Perioperative Anaemia
The QAH Story

November 2018

Dr Heidi Lightfoot *Core Anaesthetics Trainee*
Dr Shirley Lobo *Consultant Anesthetist*
Queen Alexandra Hospital
WHO definition of anaemia: haemoglobin <130g/dL

The most common cause in the surgical population is iron deficiency \(^1,^3\)

The most common treatment is blood transfusion \(^3\)

Patients requiring blood transfusions during major surgical intervention have poorer outcomes \(^2\)

1. World Health Organisation 2014
3. Preoperative anaemia Clevenger et al Anaesthesia 2015
The incidence and importance of anaemia in patients undergoing cardiac surgery in the UK – the first Association of Cardiothoracic Anaesthetists national audit*

A. A. Klein✉, T. J. Collier, M. S. Brar, C. Evans, G. Hallward, S. N. Fletcher, T. Richards, on behalf of the Association of Cardiothoracic Anaesthetists (ACTA)

Anaemic patients

Higher mortality - **2 times more likely to die**

Higher transfusion requirements for small haemoglobin changes (10g/dL)

Longer hospital stays (median 2 days)

Death linked to severity of anaemia and to gender
Drivers for change

NICE

Patient blood management

National blood transfusion services

Implementation of perioperative medicine programmes to support the RCoA curriculum

Best Practice references: Cambridge (Klein), Cardiff (Evans)

ACSA/CQUIN
Consensus Statement | Open Access | cc by nc sa

International consensus statement on the peri-operative management of anaemia and iron deficiency


First published: 20 December 2016 | https://doi.org/10.1111/anae.13773 | Cited by: 49
1. Peri-operative care pathway
2. Investigate anaemia in all surgical procedures with expected blood loss > 500 ml.
3. Iron deficiency = serum ferritin level < 30 μg.l⁻¹
4. Postpone major, non-urgent surgery to diagnose and treat anaemia.
5. Target haemoglobin ≥ 130 g.l⁻¹ in both sexes.
6. Oral iron if surgery scheduled 6–8 weeks after diagnosis.
7. Daily/alternate day oral iron and nutritional advice.
8. Intravenous iron as front-line therapy if oral not tolerated/surgery < 6 weeks away.
9. Start the diagnosis and treatment of anaemia and iron deficiency as early as possible; ideally as soon as the decision to undertake surgery is made.
Portsmouth experience

Efforts since at least 2013; effective roll-out since 2017

Who?
    new evidence on new thresholds: PPOG

When?
    is a delay acceptable?

Where?
    DSU

Timing

Organisational problem, not just clinical problem
Achievements so far

A working pathway for patients
  robust admin flow
  efficient DSU pathway
Patient feedback
Trust-approved SOP for DSU
Guideline for Perioperative Management of Anaemia approved by Trust, CHAT, Surgery/AAnaesthetics
Outcomes
  length of stay, blood transfusion
Engagement with all cancer specialities
Some equipment (from Pharmacosmos)
Some database
A growing TEAM!
Would you recommend the service to a friend/relative?

Areas for improvement

- Short notice appointments
- Lack of patient understanding
Prescriptions are incorrect

Occasionally unable to cannulate

Second Doses is not usually required

**Time inefficient:** 2-21 days (average 15 days)

Infusing incorrect patients

Blood Results

Plans: Stickers on notes (as per CWT)

Prioritise anaesthetic review of iron patients

Surgeons to request bloods in outpatients
<table>
<thead>
<tr>
<th>Referral should include</th>
<th>Tick if completed</th>
<th>Initial to say checked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescription (weight should be annotated on the front)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients Haemoglobin and Ferritin Levels (Annotated on the front of prescription)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-dated blood form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timescale to book patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient informed of Treatment Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Appointment to be Booked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient telephoned – With Appointment Date and Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day Before Appointment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appointment Letter sent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leaflets sent to patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appointment entered on DSU Central Calendar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete day surgery local anaesthetic paperwork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes Requested</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admit Patient on PAS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure notes are available</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>After Treatment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic Outcome on PAS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inform POA Group Mail box that Patient has had treatment so that the POA can be updated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send notes to coding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 1st Infusion Timings

