

# Administration of blood components

Tina Parker - Transfusion Practitioner



# Red Cells

- Each unit contains 250-350mls
- Preserved with glucose and Mannitol to keep the correct tension
- Lasts 35 days from midnight of donation day to midnight on expiry date
- Must be given via a blood administration set (170-200micron )
- Can be given stat in an emergency but usually 2 hours or 2-3 hours if co-morbidities present
- Must be **completed within 4 hours** from the time the unit is removed from the blood bank
- The giving set must be changed if any other fluids than saline have been given prior to this unit, if then transfusing other blood components following this unit then it also needs to be changed



# Reasons for Red Blood Cell transfusion

- Anaemia – chronic or acute
- Solid tumours - haematological malignancies, peptic ulcer and other GI conditions
- Myelodysplasia anaemia of chronic disease poor nutrition and treatment with chemotherapy and/or radiotherapy
- Investigations should be undertaken to determine the underlying cause
- Transfusions should be avoided in patients with B12 and folate deficiencies as the correct treatment with either B12 or folate can correct these without exposure to a blood product

# Platelets

- Straw coloured  
Kept at room temperature in an agitator  
Check the colour and consistency  
Should be started within 30 minutes of removal from the laboratory  
Complete within 20-30 minutes  
Does not have to be ABO compatible



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## Reasons for Platelet transfusion

- Acute leukaemia patients
- Chronic stable thrombocytopenia: if the patient is stable, platelet transfusions should be restricted to treating haemorrhage but may be needed for haemorrhage or infection
- Major haemorrhage – platelets are given as these are lost during massive bleeding
- Normal platelet count is 150-400<sup>9</sup>/l



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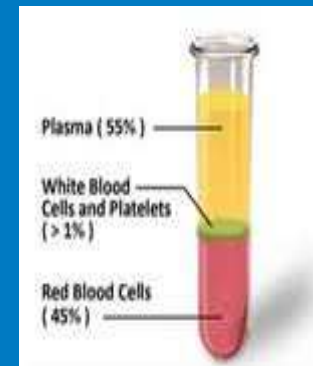
# Fresh Frozen Plasma

- Corrects coagulopathy
- FFP can be stored in the freezer for 2yrs
- Takes 20-25 minutes to defrost
- 150-300mls by blood giving set
- 30mins to 1 hour transfused
- If not used straight away it can be stored in blood bank for up to 24 hours
- However once removed from the blood bank it must be used within 4 hours



# Cryoprecipitate Transfusion

- Cryoprecipitate replaces fibrinogen and makes clotting stable, it is usually given during massive haemorrhage to maintain clotting factors
  - without this the bleed can restart
- 
- 120-150mls per unit
- Lasts 2 years frozen
- Takes 25 minutes to defrost, must then be stored at room temperature and used within 4 hours



# Administration

- Ensure your patient is ready prior to asking for blood product to be collected:
  - Correct Identification wristband in place
  - Observations recorded
  - Verbal Consent gained
  - Product is prescribed
  - Patent cannula in place
- 
- If blood is out of the Blood bank more than 30mins it cannot be restored
  - Two qualified staff members to check the unit/patient





# SHOT checklist

SERIOUS HAZARDS OF TRANSFUSION

# SHOT

## Human factors in hospital practice Be safe! Use the bedside checklist

-  Positive patient identification  
*- ask the patient to state name and date of birth*
-  Check identification of component against patient wristband
-  Check the prescription  
*- has this component been prescribed?*
-  Check the prescription  
*- is this the correct component?*
-  Check for specific requirements  
*- does the patient need irradiated components or specially selected units?*

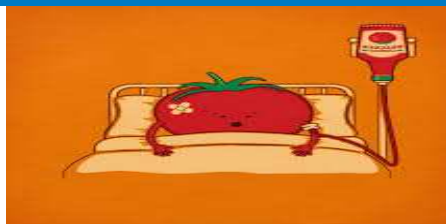


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# Requirements

- Blood components must be administered by a registered healthcare professional
- Transfusion must only take place when there are enough staff available to monitor the patient and when the patient can be readily observed.
- Overnight transfusions should be avoided unless clinically essential.
- The final administration check should always be conducted next to the patient (not in a remote clinical room or at the nursing station).
- Once all checks have been successfully completed, the transfusion should be started immediately.
- The prescription (and any other associated paperwork) must be signed by the person administering the component.
- The unique component donation number and the date, start and stop time and volumes (mls) of all blood components administered and the name of the person administering the component should be recorded in the patients' clinical notes.



# Observations



- Pre - Vital signs to be recorded within 1 hour prior to the transfusion start time:  
P BP RR T
  - Peri - **15 Minutes** after the start time of the transfusion – must be recorded by a qualified member of staff (MEHT). P BP RR T (NEWS)
  - Whilst BSH guidelines do not state RR unless any change in the other vital signs MEHT advocates this to be completed.
  - Post - If these observations are stable the next recording is at the end of the transfusion, within one hour of the completion time P BP RR T
- \* If the patient is unable to communicate for any reason, record observations more regularly (unconscious, confused, paediatric patients etc.)



# Administration cont.

Does the patient need blood products given via a fluid warmer?

