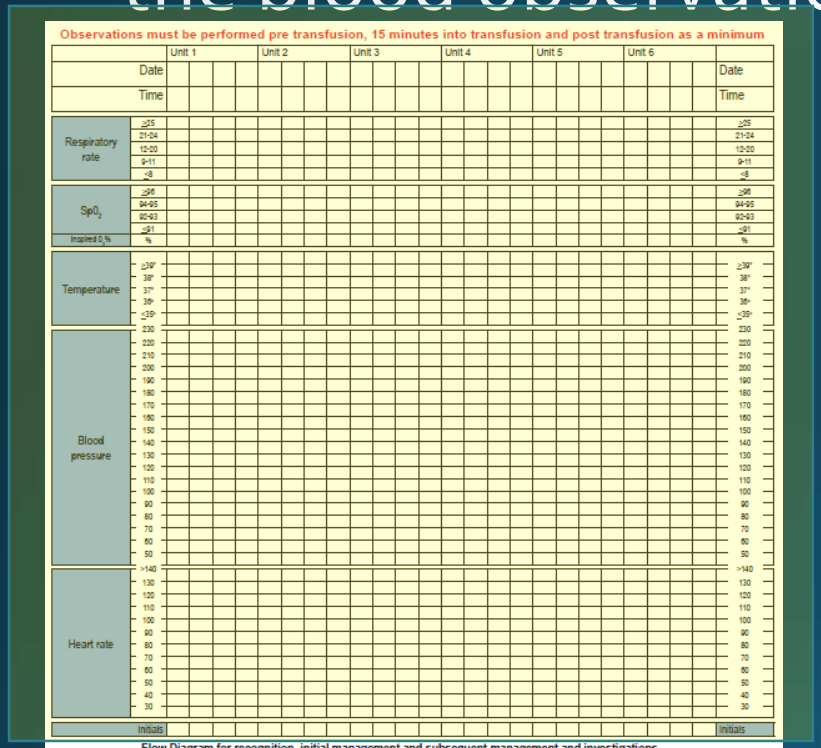
Blood groups match

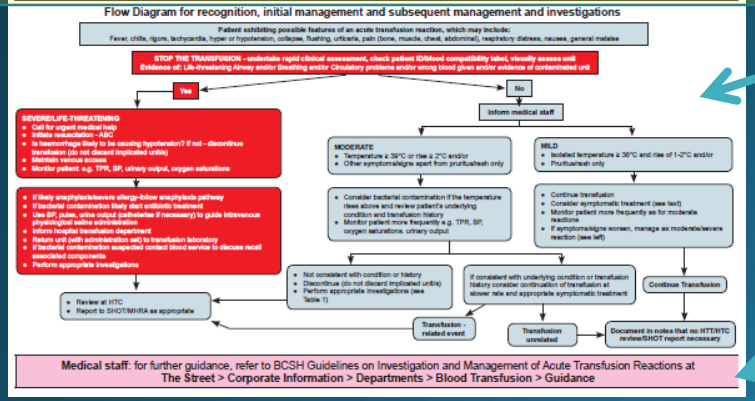
Donation numbers match

Special Requirements met



Transfusion reaction guidance integrated into the blood observation chart



