Indication Codes – Do we use them and what do they bring to the decision to transfuse?

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Indication Codes - 2005

INDICATIONS FOR TRANSFUSION OF BLOOD COMPONENTS

The indications for transfusion below are taken from UK national guidelines for the use of blood components. Although it is accepted that clinical judgement plays an essential part in the decision to transfuse or not, the purpose of drawing available transfusion guidelines together is to help clinicians decide when blood transfusion is appropriate, and to minimise unnecessary exposure to transfusion.
Each indication has been assigned a number, which may be used by clinicians when requesting blood or for purposes of audit. Specific details regarding the patient's diagnosis and any relevant procedures to be undertaken should also be provided.

Red cell concentrates

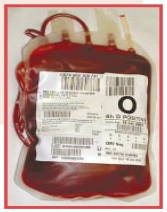
Acute blood loss
To maintain circulating blood volume and haemoglobin (Hb) concentration >7g/dl in otherwise fit patients, and >9g/dl in older patients and those with known cardiovascular disease.

R1. 15-30% loss of blood volume (800-1500ml in an adult): transfuse crystalloids or synthetic colloids. Red cell transfusion is unlikely to be necessary.
30-40% loss of blood volume (1500-2000ml in an adult): rapid volume replacement is required with crystalloids or synthetic colloids. Red cell transfusion will probably be required to maintain recommended Hb levels.
>40% loss of blood volume (>2000ml in an adult): rapid volume replacement including red cell transfusion is required.

Peri-operative transfusion
Many patients undergoing elective surgical operations should not require transfusion support if their Hb concentration is normal before surgery. Assuming normovolaemia has been maintained, the Hb can be used to guide the use of red cell transfusion.

R2. Hb < 7g/dl.

R3. Hb < 9g/dl in a patient with known cardiovascular disease, or those with significant risk factors for cardiovascular disease (eg. elderly patients, and those with hypertension, diabetes mellitus, peripheral vascular disease).



Critical Care

R4. Transfuse to maintain the Hb >7g/dl.

Post-chemotherapy

R5. There is no evidence-base to guide practice. Most hospitals use a transfusion threshold of a Hb of 8 or 9g/dl.

Radiotherapy

R6. Transfuse to maintain Hb >10g/dl.

Chronic anaemia

R7. Transfuse to maintain the haemoglobin just above the lowest concentration which is not associated with symptoms of anaemia. Many patients with chronic anaemia may be asymptomatic with a haemoglobin concentration >8g/dl.

Cryoprecipitate

C1. Acute disseminated intravascular coagulation (DIC), where there is bleeding and a fibrinogen level <1g/l.

C2. Advanced liver disease, to correct bleeding or as prophylaxis before surgery, when the fibrinogen level <1g/l.

C3. Bleeding associated with thrombolytic therapy causing hypofibrinogenaemia.

C4. Hypofibrinogenaemia (fibrinogen level <1g/l) secondary to massive transfusion.

C5. Renal failure or liver failure associated with abnormal bleeding where DDAVP is contraindicated or ineffective.

(Dose - 1 unit/5kg body weight equivalent to 10 units for an adult)

Fresh frozen plasma

F1. Replacement of single coagulation factor deficiencies, where a specific or combined factor concentrate is unavailable e.g. factor V.

F2. Immediate reversal of warfarin effect, in the presence of life-threatening bleeding.

F3. Acute disseminated intravascular coagulation (DIC) in the presence of bleeding and abnormal coagulation results.

F4. Thrombotic thrombocytopenic purpura (TTP), usually in conjunction with plasma exchange.

F5. Massive transfusion, coagulation factor deficiency can be expected after blood loss of 1.5 x blood volume, aim for PT & APTT <1.5 of the control value.

F6. Liver disease, to correct bleeding or as prophylaxis before surgery when the prothrombin time is >1.5x the control value.

(Dose - 12-15 ml/kg body weight equivalent to 4 units for an adult)

Platelet concentrates

Bone marrow failure

P1. To prevent spontaneous bleeding when the platelet count <10 x 10^9/l.

P2. To prevent spontaneous bleeding when the platelet count <20 x 10^9/l in the presence of additional risk factors for bleeding such as sepsis or haemostatic abnormalities.

P3. To prevent bleeding associated with invasive procedures. The platelet count should be raised to >50 x 10^9/l before lumbar puncture, epidural anaesthesia, insertion of intravascular lines, transbronchial and liver biopsy, and laparotomy, and to >100 x 10^9/l before surgery in critical sites such as the brain or the eyes.

