GP referral pathways
Role of primary care in the management of anaemia

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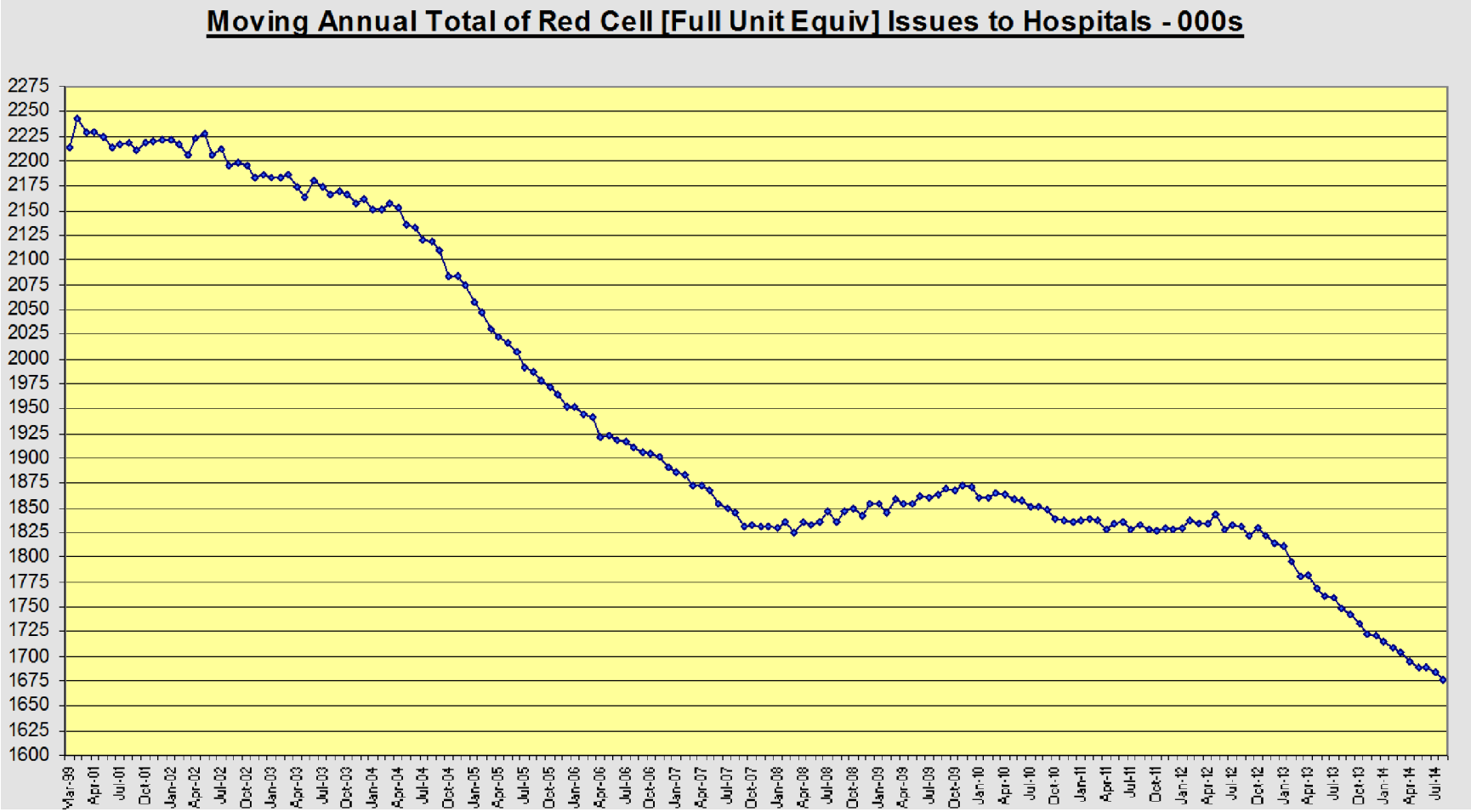
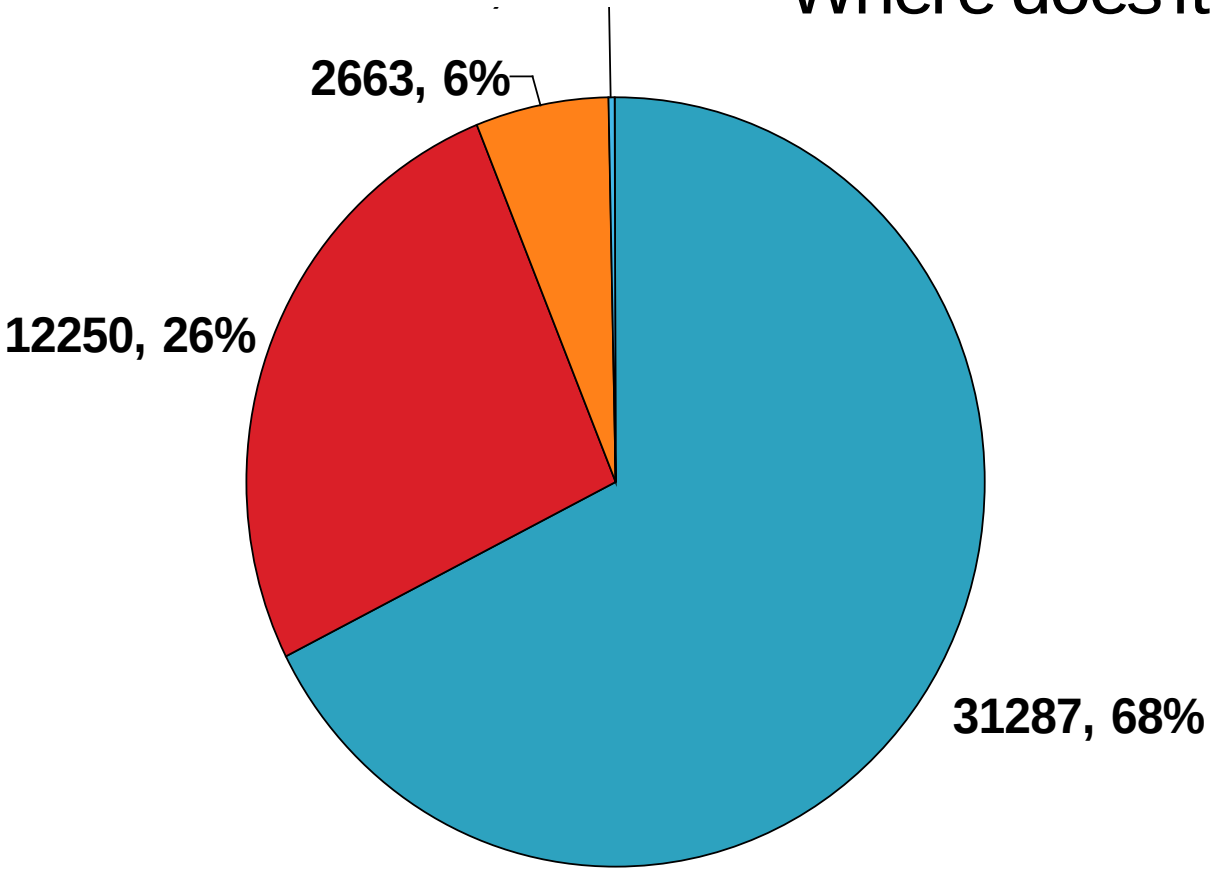
Managing anaemia – everybody's problem
25th March 2015