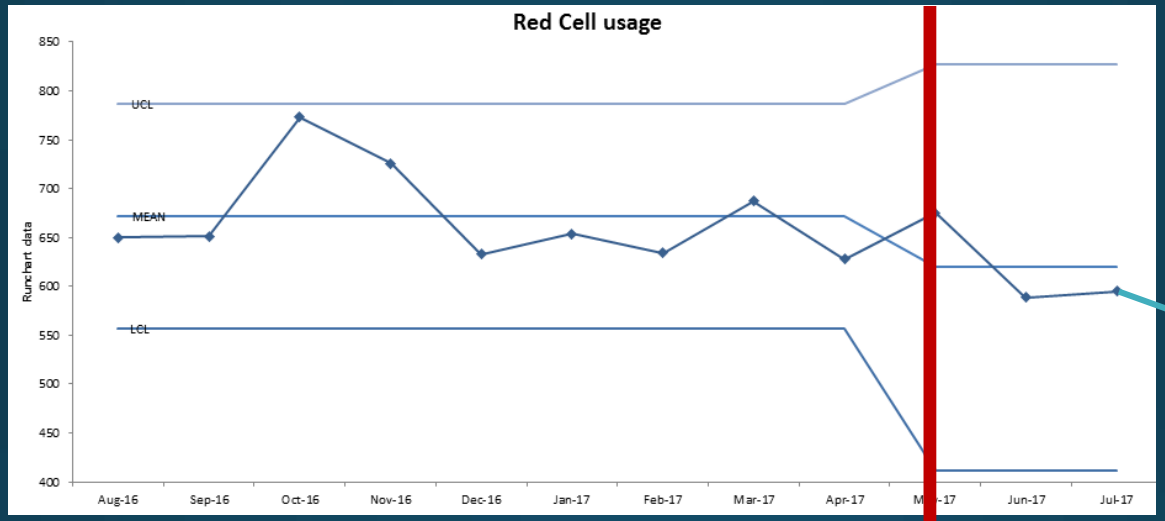


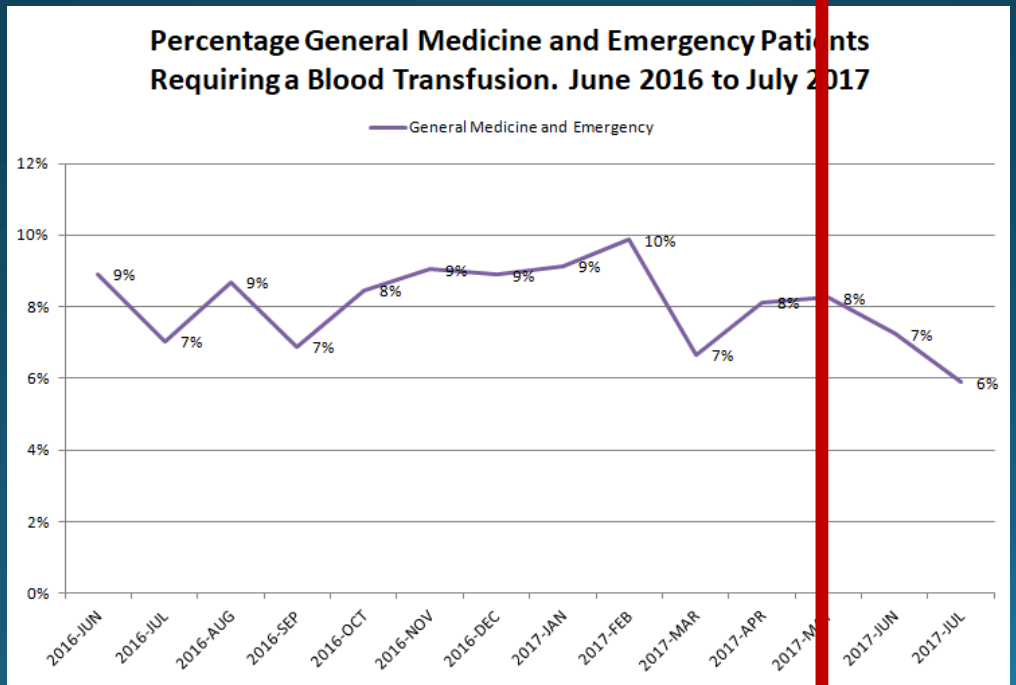
Aids recognition and provides advice on when and how to report the hospital transfusion team and thereby to SHOT/MHRA.