Critical care/surgery

P4. Massive blood transfusion. The platelet count can be anticipated to be <50 x 10^9/l after 1.5-2 x blood volume replacement. Aim to maintain platelet count >50 x 10^9/l.

P5. Bleeding, not surgically correctable and associated acquired platelet dysfunction e.g. post-cardiopulmonary bypass, possibly combined with the use of potent anti-platelet agents such as clopidigrel.

P6. Acute disseminated intravascular coagulation (DIC) in the presence of bleeding and severe thrombocytopenia.

P7. Inherited platelet dysfunction e.g. Glanzmanns thrombasthenia with bleeding or as prophylaxis before surgery.

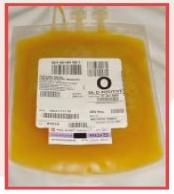
Immune thrombocytopenia

P8. Autoimmune thrombocytopenia, in the presence of major haemorrhage.

P9. Post-transfusion purpura, in the presence of major haemorrhage.

P10. Neonatal alloimmune thrombocytopenia, to treat bleeding or as prophylaxis to maintain the platelet count >50 x 10^9/l.

(Dose - 15 ml/kg body weight equivalent to 1 adult therapeutic dose for an adult)



References

Association of Anaesthetists of Great Britain and Ireland (2001). Blood transfusion and the anaesthetist: red cell transfusion (www.aagbi.org).
British Committee for Standards in Haematology (2001). Guidelines for the clinical use of red cell transfusion. British Journal of Haematology, 113, 24-31.
British Committee for Standards in Haematology (2003). Guidelines for the use of platelet transfusions. British Journal of Haematology, 122, 10-23.
Guidelines for the use of fresh frozen plasma. Transfusion Medicine, 2, 57-63.
Consensus Conference on Platelet Transfusion (1998). Synopsis of background papers and consensus statement. British Journal of Haematology, 101, 609-617.
Schiffer CA et al for the American Society of Clinical Oncology (2001). Platelet transfusion for patients with cancer: clinical practice guidelines. Journal of Clinical Oncology, 19, 1519-1538.
Scottish Intercollegiate Guidelines Network (2001). Perioperative blood transfusion for elective surgery. (www.sign.ac.uk).

NATIONAL BLOOD SERVICE

NHS

Indication Codes - 2011

Blood and Transplant

Platelet concentrate
(1 unit = 1 adult therapeutic dose or ATD)

Bone marrow failure (BMF)

- **P1 If reversible BMF** and count <10 x10^9/l. Not indicated in chronic stable BMF.
- **P2 BMF with additional risk factors** for bleeding e.g. sepsis if count <20 x10^9/l.
- **P3 Invasive procedure** keep count >50 x10^9/l, >80 x10^9/l if epidural, >100 x10^9/l if CNS or eye surgery.

Critical care

- **P4 Massive transfusion** aim for count of >75 x10^9/l, >100 x10^9/l if multiple, CNS or eye trauma.
- **P5 Acquired platelet dysfunction** if non-surgically correctable bleeding.
- **P6 Acute DIC & bleeding** keep count >50 x10^9/l.
- **P7 Inherited platelet dysfunction** with bleeding or presurgery.

Immune thrombocytopenia

- **P8 1° immune thrombocytopenia** as emergency presurgery or with haemorrhage (aim for count >80 x10^9/l pre major surgery & >70 x10^9/l for obstetric regional axial anaesthesia).
- **P9 Post-transfusion purpura** if major haemorrhage.
- **P10 Neonatal alloimmune thrombocytopenia** maintain count >30 x10^9/l.

What does the NBTC IT Survey (July/August 2011) tell us about using ward-based or laboratory computers to control or monitor demand for blood components, or in the case of LoPAG, platelets?

- 118/160 (74%) NHS Trusts responded (and 11 independent hospitals)
- London RTC 19/28 (56%)* lowest participation rate

Table 1: **Ability to record clinical data when making electronic requests for blood**		London RTC		Nationally (NHS)	
		Replies	'Yes'(%)	Replies	'Yes' (%)
Q6 a	Electronic requests for blood	19	7 (37%)	116	24 (21%)
Q6 b	Mandatory completion of all fields	7	4 (57%)	24	18 (75%)
Q6 c	Is 'diagnosis' data entry free-text?	7	7 (100%)	23	22 (96%)
Q6 d	Is 'diagnosis' data mandatory?	7	5 (71%)	22	15 (68%)
Q6 e	Is 'procedure' data free-text?	7	4 (57%)	23	16 (70%)
Q6f	Is 'procedure' data mandatory	7	4 (57%)	23	12 (52%)

