Trust Guideline for the Management of Reactions to Blood and Blood Products

For use in:	All clinical areas which transfuse
By:	Clinical staff involved in transfusion
For:	Management of reactions to blood and blood products
Division responsible for document:	Trustwide
Key words:	Reaction, transfusion, blood, blood product
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Compliance links: *(is there any NICE related to guidance)*	None
If Yes - does the strategy/policy deviate from the recommendations of NICE? If so why?	N/A

A Clinical Guideline recommended

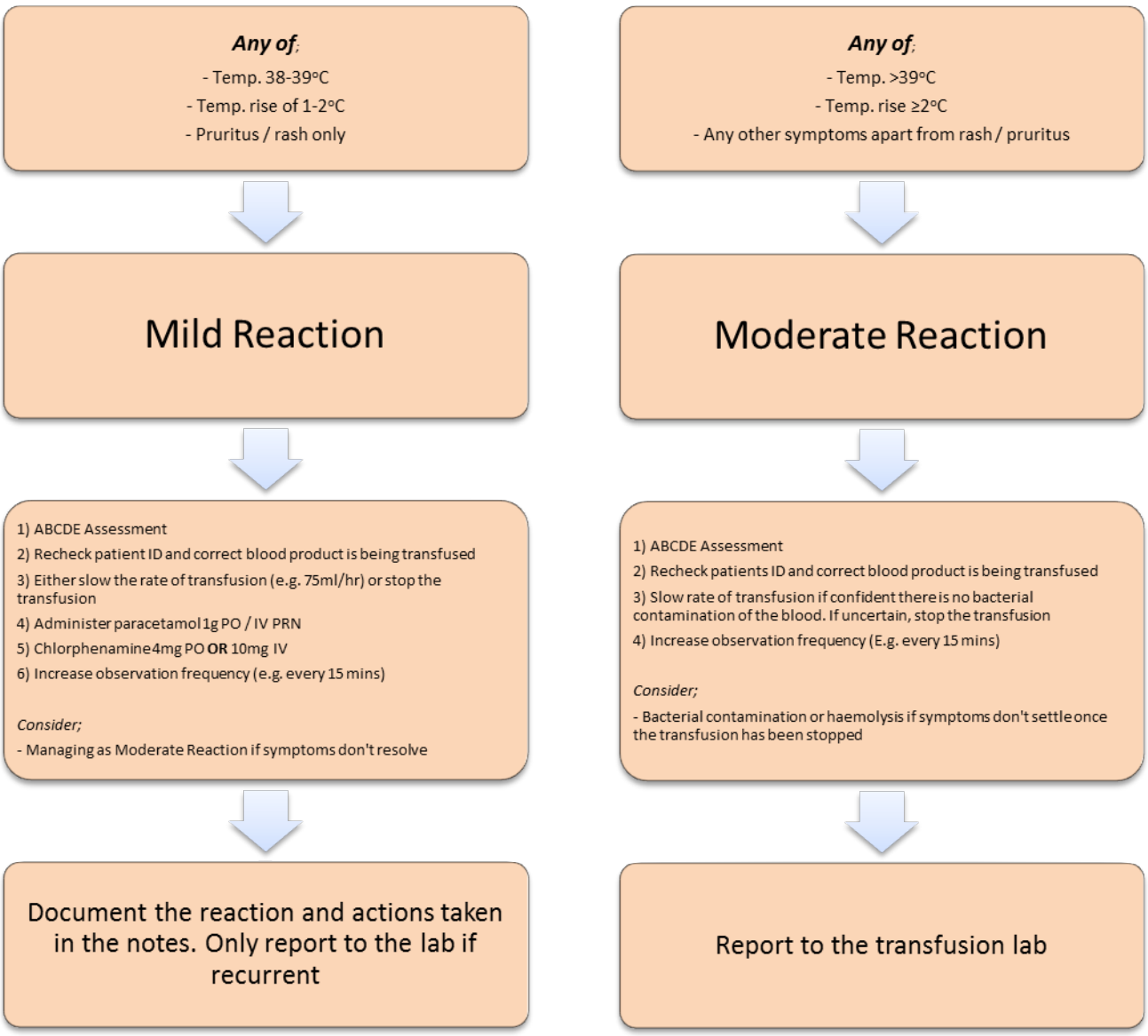
This guideline has been approved by the Trust's Clinical Guidelines Assessment Panel as an aid to the diagnosis and management of relevant patients and clinical circumstances. Not every patient or situation fits neatly into a standard guideline scenario and the guideline must be interpreted and applied in practice in the light of prevailing clinical circumstances, the diagnostic and treatment options available and the professional judgement, knowledge and expertise of relevant clinicians. It is advised that the rationale for any departure from relevant guidance should be documented in the patient's case notes.

