Alternatives to blood transfusion

suitable for haematology patients

Dr Dora Foukaneli
Consultant in Haematology and Transfusion Medicine
Cambridge University Hospitals and NHSBT Cambridge
Patient Blood Management

• Patient Blood Management (PBM) is a multidisciplinary, evidence-based approach to optimising the care of patients who might need a blood transfusion.

• NHS Blood and Transplant (NHSBT) Department of Health

• National Blood Transfusion Committee
Reasons to Reduce Blood Exposure:

• Limited resources
  – Increasing demands
  – New donor selection criteria: ↓ donor panels
  – Rare blood group
  – Multiple red cell antibodies

• To reduce risks
  – Errors
  – Transfusion-transmitted infections (TTIs)
  – Immunological complications
Why haematological patients require transfusion

- Bone marrow failure
  - Disease or treatment
- Peripheral cytopenias
  - Reduce production or increase destruction of peripheral blood cells
### Indication for RBC transfusion

<table>
<thead>
<tr>
<th>Indication</th>
<th>National (N=4328)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Symptomatic anaemia</strong></td>
<td></td>
</tr>
<tr>
<td>• Mild (Chronic fatigue, loss of energy)</td>
<td>20%</td>
</tr>
<tr>
<td>• Moderate (Palpitations; Shortness of breath on exertion etc.)</td>
<td>22%</td>
</tr>
<tr>
<td>• Severe (Shortness of breath at rest; symptoms of ischaemic heart disease, such as chest pain; hypotension or tachycardia unresponsive to fluid resuscitation; cardiac failure)</td>
<td>4%</td>
</tr>
<tr>
<td>• Unspecified</td>
<td>2%</td>
</tr>
<tr>
<td><strong>B. Hb level less than the local threshold</strong></td>
<td>23%</td>
</tr>
<tr>
<td><strong>C. Chronic transfusion programme</strong></td>
<td>26%</td>
</tr>
<tr>
<td><strong>D. Cannot determine reason for transfusion</strong></td>
<td>3%</td>
</tr>
<tr>
<td><strong>Not stated</strong></td>
<td>1%</td>
</tr>
</tbody>
</table>

Attention: each participant had to tick one indication therefore it is possible that were patients that had more than one reason to be transfused. i.e a patient in a chronic transfusion programme that also had symptoms.
NG 24

• Alternatives to blood transfusion for patients having surgery
• Intravenous and oral iron
  – ANAEMIA PATHWAYS

• Cell salvage and Tranexamic acid
  – Is this applicable to haematogy?
Alternative to blood transfusion

• Treat the underline disease
• Treat the underline cause of anaemia or thrombocytopenia
  – Iron
  – B12
  – Folate
  – Steroids (Autoimmune haemaolytic anaemia)
  – Eltrombopag
    • ITP
    • Possible Aplastic anaemia (currently under trial in Europe)

Hydroxycarbamide (SS disease)
Alternatives

- Epo
  - Renal failure
  - Chemotherapy induced anaemia
  - MDS
Use of RBC units in MDS patients in UK

150,000-200,000 units RBC per year.
Incidence

Per 100,000 population
United States: 3.6
United Kingdom: 3.6
Germany: 4.1
Sweden: 3.6
France: 3.2
Japan: 1.0.

• 36.3/100,000 in 80 and above age group

10,000 new cases of MDS each year

*The American Journal of Medicine 2012 125, S2-S5DOI: (10.1016/j.amjmed.2012.04.014)*
Clinical presentation

Low and intermediate risk MDS (70%)

65%
anaemia
±mild thrombocytopenia
±mild neutropenia

57% Hb <100g/L
27% Hb <80g/L

Thrombocytopenia: <100.000x10^9L
Neutropenia: <1.500x10^9L

Symptoms
Chronic fatigue
Shortness of breath
Rarely bruising and bleeding, recurrent infections

<5% present with
Isolated thrombocytopenia or
Isolated neutropenia
Duration of response in responding patients

A validated decision model for Epo + G-CSF in MDS
Alternatives to blood transfusion for MDS patients

- **EPO**
  - Low risk patients with MDS (check erythropoietin level)
  - EPO + GCSF for patient with RARS

- **Oral lenalidomide** for patients with 5q- syndrome (transfusion dependant)

- **Azacitidine**
  - SC for patients with High Risk MDS
  - Oral Aza trial for transfusion dependant patients with low risk MDS and severe thrombocytopenia

- **Definitive treatment**
  - Transplantation
  - Curative chemotherapy for selected patients
Tranexamic acid

- Trauma patients and surgery
- ITP
- Congenital bleeding disorders
- Thrombocytopenic patients with nasal and PV bleeding
- Patients on anti-platelet agents and bleeding
- TREATT
  - Randomised control clinical trial of tranexamic acid (oral or IV) versus placebo for AML