You could theoretically use ward computers to control ordering of platelets by insisting on a reason for transfusion BUT only 37% of hospitals in London RTC order blood using these ward based systems

Data entry needs to be mandatory and coded to be searchable.
No London RTC hospitals have mandatory and searchable data

Table 2: Ability to record clinical data in the laboratory (LIMS)			London RTC		Nationally (NHS)	
			Replies	'Yes'(%)	Replies	'Yes' (%)
Q7a	Is 'diagnosis' data entry…	Free-text?	16	8 (50%)	91	55 (60%)
		Drop down menu?		8 (50%)		36 (40%)
Q7b	Is 'diagnosis' data mandatory?		16	4 (57%)	90	38 (42%)
Q7c	Is 'procedure' data…	Free-text?	16	7 (44%)	94	51 (54%)
		Drop down menu?		9 (66%)		43 (46%)
Q7d	Is 'procedure' data mandatory		16	10 (63%)	94	39 (41%)
Q7e	Is there a mandatory field for the NBTC indication code?		16	3 (17%)	95	15 (16%)
Q8a	Can you search the LIMS for…	Diagnosis?	19	11 (58%)	116	71 (61%)
		Procedure?		10 (53%)		67 (58%)
		NBTC ind. Code?		10 (53%)		42 (36%)
		Tx.Triggers?		2 (11%)		18(16%)

More laboratory systems have mandatory and searchable coded clinical information which could a) enable BMSs to challenge requests and b) audit

Blood Transfusion Telephone Request Form

DATE……. TIME……. CALL RECEIVED BY……

HOSP. NUMBER…… PAT. NAME……

D.O.B……/……/…….. M/F REQUESTED BY……..

CLINICAL DETAILS……..

BLOOD GROUP…….. AB SCREEN …….

SPECIAL REQUIREMENT: CMV- IRRADIATED HLA
OTHERS:…….

LAB NUMBER……DATE OF TEST……

CROSSMATCH.

Not TX in last 48hrs
Y/N……..
No Units…….
Hb……..

REASON…….

- **Bleeding**
- **Pre-op**
- **Top Up**
- **Exchange**

Refer to SpR. □ Bleep No……..

FFP

(Normal dose 12-15ml/kg)

INR…….. WGT……..

Indication…….

- **INR> 1.5**
- **BLEEDING**
- **WARFARIN REVERSAL**
- **PLASMA EXCHANGE**

More than 4 units refer to SpR

PLATELETS 1 bag ↑20,000
No Of units
AD/Paed. ……..
PLT COUNT:…….
REASON:……..

- **CABG <50,000 or on Asprin/ Clopidogrel last 5 days**
- **HOP <20,000**
- **Blood loss 50-80,000**
- **Eye/Brain <100,000**
- **Liver <50,000**

Referred to SpR. □
Bleep:……`

Cyroprecipitate: Normal Dose: 10-20 bags. No. Units……..
Indication…….. Fib. Level…….

- **Bleeding** **Fibrinogen <1.5**

dition...

Template Name:

d __ - __ - ____

d

lt

Please Contact Haem SpR for more than 2 Units

d

ct

er

- P1- Bone Marrow Failure: Risk of Bleeding & Platelets <10
- P10- Neonatal Alloimmune Thrombocytopenia (NAIT) : Bleeding or to maintain platelets >30
- P2- Sepsis or Haemostatic Abnormalities: Risk of Bleeding & Platelets <20
- P3- Invasive Procedures: Platelets >50 for Lumbar Puncture, Intravascular Lines Insert, Laparotomy
- P4- Massive Blood Loss: Maintain Platelets >75
- P5 -Acquired Platelet Dysfunction, (Anti-Platelet Drugs) : with non surgical bleeding
- P6-Acute DIC: in presence of bleeding with severe thrombocytopenia
- P7- Inherited platelet dysfucntion: with bleeding or prophylaxis before surgery
- P8-primary Immune Thrombocytopenia: Major Haemorrhage: maintain platelets >80
- P9- Post Transfusion Purpura: in prescence of Major Haemorrhage

What do you do in your hospital?

- Clinical information used to request blood components should be:
  - Mandatory for diagnosis and/or procedure
  - Preferably coded but **KEEP IT SIMPLE**
  - Remember ‘a’ for ‘anaemia’ is at the top of an alphabetical drop-down list!

- Consider using NBTC indication codes
  - when ordering blood using ward-based ordering
  - when entering requests into the LIMS