The Trust's guidelines are made publicly available as part of the collective endeavour to continuously improve the quality of healthcare through sharing medical experience and knowledge. The Trust accepts no responsibility for any misunderstanding or misapplication of this document.

Trust Guideline for the Management of Reactions to Blood and Blood Products

Summary overview of management of acute transfusion reactions

Mild / Moderate Reaction



Trust Guideline for the Management of Reactions to Blood and Blood Products

Wheeze
Swelling
Pain
Hypotension
Collapse

Anaphylaxis

STOP THE TRANSFUSION & Check patients ID and correct blood product is being transfused

FOLLOW ANAPHYLAXIS ALGORITHM

1) Call for help
2) ABCDE Assessment
3) Give adrenalin (doses below)
4) Give hydrocortisone & chlorphenamine
5) IV fluid challenge
6) Send bloods for; **FBC, U&E, LFTs, coagulation, first sample urine (Hb), repeat group and save, IgA level, serial mast cell tryptase**
7) Regular observations

Consider;
- Salbutamol
- CXR
- ABG

Acute SOB
Hypoxia
Raised JVP (TACO)

TACO / TRALI

Transfusion Assoc. Circulatory Overload / Transfusion Assoc. Lung Injury

STOP THE TRANSFUSION & Check patients ID and correct blood product is being transfused

1) ABCDE Assessment
2) Keep cannula patent with IV fluids (if not suspectiong TACO - Check JVP)
3) Send bloods for; **FBC, U&E, LFTs, coagulation, first sample urine (Hb), repeat group and save, IgA level, serial mast cell tryptase**
4) CXR
5) D/W patients consultant
6) Monitor urine output
7) Regular observations

Consider;
- ABG
- Furosemide
- Slowing or stopping the transfusion

Fever / Rigors
Tachycardia
Hypotension
Anxiety
Pain
SOB / dyspnoea

ABO Incompatibility **OR** Sepsis

STOP THE TRANSFUSION & Check patients ID and correct blood product is being transfused

1) ABCDE Assessment
2) IV fluid challenge
3) Send bloods for; **FBC, U&E, LFTs, direct antiglobulin test, repeat group and save, IgA level, serial mast cell tryptase**
4) Inform Blood Bank of the reaction
5) Send blood back to the lab
6) D/W patient's consultant / the consultant haematologist on call
7) Monitor urine output
8) Regular observations

Consider;
- CXR
- ABG

IF SUSPECTED ALSO COMMENCE SEPSIS 6;
- Consider 2222 sepsis emergency call
- IV fluid challenge
- Blood cultures
- Oxygen
- Antibiotics
- ABG (lactate)
- Catheterise

Isolated temp. rise (38-39°C or ≤2°C from baseline)
Pruritus / rash only

Mild / Moderate reaction

See overleaf

Adrenalin doses

AGE	DOSE & ROUTE
1 month – 5 Yrs.	150mcg IM
6-11 Years	300mcg IM
≥12 Years	500mcg IM

**Into Anteroaspect of thigh. Repeat every 5 mins until stable

Trust Guideline for the Management of Reactions to Blood and Blood Products

Objective/s

To ensure identification and appropriate management of reactions to blood and blood products. To ensure appropriate senior advice is sought when required particularly for the management of serious or very rare transfusion-associated adverse events.
To ensure all blood / blood product serious incidents are reported to the Blood Bank. (Blood Bank will subsequently report incidents to the SABRE (Serious Adverse Blood Reactions and Events) scheme of the MHRA and national Serious Hazards of Transfusion (SHOT) scheme if necessary)

Rationale

Approximately 12000 units of red cells, 800 units of platelets and 900 units of FFP are used by the NNUH annually. Although most transfusions proceed uneventfully, some are associated with minor reactions and others with major adverse events. It is important that all transfusion reactions are managed properly and that the need for senior advice is recognised and any preventative measures are taken for future transfusion episodes. The Medicines and Healthcare products Regulatory Agency (MHRA) require that all significant reactions are reported to the hospital Blood Bank.

