Avoiding Transfusion – Optimising Haemoglobin

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Why Not Transfuse?


  ‘Avoid the unnecessary use of blood and blood components (fresh frozen plasma and platelets) in medical and surgical practice’
Enhanced Recovery Pathway

Referral from Primary Care

- Optimising Preoperative Haemoglobin levels
- Managing pre-existing co-morbidities eg diabetes/hypertension

Pre-Operative Admissions

- Optimised health / medical condition
- Informed decision making
- Pre-operative health & risk assessment
- Pt information and expectation managed
- DX planning (EDD)

Intra-Operative

- Minimally invasive surgery if possible
- Epidural management
- Optimised fluid management
- Use of regional/spinal and local anaesthetic with sedation
- Hypothermia prevention

Post-Operative

- Optimised fluid hydration
- CHO loading
- Admit on the day of surgery
- Avoid routine use of sedative pre-medication

Follow Up

- Active planned mobilisation within 24hrs
- Rapid hydration & nourishment
- IV therapy stopped early
- No wound drains
- No Catheters
- Regular oral analgesia
- Avoidance of systemic opiate-based analgesia or administered topically

- DX on planned day
- Increase therapy support
- 24hr tele follow up
Anaemia is defined as a haemoglobin
less than 120g/L for females
less than 130g/L for males

Most anaemia will be due to iron deficiency
It is now recognised that correcting even minor degrees of anaemia significantly reduces the need for transfusion and the resultant increase in morbidity and mortality following major surgery.
West Midlands RTC Audit 2005

Transfusion Rate v PreOp Haemoglobin level
Primary Hip Surgery (n=887)

Percentage of patients Transfused

PreOperative Hb - g/dl

- 8 to 10
- 10 to 12
- 12 to 14
- 14 to 16
- >16

Legend:
- Postoperative
- Perioperative
- Uncertain Timing
Oxford Regional Audit of Preoperative Assessment in Relation to Blood Conservation
February 2005

Pre-operative haemoglobin (g/dl)

Percentage (%)

- <10
- 10 to 12
- >12

Legend:
- Tx pre op
- Tx peri-op
- Tx post op
- Iron supplements
Types of Treatment

- Better Diet
- Oral Iron
- IV Iron
- Folate

Remember most importantly to investigate cause of anaemia
Iron Therapy

- Oral Iron - Readily available, can cause side effects and compliance can be poor due to this, many factors can affect absorption of iron including underlying condition—compliance must be monitored
- IV Iron – works quicker as able to ensure loading dose is given, patient must be referred for the treatment
Patient A
Referred to Surgeon.
No FBC taken

Pre-Admission
FBC done.
Hb found to be abnormal.
Treatment started.

Surgery Date
FBC checked.
Hb still abnormal.
Surgery postponed

Postponed Date
FBC normal
Surgery performed

Patient B
Referred to surgeon
FBC taken
Hb found to be abnormal
Treatment started

Pre-Admission
FBC done.
Hb increased but still too low
Treatment continued or revised

Surgery Date
FBC checked.
Hb normal
Surgery takes place as planned
Best Practice

GP – Prior to surgical referral

Pre-admission

Good Practice

On Admission

Too Late
Primary Care

- If anaemic look for a cause
- If iron deficient, treat with oral iron and look for cause
- Optimise prior to referral
- Early detection of anaemia allows time to treat iron deficiency or refer other anaemias
Pre-Operative Assessment

Pre Op Assessment / Out patients appointment

1. Take pre-operative blood tests including FBC & G&S
2. Provide written information on transfusion and the alternatives

Hb >120g/L

Arrange repeat FBC after 6 weeks and /or 1 week prior to surgery
Arrange repeat G&S within 5 days of surgery unless report specifies otherwise
Hb <120g/L

Known / existing anaemia

Diagnosis/ treatment incomplete

New finding

Check urea, creatinine, liver function tests, CRP, ESR and TSH.
1. MCV < 76 +/or MCH < 27: Check serum iron, ferritin and transferrin levels (serum iron/TIBCx100=transferrin sat)
2. For MCV > 76: As above but with the addition of serum folate and Vit B12

Note: Serum ferritin is an acute phase protein and may be raised if CRP is elevated.