BSH algorithm

Link to BSH guideline

Current trust red cell use



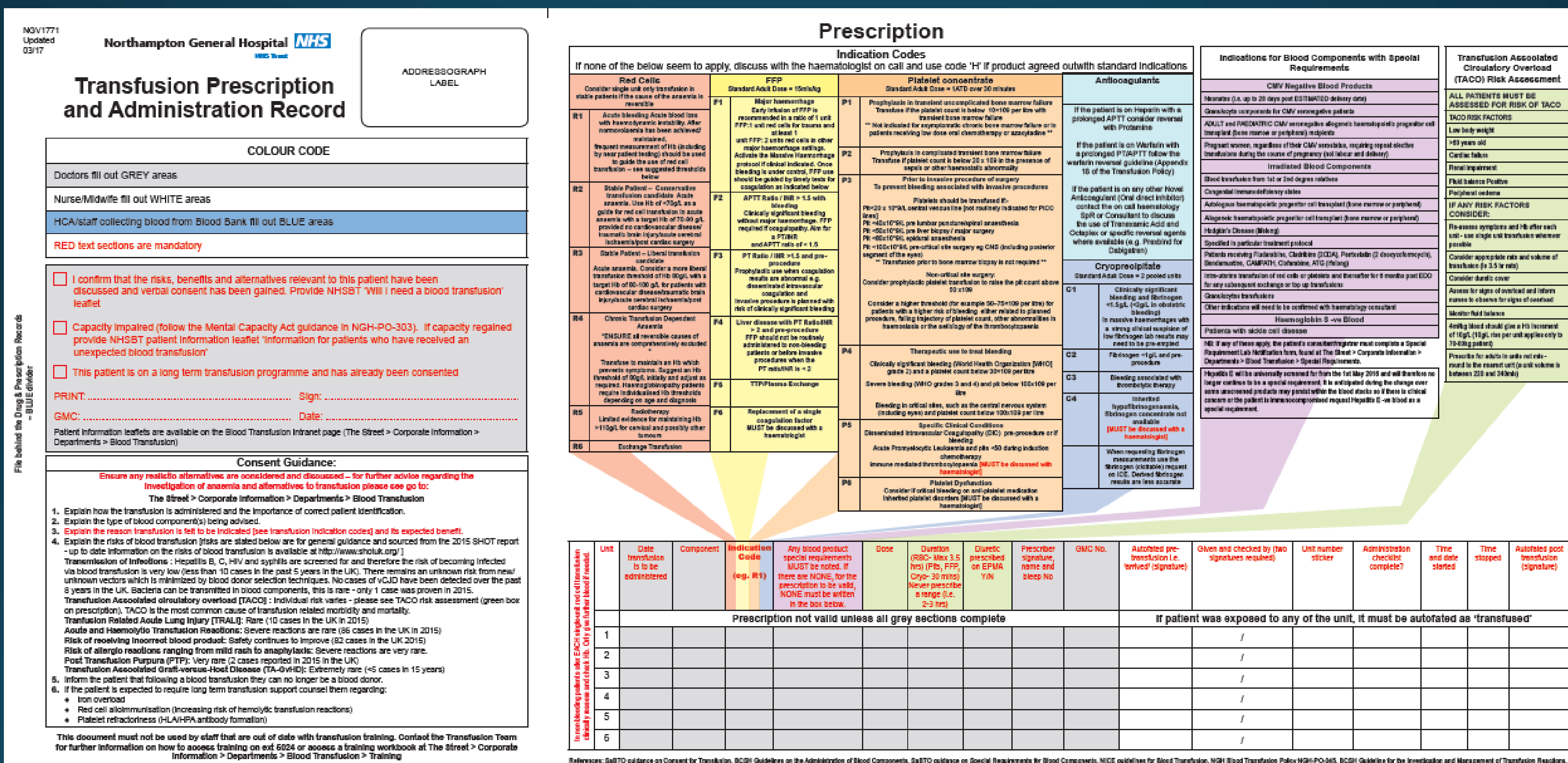


Lowest monthly RBC use on record at 559 in August 2017.

Regular Document reviews

- To ensure the document stays relevant and up to date it is set with 6 monthly reviews, a pattern established by the initial pilots.
- This approach allows the document to effectively act as a messaging board for new developments in transfusion.

Thank you.