Staff involved in transfusion should be aware of the common (and rarer) transfusion reactions and know how to investigate and manage them. **A blood / blood product investigation of transfusion reaction form** – FORM 1 (Appendix 1) must be used to report the reaction to the hospital blood bank. The appropriate reporting of serious events to SHOT/SABRE will then be carried out in conjunction with the Transfusion lab, the transfusion practitioner and a consultant haematologist.

Background

In 2017 just over 2 million blood components were issued by the transfusion services of the United Kingdom. The Serious Hazards of Transfusion (SHOT) report for that year listed 442 adverse pathological events associated with transfusion; 372 were acute transfusion reactions, 42 were haemolytic reactions, 3 were transfusion associated lung injury (TRALI) and 92 were transfusion associated circulatory overload (TACO). The commonest minor transfusion reactions – febrile non-haemolytic reactions and minor allergic reactions – are not reported to SHOT. Only 21 deaths were associated with an adverse transfusion event in 2017 and in only 3/21 did the transfusion cause the death.

Thankfully reactions are rare and are rarely fatal. However, they do cause major morbidity in some patients, can be life-threatening, and require specialist management during the reaction or to prevent its re-occurrence. This guideline describes the commonest reactions and what to do.

Broad Recommendations

Reporting of reactions

The Blood Safety and Quality Regulations 2005 require that all serious adverse transfusion events/reactions must be reported to SHOT; a number of these will also

be reported to the MHRA. This is done via the hospital Blood Bank who use the SABRE/SHOT system of reporting.

Any reaction to blood or blood products must be reported. It may be very difficult to immediately ascertain the cause of a transfusion reaction; for example, a rise in temperature may be a simple febrile response, or be due to a major ABO incompatibility. Guidelines for the initial management of the patient are set out in the quick reference guide at the front of this document (Page 2), in detail in the following sections of this guideline, and in the regional summary at the end of the document.

How to report a transfusion reaction
In the event of patient having a reaction staff must report this using the **Blood / blood product investigation of transfusion reaction form** – FORM 1 (Appendix 1) to report the event. Staff can ring the transfusion laboratory (ext 2906) during working hours, or on-call transfusion staff out-of-hours or contact the Consultant Haematologist on call (via switchboard) for advice.

An additional form may be required e.g. for suspected bacterial contamination. This form is available from the Blood Bank only. Depending on the type of reaction, further blood samples may be required from the recipient of the blood product and also the donor of the blood product.

Types of reactions

Mild / Non severe reactions

Febrile non-haemolytic transfusion reactions (FNHTR)
(These do not require reporting to hospital Blood Bank)

- Occur in 1-2% of patients, especially if multiply transfused or previously pregnant
- Temperature rises by >1^{o}C towards end of transfusion or up to 2h afterwards
- May also feel unwell with rigors or shivering

Management

- Recheck the right blood is being transfused (pack details against patient's wristband and previous blood group from notes or ICE, if known)
- Check for signs of a more serious reaction and treat accordingly (see Page 2)Temperature 38^{o}C – 39^{o}C but < 2^{o}C rise from baseline
    - reduce the rate of the transfusion (75ml/hr instead of 150ml/hr, for example) or stop transfusion temporarily
    - give paracetamol 1g po or prn
- Temperature >39^{0}C or > 2^{o}C rise above baseline or rigors and/or myalgia
    - stop transfusion
    - if symptoms do not settle, consider bacterial contamination or haemolysis
    - continue with another unit

- Observe more frequently than usual i.e. every 15 minutes during each unit

Prevention

- Consider prevention if patient has had more than 2 FNHTR
- Administer paracetamol 1g po 1-3 hours before transfusion
- Reduce the transfusion rate to 75ml/hr
- Keep patient warm
- Discuss with Consultant Haematologist if persistent

Urticaria / mild allergic reactions
(These do not require reporting to hospital Blood Bank)

- Urticaria and/or itching is quite common after start of transfusion
- It is especially common with platelets and FFP which contain plasma

Management

- Recheck the right blood is being transfused (pack details against patient's wristband and previous blood group from notes or on ICE, if known)
- Check for signs of a more serious reaction and treat accordingly
- Reduce the rate of the transfusion, or stop if reaction continues or becomes worse
- Give chlorphenamine 10mg iv
- Recommence transfusion after 30 minutes if symptoms subside
- See section on anaphylaxis (page 6) if symptoms do not improve