- Special consideration should be given when rapidly transfusing large volumes to neonates, paediatrics, elderly patients, and patients susceptible to cardiac dysfunction.
- Patients with significant cold antibodies require blood via a warmer



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## Transfusion Associated Circulatory Overload (TACO)

- Acute or worsening oedema within 6 hours of transfusion
- **Acute respiratory distress**
- **Tachycardia**
- **Increased blood pressure**
- **Acute or worsening pulmonary oedema**
- **Evidence of positive fluid balance**
  
- Treatment :
- Stop transfusion oxygen and diuretic therapy may require critical care support
- Those at risk are the frail elderly and children

# Haemoglobin checks


**NHS**  
*Blood and Transplant*

**SINGLE** Unit Blood Transfusions  
reduce the risk of an adverse reaction

**Don't give unit two  
without review**

**Before you transfuse  
your patient:**

- What is your patient's current haemoglobin level?
- What is your patient's target haemoglobin level and would this be achieved by transfusing one unit?



**Each unit transfused is an  
independent clinical decision**

Clinically re-assess your patient after each unit is transfused.

- ✓ Is your patient still symptomatic?
- ✓ Is further transfusion appropriate?

Only order one unit at a time for non-bleeding patients.  
Document the reason for the transfusion.<sup>1</sup>

Further copies are available from [NHSBT.CustomerService@nhsbt.nhs.uk](mailto:NHSBT.CustomerService@nhsbt.nhs.uk)

1. British Committee for Standards in Haematology: Addendum to the Guideline on the Administration of Blood Components. 2012

BLC710.1 1516468  
Version 2 - November 2015

After each unit in the  
non-bleeding patient



# Preventing fluid overload

**NHS**  
Blood and Transplant

## Blood Transfusion

### Size Matters!

Transfusion Associated Circulatory Overload (TACO) is a known cause of transfusion-related morbidity and mortality<sup>1</sup>

#### Before Transfusion

- ✓ Document the rationale for the decision to transfuse.
- ✓ Document the patients weight.
- ✓ Document the target Haemoglobin (Hb) level.
- ✓ Calculate the number of units required.
- ✓ Clinically re-assess the patient after each red cell unit transfused.

**Transfusing a volume of 4ml/kg will typically give a Hb rise of 10g/L and should only be applied as an approximation for a 70-80kg non-bleeding patient.<sup>1,2</sup>**



**Note: The average volume of an adult red cell unit is 280mL**

Further copies available from [NHSBT.CustomerService@nhsbt.nhs.uk](mailto:NHSBT.CustomerService@nhsbt.nhs.uk)

<sup>1</sup>. Annual SHOT report 2012.

<sup>2</sup>. British Committee for Standards in Haematology; Addendum to Administration of Blood Components. 2012.

Check the volume of the unit  
Consider the weight of the patient  
Consider calculating mls per Kg

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## 2015 SHOT report

- Recorded 26 (22) deaths, 11 definitely or probably related to transfusion
- TACO was reported to be a contributory factor in 7 cases
- 34 cases resulted in long-term morbidity
- It is probable that TACO is more likely with red cell transfusion as red cells represent mass as opposed to a fluid which may be more readily removed by diuresis.








## TACO follows transfusion in a community hospital

- An elderly man with disseminated malignancy including pulmonary metastases was admitted to his community hospital for transfusion of 2 units of red cells
- He suffered from pre-existing congestive cardiac failure and renal impairment, and was short of breath
- The staff were concerned but encouraged by the oncology team at the hospital to proceed
- Later the same day (between 6 and 12 hours later) the man was admitted to hospital with fluid overload, and with treatment produced a diuresis of more than 4L but later died
- The transfusion was considered contributory to his death
- Following review it was agreed that patients with pre-existing cardiac and other co-morbidities would not be accepted for transfusion in the community hospital

## Consider:

- Does the patient actually need the product?
- Any alternatives
- Body weight
- Underlying co-morbidities

**TACO Check-List Red Cell Transfusion for Non-Bleeding Patients**

	<p>Does the patient have a diagnosis of 'heart failure' congestive cardiac failure (CCF), severe aortic stenosis, or moderate to severe left ventricular dysfunction?</p> <p>Is the patient on a regular diuretic?</p>
	<p>Is the patient known to have pulmonary oedema?</p> <p>Does the patient have respiratory symptoms of undiagnosed cause?</p>
	<p>Is the fluid balance significantly positive?</p> <p>Is the patient on concomitant fluids (or has been in the past 24 hours)?</p> <p>Is there any peripheral oedema?</p>

**If 'yes' to any of the above**



- View the need for transfusion (do the benefits outweigh the risks)?
- Can the transfusion be safely deferred until the issue can be investigated, treated or resolved?
- Consider body weight dosing for red cells (especially if low body weight)
- Transfuse one unit (red cells) and review symptoms of anaemia
- Measure the fluid balance
- Consider giving a prophylactic diuretic
- Monitor the vital signs closely, including oxygen saturation



# Discharge

- Patients who are given transfusions on an out-patient basis need to be given information about potential late onset reactions and who to contact in this situation
- Patients who may not know they have had a transfusion, e.g. transfused during surgery, or unconscious need to be informed retrospectively as they also may have a delayed transfusion reaction and can no longer donate blood.



# Any Questions?

