SOUTHEND HOSPITAL
GUIDELINES

INDICATION FOR RED CELL TRANSFUSION

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and

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<table>
<thead>
<tr>
<th>Page</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Summary chart of indications for red cell transfusion</td>
</tr>
<tr>
<td>4</td>
<td>Introduction</td>
</tr>
<tr>
<td>6</td>
<td>Indications for red cell transfusion.</td>
</tr>
<tr>
<td>10</td>
<td>Alternatives to red cell transfusion</td>
</tr>
<tr>
<td>11</td>
<td>References</td>
</tr>
</tbody>
</table>
INDICATION CODES FOR RED CELL TRANSFUSION

SUMMARY

R1  Acute blood loss

Objective: to maintain circulating blood volume and haemoglobin (Hb) concentration > 7 g/dl in otherwise fit patients, and 8 - 9g/dl in older patients and those with known cardiovascular disease.

- **15-30% loss of blood volume (800-1500 in an adult)** red cell transfusion is unlikely to be necessary, transfuse crystalloids or synthetic colloids. In obstetrics transfusion should commence when blood loss approaches 1000ml and is continuing.

- **30 -40% loss of blood volume (1500-2000 in an adult)** Rapid volume replacement is required with crystalloids or synthetic colloids and red cell transfusion probably required to maintain Hb levels.

- **>40% loss of blood volume (>2000ml in an adult)** Rapid volume replacement is required including red cell transfusion.

R2  Hb concentration < 7g/dl

R3  Hb concentration < 8 or 9g/dl in patients with known cardiovascular disease or those with significant risk factors of such disease (e.g. elderly patients, those with hypotension, diabetes mellitus PVD.

For Chronic renal failure transfuse to maintain Hb > 10g/dl

R4  In critical care transfuse to maintain Hb > 7 g/dl. or >9 g/dl if cardiac or respiratory disease present.

R5  Post-chemotherapy / radiotherapy: There is no evidence based guide to practice

Most hospitals use a threshold of Hb 8 or 9 g/dl for chemotherapy and 11 – 12 for radiotherapy

R6  Chronic anaemia: Transfuse to maintain the Hb concentration just above the lowest concentration which is not associated with symptoms of anaemia. Many patients may be asymptomatic with an Hb >8g/dl. Do not transfuse when effective alternatives exist.
INTRODUCTION

Red cell transfusions are required to increase the oxygen carrying capacity of the blood by raising the haemoglobin concentration of patients with acute or chronic anaemia and avoid tissue hypoxia.

Transfusion medicine is changing rapidly in response to a number of different developments. There are renewed concerns about the safety of transfusion, in relation to both infectious and non-infectious complications, as highlighted in the Serious Hazards of Transfusion (SHOT) initiative. Hence appropriate use of donor blood is becoming an increasingly important clinical governance and public health issue.

There are no reliable parameters to guide the need for red cell transfusion. The decision to transfuse red cells is a complex one and depends on factors such as the cause of the anaemia, its severity and chronicity, the patient’s ability to compensate for anaemia, the likelihood of further blood loss and the need to provide some reserve before the onset of tissue hypoxia. The risk of a transfusion should be taken seriously on balance against the perceived benefits. Although in these guidelines we will try to specify a given concentration of haemoglobin to trigger transfusion, consideration of the patient’s clinical condition is an essential part of the decision to transfuse red cells or not.

Associated documentation:

- CG-260: Guideline for the Management of Adult massive Haemorrhage
- CG 060 indications for the Use of Fresh Frozen Plasma and Cryoprecipitate
- CG 071 Indications for the Use of Platelet Transfusion
- CG 242 Guideline for the Management of Patients who Refuse Blood Product Transfusion
- BT-11: Policy for the Administration of Blood and Blood Components
- CG-051: Guidelines for the use of ORhD Negative Red Cells (including major incident planning)
General Principles

- Clinician prescribing red cell (RBC) transfusion should be aware of indications and the risks and benefits of transfusion.

- Patients should be given information about the risks and benefits of RBC transfusion in advance of transfusion whenever possible, together with possible alternatives (National Blood Transfusion information leaflets available). Patients have the right to refuse transfusion but this must be documented in the medical notes.

- The cause of anaemia should be established.

- There is no universal “trigger” for RBC transfusion (a haemoglobin concentration at which transfusion of red cells is appropriate for all patients). Clinical judgement plays a vital role in the decision to transfuse red cells or not.

- In acute blood loss, crystalloids or synthetic colloids should be used for rapid volume replacement.

- The reason for administration of RBC transfusion and the record of each unit of blood must be documented in the patient’s medical records.

- Normally patients should not be transfused if haemoglobin concentration is above 10g/dl.

- A strong indication for transfusion is haemoglobin concentration below 7g/dl.

- Transfusion will become essential when haemoglobin concentration decreases to 5g/dl.

- Haemoglobin concentration between 8g/dl and 10g/dl is a safe level even for those patients with significant cardio respiratory disease.