Prevention

- Administer chlorpheniramine 10mg iv before transfusion commences
- Discuss with Consultant Haematologist if reaction reoccurs

Severe Reactions

Allergic/anaphylactic reactions
(These MUST be reported to the hospital Blood Bank using FORM 1 appendix 1)

- Rare but life-threatening
- Commoner with plasma containing products e.g. FFP and platelets
- Usually occur shortly after transfusion commences
- Symptoms include dyspnoea, chest pain, abdominal pain and nausea
- Signs include bronchospasm, facial and laryngeal oedema, hypotension, vomiting, urticaria and conjunctivitis

Management

- Stop the transfusion and keep line open with Sodium Chloride (NaCl) 0.9%
- Call a doctor to see the patient urgently
- Check and record pulse, BP, temperature and respirations
- Check for respiratory signs – wheeze, tachypnoea, SOB, cyanosis
- Check blood gases/oxygen saturation
- Recheck the right blood is being transfused (pack details against patient's wristband and previous blood group from notes if known)
- Refer to Trust Emergency Treatment of Anaphylaxis guideline **http://www.resus.org.uk/**

Prevention

- If patient has had a previous severe allergic reaction discuss with Consultant Haematologist; special washed products may be required
- Patients should also be screened for IgA deficiency if appropriate – discuss with clinical immunologist

Acute haemolytic transfusion reaction
(These MUST be reported to the hospital Blood Bank using FORM 1- appendix 1)

- Rare but life-threatening
- Due to intravascular lysis of incompatible red cells which leads to renal failure, DIC and occasionally death
- Reaction usually occurs within a few minutes of transfusion
- Symptoms include feeling of apprehension, flushing, agitation, pain at cannula site and pain in chest, back or abdomen
- Signs include fever, hypotension, general oozing from venepuncture/operative sites and haemoglobinuria
- In unconscious patients, ABO incompatibility may be difficult to detect

Management

- Stop the transfusion and keep line open with Sodium Chloride (NaCl) 0.9%
- Call a doctor to see the patient urgently
- Check and record pulse, BP, temperature and respirations
- Recheck the right blood is being transfused (pack details against patient's wristband and previous blood group from notes or ICE, if known)
- Inform blood bank immediately if ABO incompatibility suspected – **another patient may be at risk if two units have been accidentally transposed**
- Send urgent FBC, direct Coomb's test (EDTA sample to blood bank), U and E, LFTs, LDH and coagulation screen
- Send repeat cross match to blood bank

- Send unit of blood / blood product and giving set to blood bank
- Monitor urine output and manage acute renal failure
- Monitor for DIC and manage accordingly
- Discuss immediately with patient's consultant, Consultant Haematologist and consider ITU referral
- Follow Trust incident procedure for reporting

Prevention

- Majority of ABO incompatibilities are due to
    - Errors in sample taking (e.g. wrong blood in tube)
    - Errors in collection from issue fridge (e.g. collector does not have patient details with them)
    - Errors in patient identification (e.g. bedside checking omitted/inadequate)
- All relevant Trust personnel should have updated training in transfusion and adhere to Trust policies

Transfusion-related acute lung injury (TRALI)
(These MUST be reported to the hospital Blood Bank using FORM 1 appendix)

- Rare but life-threatening
- Occurs within 6 hours of transfusion but can occur up to 24 hours after transfusion
- Occurs most often with FFP due to antibodies in donor plasma reacting with patient's white cells
- Symptoms include increasing breathlessness and cough
- Signs include hypoxia and "white out" on CXR, which is indistinguishable from Acute Respiratory Distress Syndrome (ARDS)
- Signs of TRALI also similar to transfusion associated circulatory overload

Management

- Stop the transfusion and keep line open with Sodium Chloride (NaCl) 0.9%
- Call a doctor to see the patient urgently
- Check and record pulse, BP, temperature and respirations
- Check for respiratory signs – wheeze, tachypnoea, SOB, cyanosis
- Check blood gases/oxygen saturation
- Recheck the right blood is being transfused (pack details against patient's wristband and previous blood group from notes or ICE, if known)
- Arrange CXR
- Administer oxygen; discuss patient with ITU.