Red cell use to August 2014



Where does it all go?



2014 NCA red cell use

Category	Number	Percentage of total
Cardiothoracic	2838	6.12
Trauma	2199	4.75
Orthopaedics	1767	3.81
GI Surgery	1737	3.75
Vascular	1109	2.39
Urology	938	2.02
Solid Organ Tx	409	0.88
Neuro surgery inc injury	279	0.6
Plastic inc burns	204	0.44
ENT	191	0.41
Other surgery	579	1.25
Total	**12250**	**26.44**

Sub-category	Number	Percentage of total usage
Non-haematological cancer	4541	9.8
Myelodysplasia	2923	6.31
Renal failure	2242	4.84
Acute upper GI bleed	2192	4.73
Acute Myeloid leukaemia	1987	4.29
Lymphoma/CLL	1881	4.06
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Sickle cell anaemia	1350	2.91
Non-haem anaemia, not specified	1338	2.89
Acute lower GI bleed	1255	2.71
Iron deficiency	1255	2.71
GI blood loss, site unknown	1091	2.35
Myeloma	1085	2.34
Total	**24789**	**53.5**

What's the problem?

Life saving	vs	adverse patient outcomes
	OR	
Improve patient outcome	by	avoiding unnecessary exposure

The three pillars of PBM

Predictors for red cell blood transfusion	Pillars of blood management
Pre op anaemia	Optimisation of red cell mass
Volume of surgical blood loss	Minimisation of blood loss
Failure to adopt a more restrictive threshold for transfusion	Optimisation of the patient’s tolerance of anaemia

Elective surgery

- Is surgery likely to result in significant blood loss?
- Does my patient have anaemia or are they at risk of anaemia?
- Are there comorbidities that may contribute to adverse outcomes if anaemia develops?
- Are there chronic conditions that may impede BM response?

Pre-operative anaemia

- Awareness
- Identification
- Investigation
- Management

Is this best done by POAC or by primary care?