<table>
<thead>
<tr>
<th>In to Reception</th>
<th>3rd Stage</th>
<th>Cannula In</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infusion Start</td>
<td>Infusion Finish</td>
<td>Cannula Out</td>
</tr>
</tbody>
</table>

### 2nd Infusion Timings

<table>
<thead>
<tr>
<th>In to Reception</th>
<th>3rd Stage</th>
<th>Cannula In</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infusion Start</td>
<td>Infusion Finish</td>
<td>Cannula Out</td>
</tr>
</tbody>
</table>
Gynaecology audit
Urology audit
Audit of waiting times
Audit of referral process/patient flow
Patient feedback
Audit period April 3rd – July 31st 2018

Total elective gynae operations: 285

Average age 50
  Oldest patient 94
  Youngest patient 18

217 patients had a pre-op haemoglobin measured

97 patients had a haemoglobin measured post-op
All elective gynaecological patients April-July 2018

Total number of patients anaemic at pre-op assessment: 105

Haemoglobin at pre-op assessment <120g/dL: 39 (13%)
Haemoglobin at pre-op assessment <130g/dL: 67 (23%)
For the purposes of this audit, ‘major’ surgery was defined as:

- operations such as TAH, BSO, oophorectomy, salpingectomy, vaginal hysterectomy
- could justify overnight stay
- scheduled to take >60 minutes

Number of patients having major surgery: 103
Major surgery patients

Of these, anaemic at pre-op assessment: 51

Haemoglobin at pre-op assessment <120g/dL: 21 (20%)
Haemoglobin at pre-op assessment <130g/dL: 30 (28%)
<table>
<thead>
<tr>
<th>Average length of stay</th>
<th>hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>All elective gynaecology patients (all surgery; including day case)</td>
<td>27</td>
</tr>
<tr>
<td>Major surgery (regardless of starting haemoglobin)</td>
<td>55</td>
</tr>
<tr>
<td>Pre-op Hb &lt;120 (all surgery)</td>
<td>41</td>
</tr>
<tr>
<td>Major surgery + pre-op haemoglobin &lt;120g/dL</td>
<td>60</td>
</tr>
</tbody>
</table>
3 patients received iron transfusion pre-op:

All referred by GPs

5 patients commenced on oral iron post-op
Blood transfusion?

From the available information in *discharge summaries*: 2 patients received a peri-operative blood transfusion

- One post-op
- One pre-op

Data from *blood transfusion records*: 4 patients had a peri-operative blood transfusion

- 3 were post-op
- 2 were anaemic pre-op
- Average post-op drop in haemoglobin of 30g/dL
- Average improvement post transfusion 20 g/dL
Anaemic who had the right work-up?

Of the 106 patients that had a haemoglobin at pre-op of <130

- 25 had a ferritin measured = 23%
- 2 had a transferrin saturation measured = 2%
- 17 had a CRP measured = 16%
Anaemia is prevalent in this population

Anecdotal evidence: anaemia is tolerated because a gynaecological problem is presumed the cause

Anaemia may have important consequences such as increased LOS

Full investigation of anaemia +/- pre-operative iron transfusion IS required
Record blood transfusion in discharge documentation

Aim to develop ICE tab for ‘pre-op anaemia work up’

Re-audit in 3 months from action
Action Points

Short term
- IV iron database
- 5 days a week IV infusion service
- Hb to be discussed at all cancer speciality MDTs
- Procure equipment for improved service delivery
- Referral/access to virtual anaemia clinic

Long term
- Database with quarterly reports
- Waiting times less than 2 days
- All patients for elective surgery to have Hb >130g/dL
- Minimise use of blood
- Extend service to all specialities