- Some patients may require ventilation – majority of cases will resolve in 24-48h with support

Prevention

- FFP is now made only from the plasma of male donors
- Use Prothrombin Complex Concentrate (PCC) (Beriplex or other) for urgent warfarin reversal; this is not associated with TRALI and provides a safer, faster alternative (see Trust guideline on Anticoagulation with warfarin)

Reporting

It is very important to discuss suspected cases of TRALI with the hospital Blood Bank as further investigations of the **donor** are needed. If the donor is shown to have HLA/HNA antibodies she/he will be withdrawn from the donor panel.

Septic shock
(This MUST be reported to the hospital Blood Bank using FORM 1 appendix 1)

- Rare but life-threatening and often fatal
- Most commonly associated with platelets and more rarely red cells
- Due to bacterial contamination of product
- Symptoms are immediate and include collapse and death
- Signs include hypotension and cardio-respiratory arrest

Management

- Stop the transfusion and keep line open with Sodium Chloride (NaCl) 0.9%
- Call a doctor to see the patient urgently
- Check and record pulse, BP, temperature and respirations
- Resuscitate appropriately and give broad spectrum antibiotics which cover both Gram positive and Gram negative organisms
- Take blood cultures
- Blood/blood product and giving set **MUST** be sent to the blood bank.
- Septic shock from a blood product occurs immediately the product is given and is usually fatal or near fatal; it does not cause minor reactions. Please discuss further action with Blood Bank staff if the patient has died or is very ill immediately after commencing a blood product (usually platelets)

Prevention

- All products should be inspected for clumps, discolouration and cloudiness and leaks
- If suspicious, do not use but discuss alternatives with blood bank and return product to them
- Adhere to expiry date on products and do **NOT** use out of date units

Transfusion associated circulatory overload (TACO) or dyspnoea (TAD)
(This MUST be reported to the hospital Blood Bank using FORM 1, appendix 1)

- Can be mistaken for TRALI – raised JVP occurs in fluid overload and not in TRALI
- Commoner in the frail elderly patient and children
- Associated with large volume transfusions e.g. FFP

Management

- Reduce the rate if infusion, if necessary stop transfusion
- Administer oxygen and diuretics as appropriate

Prevention

- Consider Furosemide 20-40mg orally before elective transfusion in susceptible patients
- TACO is more common in underweight patients – remember that one unit of red cells will raise the haemoglobin by 10g/l in 70 to 80kg patients; smaller patients should be dosed according to weight :

  Weight x 4ml/kg = 10g/l rise so

  50kg x 4ml/kg = 200ml = < 1unit required
- Consider 1 unit red cell transfusions in frail elderly patients
- Use PCC not FFP to reverse warfarin

Other rare reactions

There are several delayed effects of transfusion which can occur days to weeks after the event and may not be recognised as a transfusion reaction. They can however be a source of major morbidity and even death. Some are predictable, such as transfusion siderosis, and others may be preventable.

<u>Delayed transfusion reaction</u>

(This MUST be reported to the Blood Bank using FORM 1, appendix 1)

- Occur >24h after transfusion and usually 5-10 days later
- Due to antibodies formed previously (after blood transfusion or pregnancy) which are no longer detectable in screening
- Antibody level boosted by further transfusion and delayed haemolysis occurs

Management

- Recognition that falling Hb, jaundice, malaise and back pain may be due to recent transfusion
- Check Hb and film, DCT, bilirubin and re-group and screen – suspect delayed HTR if evidence of haemolysis with positive DCT and new antibody detected
- Discuss management with Consultant Haematologist; steroids are not useful but further transfusion of antigen negative blood may be required

Prevention

- A review of notes/patient antibody card/old blood bank records may alert staff to previous antibodies

Transfusion transmitted infection
(This MUST be reported to the Blood Bank using FORM 1, Appendix 1)

- May not manifest itself for years
- If acute illness e.g. hepatitis thought to be linked to transfusion then the Blood Bank should be alerted immediately to ensure recall of other products and donor tracing

Management

- As for underlying disease
- Check with Consultant Haematologist re compensation schemes

Prevention

- Careful donor selection and screening
- Transfusion of blood products only when absolutely necessary
- Increasing use of virally and bacterially inactivated components

Transfusion associated graft versus host disease (TA GVHD)
(This MUST be reported to Blood Bank using FORM 1, Appendix 1)

- Rare but fatal complication of transfusion of cellular products to immunocompromised patients or partially-matched recipients
- Due to engraftment of donor T lymphocytes