Mild / moderate Hb 80-120g/L

Severe / symptomatic Hb <80g/L

Long lead-time to surgery (>6 weeks)
Low ferritin / serum iron + / - raised transferrin
Prescribe oral iron tablets
Refer to GP for management

Mild / moderate Hb 80-120g/L

Short lead-time to surgery (<6 weeks)

Refer to anaesthetist

Severe / symptomatic Hb <80g/L

Investigate and manage in relation to urgency / severity of surgery

Diagnosis/ treatment complete

Refer to GP for management

Arrange repeat FBC after 6 weeks and/or 1 week prior to surgery
Arrange repeat G&S within 5 days of surgery unless report specifies otherwise
Other Important Pre-Operative Considerations

- Where ever possible investigate all anaemia completely before referral for surgery
- Anaemia of Chronic Disease – Referral
- Haemoglobinopathies – important to determine if any underlying, treatable anaemia
- Antibodies – If atypical antibodies are present then blood should be made available to cover the surgery
- If any other underlying conditions which will affect blood loss ensure to enlist specialist help
Drugs Which Can Increase Bleeding Risk

- Aspirin – Usually discontinue 2 weeks prior to surgery
- NSAIDS – 1 week
- Clopidogrel – 7 days
- Dipyridamol – 24 hours
Is patient having a Low Bleeding Risk Procedure*?

Yes

No need to stop warfarin

No

Stop warfarin 5 days prior to procedure date

High Thrombotic Risk:

VTE within last 3/12
AF plus previous CVA/TIA or prosthetic valve or mitral stenosis or previous embolic event.
Mitral valve replacement

Therapeutic LMWH Bridging required
Commence Fragmin (weight related dose) iu/kg od

Low Thrombotic Risk:

Low risk AF (no prior TIA/CVA or other risk factors)
Bileaflet aortic valve replacement
VTE more than 3/12 earlier

No therapeutic LMWH Bridging required
Consider standard thromboprophylaxis Fragmin 5000iu sc od if so indicated by VTE risk assessment.

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*Skin biopsy
*Dental extractions
*Some Endoscopic procedures – diagnostic procedures, biopsy of non-vascular tissues, biliary/pancreatic stents

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Management of Warfarinised Patient Undergoing Invasive Procedure or Surgery
Intra-Operative Considerations

- Anaesthetic techniques used that will reduce blood loss eg. controlling blood pressure
- Surgical techniques
- Use near patient testing to determine blood loss rather than ‘estimation’
- Transfuse 1 unit rather than 2 if required
- Possibility of use of Cell Salvage
Does Enhanced Recovery Work

Percent Patients Tx

- NCA 2000: 51%
- NCA 2007: 23%
- 2010: 8%
Wexham % patients with Pre-op Hb <120g/L

- NCA 2007: 25%
- 2010: 9%

Wexham % patients with Pre-op Hb >120g/L

- NCA 2007: 75%
- 2010: 91%
Number of Patients with Hb<120g/L at Pre Admission

- Normal MCV/MCH: 14
- Iron Deficient MCV/MCH: 10
- B12 Deficient MCV/MCH: 1
In Summary

- Transfusion is part of the Enhanced Recovery Program
- Early treatment of anaemia is essential in Enhanced Recovery
- GP’s should investigate and treat all anaemia prior to referral for surgery where ever possible
References

• Audit of blood use in orthopaedic surgery - comparative report March 2005
  http://www.transfusionguidelines.org.uk/Index.aspx?Publication=RTC&Section=28&pageid=1183

• Oxford Regional Audit of Pre-operative Assessment in Relation to Blood Conservation
  http://www.transfusionguidelines.org.uk/docs/pdfs/rtc-scent_audit_pre_op.pdf

• Delivering enhanced recovery: Helping patients to get better sooner after surgery (PDF, 651K)
Thank You

- Fitter PTS Sooner
- Reduced Length of Stay
- Shorter Pathways/Reduced Waits
- Rehabilitation & Return to Work
- Ongoing Care Interventions Reduced/Quicker
- Improved PT Experience
- Improved Clinical Outcome
- Improved Efficiency Savings
- Increased Capacity for Trust
- Operational & Quality Standards Met