NGV1771
Updated
03/17
Northampton General Hospital NHS
NHS Trust
Transfusion Prescription and Administration Record
ADDRESSOGRAPH LABEL
COLOUR CODE
Doctors fill out GREY areas
Nurse/Midwife fill out WHITE areas
HCA/staff collecting blood from Blood Bank fill out BLUE areas
RED text sections are mandatory
I confirm that the risks, benefits and alternatives relevant to this patient have been discussed and verbal consent has been gained. Provide NHSBT 'Will I need a blood transfusion' leaflet
Capacity impaired (follow the Mental Capacity Act guidance in NGH-PO-303). If capacity regained provide NHSBT patient information leaflet 'Information for patients who have received an unexpected blood transfusion'
This patient is on a long term transfusion programme and has already been consented
PRINT: .... Sign: ....
GMC: .... Date: ....
Patient information leaflets are available on the Blood Transfusion Intranet page (The Street > Corporate Information > Departments > Blood Transfusion)
File behind the Drug & Prescription Records – BLUE divider
Consent Guidance:
Ensure any realistic alternatives are considered and discussed – for further advice regarding the investigation of anaemia and alternatives to transfusion please see go to:
The Street > Corporate Information > Departments > Blood Transfusion
1. Explain how the transfusion is administered and the importance of correct patient identification.
2. Explain the type of blood component(s) being advised.
3. Explain the reason transfusion is felt to be indicated [see transfusion indication codes] and its expected benefit.
4. Explain the risks of blood transfusion [risks are stated below are for general guidance and sourced from the 2015 SHOT report - up to date information on the risks of blood transfusion is available at http://www.shotuk.org/]
Transmission of infections : Hepatitis B, C, HIV and syphilis are screened for and therefore the risk of becoming infected via blood transfusion is very low (less than 10 cases in the past 5 years in the UK). There remains an unknown risk from new/unknown vectors which is minimized by blood donor selection techniques. No cases of vCJD have been detected over the past 8 years in the UK. Bacteria can be transmitted in blood components, this is rare - only 1 case was proven in 2015.
Transfusion Associated circulatory overload [TACO] : Individual risk varies - please see TACO risk assessment (green box on prescription). TACO is the most common cause of transfusion related morbidity and mortality.
Tranfusion Related Acute Lung Injury [TRALI]: Rare (10 cases in the UK in 2015)
Acute and Haemolytic Transfusion Reactions: Severe reactions are rare (86 cases in the UK in 2015)
Risk of receiving incorrect blood product: Safety continues to improve (82 cases in the UK 2015)
Risk of allergic reactions ranging from mild rash to anaphylaxis: Severe reactions are very rare.
Post Transfusion Purpura (PTP): Very rare (2 cases reported in 2015 in the UK)
Transfusion Associated Graft-versus-Host Disease (TA-GvHD): Extremely rare (<5 cases in 15 years)
5. Inform the patient that following a blood transfusion they can no longer be a blood donor.
6. If the patient is expected to require long term transfusion support counsel them regarding:
• Iron overload
• Red cell alloimmunisation (increasing risk of hemolytic transfusion reactions)
• Platelet refractoriness (HLA/HPA antibody formation)
This document must not be used by staff that are out of date with transfusion training. Contact the Transfusion Team for further information on how to access training on ext 6024 or access a training workbook at The Street > Corporate Information > Departments > Blood Transfusion > Training
Prescription
Indication Codes
If none of the below seem to apply, discuss with the haematologist on call and use code 'H' if product agreed outwith standard indications
Red Cells
FFP
Platelet concentrate
Anticoagulants
Cryoprecipitate
Indications for Blood Components with Special Requirements
CMV Negative Blood Products
Irradiated Blood Components
Haemoglobin S -ve Blood
Transfusion Associated Circulatory Overload (TACO) Risk Assessment
Unit
Date transfusion is to be administered
Component
Indication Code (eg. R1)
Any blood product special requirements MUST be noted. If there are NONE, for the prescription to be valid, NONE must be written in the box below.
Dose
Duration (RBC- Max 3.5 hrs) (Plts, FFP, Cryo- 30 mins) Never prescribe a range (i.e. 2-3 hrs)
Diuretic prescribed on EPMA Y/N
Prescriber signature, name and bleep No
GMC No.
Autofated pre-transfusion i.e. 'arrived' (signature)
Given and checked by (two signatures required)
Unit number sticker
Administration checklist complete?
Time and date started
Time stopped
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Prescription not valid unless all grey sections complete
If patient was exposed to any of the unit, it must be autofated as 'transfused'
1
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