Prevention

- TA-GVHD is prevented by irradiation of cellular products (see national and local guidelines)
- Susceptible patients should be identified to blood bank using special irradiated blood products forms and issued with irradiated blood products card
- Temporary restrictions should be lifted promptly using request removal form
- Information should be shared with other hospitals involved in patient's care

Post transfusion purpura
(This MUST be reported to Blood Bank using FORM 1, Appendix 1)

- Rare and occurs 5-12 days post-transfusion
- Causes thrombocytopenia and bleeding refractory to platelets
- More common in parous women and caused by preformed anti platelet antibodies (usually anti HPA-1a)

Management

- Discuss with Consultant Haematologist
- Treat with steroids and iv immunoglobulin
- For elective transfusions, HPA compatible red cells and platelets should be obtained, but if required urgently unmatched components may be issued, and platelet count must be monitored

Transfusion siderosis

- Inevitable consequence of long term transfusion programme
- Each unit of blood contains 250mg of iron which is deposited in organs

Management

- Chelation of suitable patients with desferrioxamine or oral chelators when available

Prevention

- Exploration of all other alternatives to blood transfusion;
- Transfusion only when clinically necessary

Clinical audit standards
Audit of SHOT/SABRE reports
Audit of reaction management in areas of high blood product use

Summary of development and consultation process undertaken before registration and dissemination

The authors listed above drafted this guideline on behalf of the Hospital Transfusion Committee which has agreed the final content. During its development it was has been circulated for comment to: Transfusion laboratory staff, Consultant Haematologist, Transfusion Practitioner, Clinical Governance Lead.

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

Distribution list / dissemination method
Trust Intranet

References / source documents
Handbook of Transfusion Medicine. FifthEdition. 2013
http://www.transfusionguidelines.org.uk/index.asp?Publication=HTM

NHS Blood and Transplant Authority (replaces National Blood Service)
http://hospital.blood.co.uk

National Resuscitation Council **http://www.resus.org.uk/**

Appendix 1: Investigation/reporting of transfusion reaction form –

FORM 1

Patient sticky label or details

Diagnosis……Reason for transfusion ……

Indicate type of reaction by ticking the appropriate box – refer to reaction table for help.

□ **Febrile Non-Haemolytic Reaction OR Mild Allergic Reaction**: manage as per table; no blood samples are required by the laboratory

□ **Possible Haemolytic Transfusion Reaction including Suspected ABO Incompatibility**

Check the identity of the recipient against the details on the unit and compatibility form – if there is a discrepancy stop transfusion immediately and tell the blood bank. DO NOT TRANSFUSE ANY MORE BLOOD PRODUCTS.

□ **Severe Allergic Reaction**

□ **Suspected Bacterial Infection of Unit – a special form will need to be completed (this is available from the blood bank)**

□ **Acute Dyspnoea / Hypotension (transfusion related acute lung injury must be considered)**

□ **Other, please specify**…….

Doctor's signature……**Bleep No**……...**Date**……

For all serious reactions:

Return implicated unit and giving set to blood bank.
Return all units transfused in the previous 24 hours to blood bank.
Send the following samples to blood bank:
6ml EDTA for repeat Group and Antibody Screen
7ml clotted for other tests if required
Send the following samples to the lab, as appropriate (see management table)
FBC with film, coag screen, U and E, LFTs, blood cultures

For help and advice on transfusion reactions:

Transfusion Practitioner, bleep 0852, Haematology SpR, DECT 2919
Consultant Haematologist, DECT 6744; out of hours contact switchboard
Transfusion Laboratory, ext 2905/2906; out of hours bleep 0670

SEND THIS FORM TO TRANSFUSION LAB WITH RELEVANT SAMPLES

Consultant Haematologist's Conclusions:…….

