Indications for transfusion/transfusion triggers

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Objectives

- Cover indications and triggers for:
  - red cells
  - platelets
  - fresh frozen plasma
- Will you transfuse?
- Transfusion check list
By the end of this session

- Demonstrates a clear understanding for the use of red cells, platelets, fresh frozen plasma
- Can make the decision for transfusion within best available evidence and local guidelines
- Can demonstrate in which conditions their use is not appropriate
- Knows when to consult with a Haematologist with responsibility for transfusion as required
Blood transfusion should not be performed where there are appropriate alternatives such as haematinic replacement (in iron deficiency) or erythropoiesis stimulating agents (in chronic kidney disease).
There is no universal transfusion trigger – the decision to transfuse should be based on clinical assessment of the patient, supported by the results of laboratory tests and informed by evidence-based guidelines.
Triggers

- Haemodynamically stable haemato-oncology patients who are anaemic after intensive chemotherapy rarely need transfusion if the Hb is >80 g/L.

- When using a restrictive red blood cell transfusion threshold, consider a threshold of 70 g/l and a haemoglobin concentration target of 70–90 g/l after transfusion.

- Treatment of patients dependent on long-term transfusion (e.g. myelodysplasia) should aim to minimise symptoms of anaemia and improve health-related quality of life rather than achieve an arbitrary Hb concentration.

- NO TRIGGERS for patients with massive haemorrhage
Transfusion management has been strongly influenced by the 1999 Transfusion Requirements In Critical Care (TRICC) study ([http://www.ncbi.nlm.nih.gov/pubmed/9971864](http://www.ncbi.nlm.nih.gov/pubmed/9971864)).

Randomised patients to an Hb ‘transfusion trigger’ of 100 g/L (liberal) or 70 g/L (restrictive).

There was a trend to lower mortality in patients randomised to a restrictive policy (30% of whom received no transfusions). This was statistically significant in younger patients (<55 years) and those less severely ill. **A restrictive transfusion policy was associated with lower rates of new organ failures and acute respiratory distress syndrome.**
Single Unit Blood Transfusions

The Patient Blood Management (PBM) recommendations endorsed by NHS England state (2014):

‘Transfuse one dose of blood component at a time e.g. one unit of red cells or platelets in non-bleeding patients and reassess the patient clinically and with a further blood count to determine if further transfusion is needed.'
Remember

- Children – weight calculation
- Low weight adults – you may over transfuse!
- Check your local guidelines!
Offer prophylactic platelet transfusions to patients with a platelet count below $10 \times 10^9$ /L who are not bleeding or having invasive procedures or surgery, and who do not have any of the following conditions:

- Sepsis / other additional risk factor offer prophylactic transfusion at a count below $20 \times 10^9$ /L

- \textit{Single unit transfusion ONLY} – $30-50 \times 10^9$ /L
TRIGGERS

- Platelet prophylaxis is not required for bone marrow aspiration or trephine, PICC line, traction removal of a central line and cataract surgery.
- Minor bleeding $>30 \times 10^9$/L
- Lumber punctures $>40 \times 10^9$/L
- Bleeding or major surgery/ procedures level of $>50 \times 10^9$/L
- Insertion and removal of epidural catheter $>80 \times 10^9$/L
- Brain bleeding /neurosurgery/ eye surgery/ major trauma $>100 \times 10^9$/L
Do NOT give routine platelet transfusion in:

- chronic bone marrow failure
- autoimmune thrombocytopenia
- heparin-induced thrombocytopenia
- thrombotic thrombocytopenic purpura
Do not offer fresh frozen plasma transfusions to correct abnormal coagulation in patients who:

- are not bleeding (unless they are having invasive procedures or surgery with a risk of clinically significant bleeding)
- need reversal of a vitamin K antagonist.
- Dose **10-15ml/kg** – 3 bags for 70Kg weight adult
- Discuss with haematologist
Would you transfuse?

- For each patient:
- Would you transfuse? YES / NO?
- Why?
Mr Black – 60 year old male had an elective prostatectomy. Post OP his Hb was 85g/l (Pre op 112 g/L)?
The recipient of the blood transfusion had received the blood in 1996 during an operation from a donor with no sign of vCJD. But the donor developed VCJD symptoms and died in 1999. The recipient became ill six and a half years after the transfusion and died in autumn 2003.

‘Derek Kenny from Portsmouth died of new variant CJD six years ago after being given a contaminated blood transfusion.’
Case 2

- Miss Red is 35. She attended for a pre-op assessment. She has heavy periods
- Her Hb is 70g/l MCV 65, MCH 25?
Iron deficiency

- Oral iron
- IV iron
- Management of blood loss – referral to gynecology for further management
- Routine surgery an be deferred till Hb is optimized.
Case 3

- Mr Orange is followed up in the renal clinic. He was admitted under the medical team with a chest infection.
- His Hb is 72g/L, normal MCV and MCH.
- He has a Cr of 300 (normal for him).
Anaemia of renal disease

- IV Fe
- EPO
You are asked to request blood for a patient on the Haematology ward with acute Leukaemia undergoing chemotherapy. His Hb is 65 g/L.
Chemotherapy patients

- Transfuse – bone marrow suppression Hb will not improve unless transfused.
Case 5

- 45 year old male admitted to A&E with upper GI bleeding. He has a Hb of 55g/L.
- Obs: Temp 37 degrees, BP 85/60, pulse 120, RR 20 sat 96% on air
Massive haemorrhage

- No restriction to blood transfusion!
Case 6

- A patient with long standing low platelets. He is admitted with abdominal pain and needs an urgent appendectomy.
- Hb 127 g/l
- WCC 17
- Plt 40
Needs platelet count >50 for surgery
Case 7

- 80 year old lady admitted following a fall, found to have a large subdural haematoma.
- Hb 90g/l
- WCC 8
- Plt 150
- On warfarin INR 14
NOT for FFP – needs Beriplex (prothrombin complex)
Need to discuss with haematology
Case 8

- 45 year old with alcohol excess and liver disease. He needs a PICC line insertion of IV access.
- Hb 70g/l
- WCC 6
- Plt 35
- MCV 108
Macrocytic anaemia – NO check b12 folate
Platelets count ok for PICC line
Case 9

- Patient admitted with a massive intracranial bleed requiring neurosurgery
- Hb 60g/L
- WCC 14
- Plt 70
- Red cells – major bleeding + urgent surgery
- Platelets – platelet > 100
Case 10

- Patient under haematology with MDS on regular transfusions every 2-3 weeks. Attended with SOB, tachycardia and extreme fatigue.
- Hb 84g/l
Yes – symptomatic anaemia in the context of bone marrow failure, no trigger used.
HAVE YOU?

- Explained the reason for the transfusion
- Explained the risks and benefits
- Explained the transfusion process
- Identified any transfusion needs specific to them
- Considered any alternatives that are available, and how they might reduce their need for a transfusion
- Informed them that they are no longer eligible to donate blood
- Encouraged them to ask questions.