Blood Transfusion

Size Matters!

Transfusion Associated Circulatory Overload (TACO) is a dangerous complication and in 2015 was associated with 34 cases of major morbidity and contributed to 7 deaths.¹

To ensure a safe and appropriate transfusion:

✓ Document the rationale for the decision to transfuse and the target Haemoglobin (Hb) level.
✓ Consider your patient’s weight and calculate (based on 4mL/kg) the number of units or volume required.
✓ Clinically re-assess your patient after each red cell unit transfused.
✓ Closely monitor patients who are at increased risk of TACO.

A Hb rise of 10g/L can only be applied to a 70-80kg non-bleeding patient.²

Note: The average volume of an adult red cell unit is 280mL, therefore, if your patient’s body weight is significantly less than 70kg, you may notice a larger than expected Hb rise following transfusion.

Further copies are available from NHSBT.CustomerService@nhsbt.nhs.uk

# Indications for the use of Blood Components in Adults

This guidance is based on the NBTC Indication Codes for Transfusion (June 2016).

## Red Cell Concentrates

Dose – if no bleeding and anaemia reversible, use the minimum number of units to achieve a target Hb. Assume an increment of 10g/L per unit for a 70kg adult.

- **R1 Acute Bleeding** Once normovolaemia achieved, frequent measurement of Hb (including by near patient testing) should be used – see suggested thresholds below.
- **R2 Hb ≤70g/L** if stable acute anaemia. Use a target Hb of 70-90g/L. Follow local protocols for post cardiac surgery, traumatic brain injury, acute cerebral ischaemia.
- **R3 Hb ≤80g/L if cardiovascular disease** Use a target Hb of 80-100g/L.
- **R4 Chronic transfusion dependent anaemia** Maintain an Hb which prevents symptoms. Suggest an initial threshold of 80g/L then adjust as required. Haemoglobinopathy patients require individualised Hb thresholds.
- **R5 Radiotherapy** Limited data for maintaining Hb of 110g/L.
- **R6 Exchange transfusion.**

## Cryoprecipitate

Dose – 2 pooled units will increase fibrinogen by approximately 1g/L. Cryoprecipitate is usually used with FFP unless there is an isolated fibrinogen deficiency.

- **C1 Clinically significant bleeding and fibrinogen <1.5g/L (<2g/L in obstetric bleeding).**
- **C2 Fibrinogen <1g/L and pre procedure.**
- **C3 Bleeding associated with thrombolytic therapy.**
- **C4 Inherited hypofibrinogenenaemia, fibrinogen concentrate not available.**

## Platelet concentrates

Dose – for prophylaxis, 1 adult therapeutic dose. Prior to invasive procedure/to treat bleeding, consider patient size, previous increments and target count.

**Prophylactic platelet transfusion**

- **P1 Plt <10 x 10⁹/L reversible bone marrow failure.** Not indicated in chronic bone marrow failure.
- **P2 Plt 10 – 20 x 10⁹/L sepsis/haemostatic abnormality.**

Prior to invasive procedure or surgery if:

- **P3a Plt <20 x 10⁹/L central venous line.**
- **P3b Plt <40 x 10⁹/L pre lumbar puncture/spinal anaesthesia.**
- **P3c Plt <50 x 10⁹/L pre liver biopsy/major surgery.**
- **P3d Plt <80 x 10⁹/L epidural anaesthesia.**
- **P3e Plt <100 x 10⁹/L pre critical site surgery e.g. CNS.**
- **Transfusion prior to bone marrow biopsy not required.**

**Therapeutic use to treat bleeding (WHO bleeding grade ≥2)**

- **P4a Major haemorrhage Plt <50 x 10⁹/L.**
- **P4b Critical site bleeding e.g. CNS Plt <100 x 10⁹/L.**
- **P4c Clinically significant bleeding Plt <30 x 10⁹/L.**

**Specific clinical conditions**

- **P5a DIC pre procedure or if bleeding.**
- **P5b Primary immune thrombocytopenia (emergency pre-procedure/severe bleeding).**

**Platelet dysfunction**

- **P6a Consider if critical bleeding on anti-platelet agent.**
- **P6b Inherited platelet disorders directed by haemostasis specialist.**

Further information will be available on hospital intranet sites or from the blood transfusion laboratory.

Further supplies of this flyer can be ordered by accessing https://hospital.nhsbltleaflets.co.uk

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### Fresh Frozen Plasma

- **Dose** – 15ml/kg body weight, often equivalent to 4 units.

#### **F1 Major haemorrhage**

Early use in trauma – 1 unit FFP: 1 unit red cells. Other settings at least 1 unit FFP: 2 units red cells. Once bleeding controlled use thresholds below.

#### **F2 PT Ratio/INR >1.5 with bleeding**

Without major haemorrhage. Keep PT/APTT ratio of <1.5.

#### **F3 PT Ratio/INR >1.5 and pre-procedure**

E.g. disseminated intravascular coagulation (DIC) with risk of significant bleeding.

#### **F4 Liver disease with PT Ratio/INR >2 and pre-procedure**

Not usually required if no bleeding or before invasive procedure if PT ratio/INR is <2.

#### **F5 TTP/plasma exchange.**

#### **F6 Replacement of single coagulation factor.**

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### Prothrombin complex concentrate

- **Dose** determined by situation and INR. Follow local guidelines.

#### **PCC1 Emergency reversal of VKA for severe bleeding**

Or head injury with suspected intracerebral haemorrhage.

#### **PCC2 Emergency reversal of VKA pre emergency surgery.**

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**Reference:**

National Blood Transfusion Committee Indication Codes – An Audit Tool (June 2016)

http://hospital.blood.co.uk/patient-services/patient-blood-management/transfusion-team-resources/