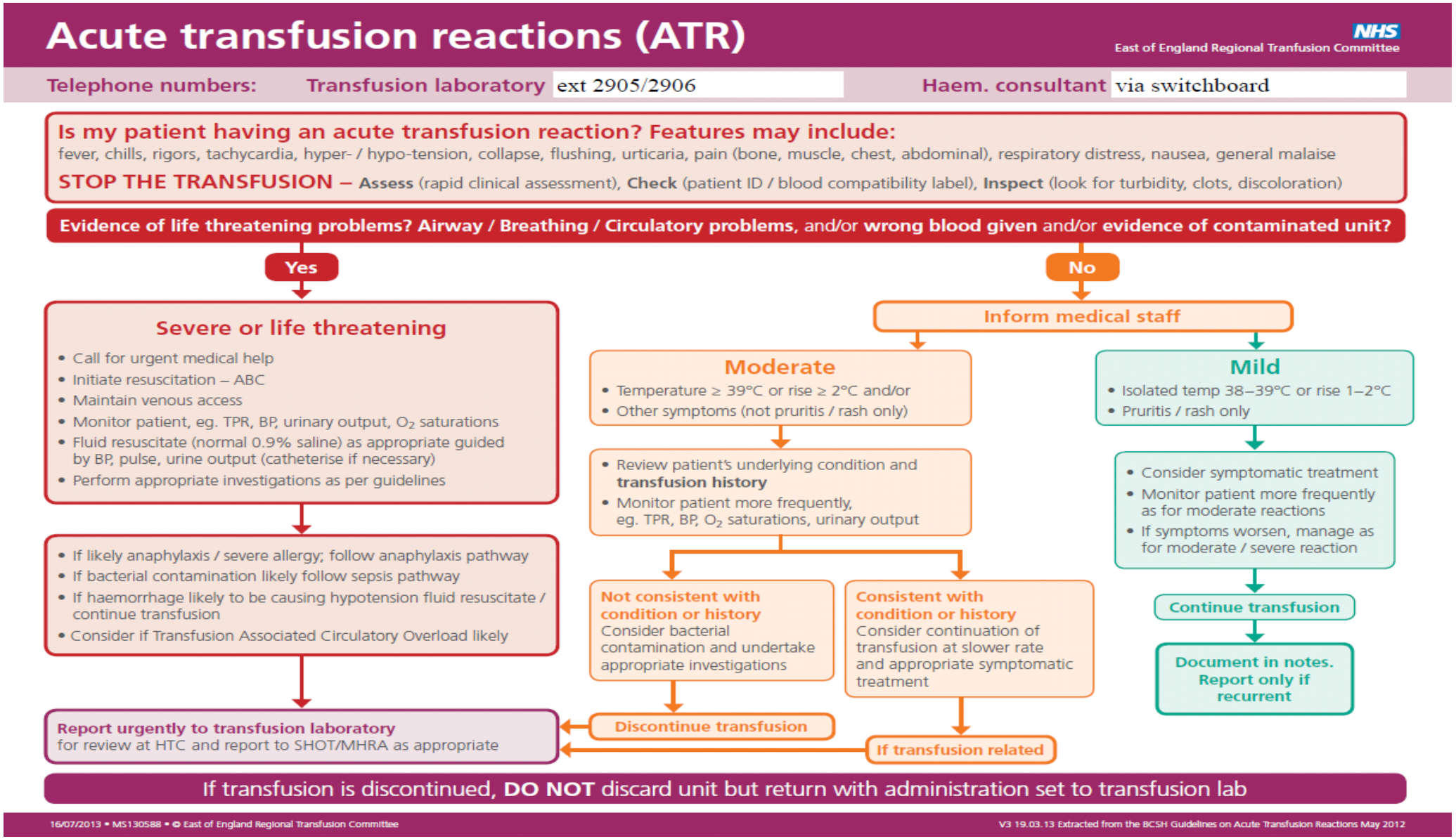
…….

……

Signature……..**Date**……..

Appendix 2 Glossary of abbreviations

DCT	Direct Coomb's test
DIC	Disseminated Intravascular Coagulation
FBC	Full Blood Count
FFP	Fresh Frozen Plasma
HTR	Haemolytic transfusion reaction
JVP	Jugular venous pressure
LDH	Lactate dehydrogenase
LFTs	Liver Function Tests
MHRA	Medicines and Healthcare Products Regulatory Authority
PCC	Prothrombin Complex Concentrate
SABRE	Serious Adverse Blood Reactions and Events
SHOT	Serious Hazards of Transfusion
TA GVHD	Transfusion associated graft versus host disease
TRALI	Transfusion-related acute lung injury
U&E	Urea and Electrolytes