- Symptomatic patients should be transfused.
Indications for the use of red cell transfusion

R1. Acute blood loss

Objective: to maintain circulating the blood volume and haemoglobin concentration > 7g/dl in otherwise fit patients and > 8 or 9g/dl in older patients and those with known cardiovascular and respiratory disease.

It may be difficult to assess the amount of blood loss, but consideration of lost circulatory volume may be useful in guiding the transfusion management. The following is a general guide for the need for transfusion based on acute blood loss in an adult.

- **15%** loss of blood volume (750 ml): no need for transfusion unless blood loss is superimposed on pre-existing anaemia or unable to compensate due to severe cardiac or respiratory disease.

- **15-30%** loss of blood volume (800-1500 ml): need to transfuse crystalloid or synthetic colloids. The need for red cell transfusion is unlikely unless the patient has pre-existing anaemia, reduced cardio-respiratory reserve or blood loss continues.

- **30-40%** loss of blood volume (1500-2000 ml): rapid volume replacement is required with crystalloid or synthetic colloids, and red cell transfusion will probably be required.

- **40%** loss of blood volume (> 2000 ml): rapid volume replacement, including red cell transfusion, is required.

To start with, 2 units of red cells should be transfused and then the clinical situation and haemoglobin concentration should be re-assessed.

R2 Clinical evidence suggests that transfusion of patients with haemoglobin concentration between 7 – 10g/dl is not always justifiable.

R3 However, in elderly patients and patients with cardiovascular and respiratory disease, you may need to consider transfusion when haemoglobin is < 8 or 9 g/dl. Renal patients maintain Hb > 10g/dl

**NOTE:** Blood volume 70ml/kg body weight in adult
Consideration of abnormal haemostasis resulting in increased risk of bleeding

- Thrombocytopenia
- Platelets dysfunction, either inherited or acquired due to Aspirin or non-steroidal anti-inflammatory drugs.

The above two causes should be treated with platelets transfusion according to our current guideline.

- Abnormal clotting screen needs to be treated according to our current guideline.

R4 Anaemia in critically ill patients

- Transfuse blood to maintain the haemoglobin > 7 g/dl or >9 if patient has cardio respiratory disease
- Over transfusion may increase mortality in this group.
- The importance of adequate volume replacement.
- Maintenance of blood pressure and the use of inotropic drugs to maintain normal cardiac output.
- Using crystalloids may be preferred to colloids for fluid resuscitation of patients with acute hypovolaemia. Colloids have the potential disadvantage of hypersensitivity, including occasional severe anaphylactoid reactions, and exacerbation of any haemostatic problems and hypotension.
R5  **Post-chemotherapy / radiotherapy**

- There is no evidence based guide to practice. Most hospitals use a threshold of Hb 8 or 9 g/dl for chemotherapy and 11 – 12 g/dl for radiotherapy

R6  **Chronic anaemia**

- The cause of anaemia should be established and treatment with red cell transfusions should not be given where effective alternatives exist, e.g. iron deficiency, megaloblastic and auto-immune haemolytic anaemia, unless the anaemia is life threatening.

- An alternative treatment with erythropoietin can be used for chronic anaemia e.g. cancer patients, myelodysplasia, renal failure etc.

- Red cell transfusion in patients with haemoglobinopathy
  
a) The aim of hypertransfusion programme in beta thalassaemia major is to suppress erythropoiesis and correction of the anaemia. In order to minimise iron overload, trigger haemoglobin concentration is < 9.5 g/dl.

b) Long term transfusion programmes used in sickle cell disease to reduce risk of vaso-occlusive events in patients with previous stroke and during pregnancy. Transfusion is not routinely indicated for patients with sickle-cell disease, unless the haemoglobin is low or pre-operatively please refer to special guidelines for further details.
Transfusion in surgical patients

Surgical patients receive more than 1,000,000 units annually, half of transfused allogeneic blood in the U.K. Several factors need to be taken into account before considering transfusion in the surgical patient.

- Ensure all patients should have pre-operative assessment.
- The decision to transfuse should always be made on an individual patient basis.
- Patients should not be transfused to achieve a normal haemoglobin concentration.
- The reason for pre and post-operative transfusions must be recorded in the clinic notes.
- Record of the administration of each unit of blood must be kept permanently in the clinical notes.
- Surgical blood ordering schedule should be followed and audited regularly.
- Up to 30% of blood loss can be treated with crystalloid or colloid solutions. There is no increase in mortality providing the haemoglobin concentration was kept above 8 g/dl even in an elderly population.
- Haemoglobin concentration above 8 g/dl is sufficient for patients with severe cardio-respiratory disease.
- Post-operative patients who are limited in their activity are unlikely to have oxygen demands that exceed supply.
- Wound healing is not affected, only when haematocrit is less than 18%.
- Iron deficiency anaemia should be investigated and corrected during pre-operative period.
**Alternative to Allogeneic Blood Transfusion**

**Autologous transfusion:**

- The use of red cell salvage.
- Pre-deposit programs reduce the need for allogeneic blood. However, risk of clerical errors and chances of transfusing the wrong blood is still possible and is now only recommended for exceptional clinical circumstances.
- Acute normovolaemic haemodilution.
References