Acute transfusion reactions (ATR)
NHS
East of England Regional Tranfusion Committee
Telephone numbers:
Transfusion laboratory ext 2905/2906
Haem. consultant via switchboard
Is my patient having an acute transfusion reaction? Features may include:
fever, chills, rigors, tachycardia, hyper- / hypo-tension, collapse, flushing, urticaria, pain (bone, muscle, chest, abdominal), respiratory distress, nausea, general malaise
STOP THE TRANSFUSION – Assess (rapid clinical assessment), Check (patient ID / blood compatibility label), Inspect (look for turbidity, clots, discoloration)
Evidence of life threatening problems? Airway / Breathing / Circulatory problems, and/or wrong blood given and/or evidence of contaminated unit?
Yes
No
Severe or life threatening
• Call for urgent medical help
• Initiate resuscitation – ABC
• Maintain venous access
• Monitor patient, eg. TPR, BP, urinary output, O2 saturations
• Fluid resuscitate (normal 0.9% saline) as appropriate guided by BP, pulse, urine output (catheterise if necessary)
• Perform appropriate investigations as per guidelines
• If likely anaphylaxis / severe allergy; follow anaphylaxis pathway
• If bacterial contamination likely follow sepsis pathway
• If haemorrhage likely to be causing hypotension fluid resuscitate / continue transfusion
• Consider if Transfusion Associated Circulatory Overload likely
Report urgently to transfusion laboratory
for review at HTC and report to SHOT/MHRA as appropriate
Inform medical staff
Moderate
• Temperature ≥ 39°C or rise ≥ 2°C and/or
• Other symptoms (not pruritis / rash only)
• Review patient's underlying condition and transfusion history
• Monitor patient more frequently, eg. TPR, BP, O2 saturations, urinary output
Not consistent with condition or history
Consider bacterial contamination and undertake appropriate investigations
Consistent with condition or history
Consider continuation of transfusion at slower rate and appropriate symptomatic treatment
Discontinue transfusion
If transfusion related
Mild
• Isolated temp 38–39°C or rise 1–2°C
• Pruritis / rash only
• Consider symptomatic treatment
• Monitor patient more frequently as for moderate reactions
• If symptoms worsen, manage as for moderate / severe reaction
Continue transfusion
Document in notes. Report only if recurrent
If transfusion is discontinued, DO NOT discard unit but return with administration set to transfusion lab
16/07/2013 • MS130588 • © East of England Regional Transfusion Committee
V3 19.03.13 Extracted from the BCSH Guidelines on Acute Transfusion Reactions May 2012

Acute transfusion reactions (ATR)

NHS
East of England Regional Tranfusion Committee

Safe transfusion practice – **Be careful, be vigilant**

All patients who have a blood component transfusion are at risk of an ATR

- Patients receiving a transfusion must be in a clinical area monitored by trained staff competent to manage transfusion and ATR
- **Check** 'Right patient, right blood'. **Confirm** patient identity with patient, **check** patient ID band **check** component compatibility label

Inspect: **Examine** component bag for abnormal appearance (clumps, particles or discolouration). **Check** IV cannula site for infection

Monitor: **Measure** patient's vital signs before transfusion, during transfusion and after transfusion

Inform: **Ask** patient to report any new symptoms or signs during transfusion and within **24 hours** of transfusion

Signs and symptoms of ATR

- Fever, chills, rigors
- Hypotension
- Pain
- Myalgia
- Hypoxia
- Signs of analphylaxis
- Nausea
- Acute bleeding from mouth, rectum, bladder, wounds
- Severe anxiety or sense of impending doom
- Mouth or throat tingling or swelling (angioedema)
- Breathlessness or noisy breathing (stridor or wheeze)
- Skin rashes or itch

Management

Stop transfusion immediately • ABC • Oxygen • Get medical help urgently

Suspect	If symptoms of	Treat	Investigate
Anaphylaxis	• Wheeze • Swelling • Pain • Hypotension • Collapse	Anaphylaxis pathway Give intramuscular adrenaline **Consider** chlorpheniramine • hydrocortisone • salbutamol	• FBC, U&E, LFT, coagulation screen • First urine sample (haemoglobin) • Repeat blood group screen and save • IgA level (EDTA) • Serial mast cell tryptase at time 0, 3h, 24h (plain tube) • Blood cultures (if sepsis suspected) • Consider CXR if breathlessness present
ABO incompatibility or sepsis (infection)	• Fever • Rigors • Tachycardia • Hypotension • Anxiety • Pain • Breathlessness	IV saline Sepsis pathway (if sepsis) IV broad spectrum antibiotics (if sepsis)	
TACO or TRALI	• Acute breathlessness • Hypoxia	Furosemide (if TACO)	

Report to laboratory all severe reactions • return blood component to laboratory • complete report / incident form