POAC

- Can only be undertaken once decision for surgery made
- May preclude oral iron
- Direct access to parenteral iron service
- Request GP to investigate cause

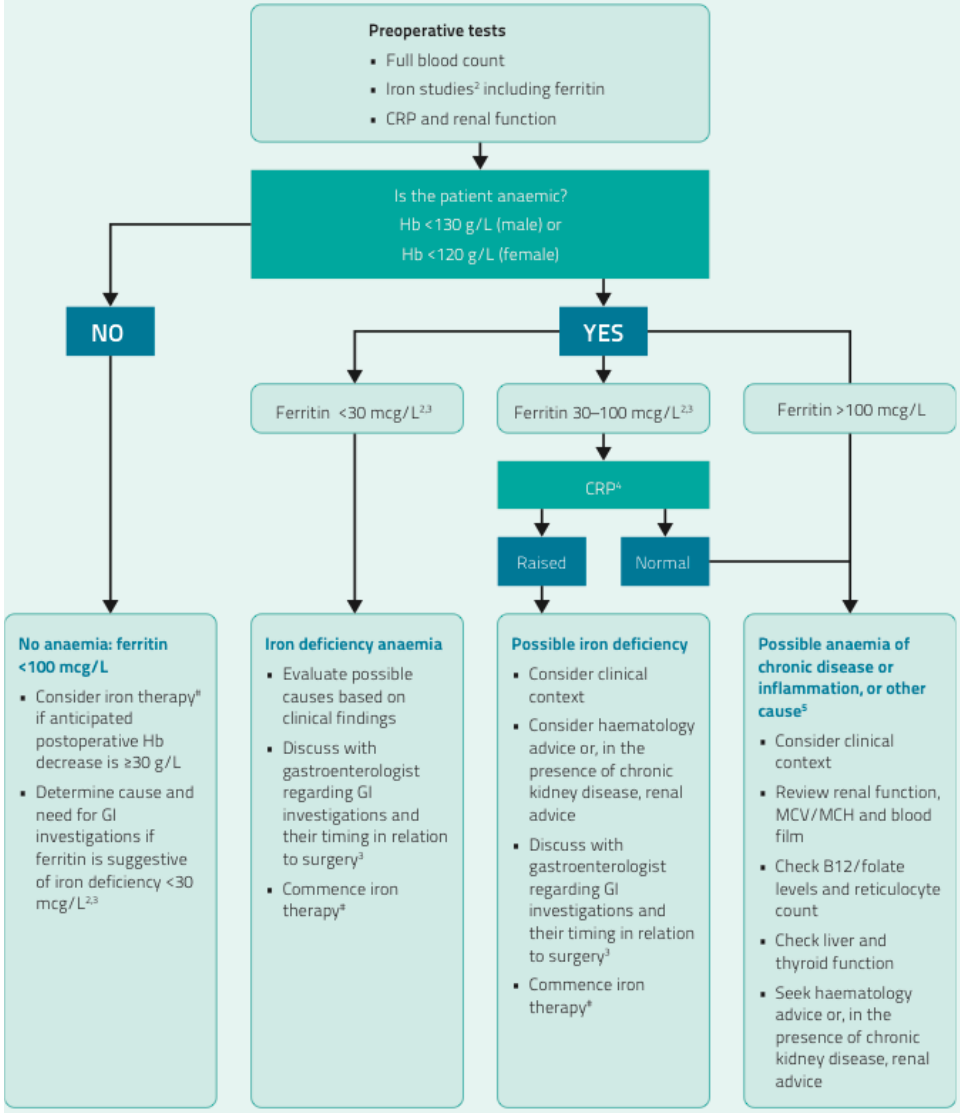
Primary care

- Assessment can be made pre surgical referral
- May permit oral iron
- Indirect access to parenteral iron service
- Clear ownership of investigation of iron deficiency

Effective communication

This template[1] is for patients undergoing procedures in which substantial blood loss is anticipated such as cardiac surgery, major orthopaedic, vascular and general surgery. Specific details, including reference ranges and therapies, may need adaptation for local needs, expertise or patient groups.

An editable electronic copy of this template is available on the National Blood Authority's website (www.nba.gov.au).



[#] Iron therapy

Oral iron in divided daily doses. Evaluate response after 1 month. Provide patient information material.

IV iron if oral iron contraindicated, is not tolerated or effective; and consider if rapid iron repletion is clinically important (e.g. <2 months to non deferrable surgery).

NOTE: 1 mcg/L of ferritin is equivalent to 8–10 mg of storage iron. It will take approximately 165 mg of storage iron to reconstitute 10 g/L of Hb in a 70 kg adult. If preoperative ferritin is <100 mcg/L, blood loss resulting in a postoperative Hb drop of ≥30 g/L would deplete iron stores.

In patients not receiving preoperative iron therapy, if unanticipated blood loss is encountered, 150 mg IV iron per 10g/L Hb drop may be given to compensate for bleeding related iron loss (1 ml blood contains ~0.5 mg elemental iron)

Abbreviations

CRP = C-reactive protein

GI = gastrointestinal

Hb = haemoglobin

IV = intravenous

MCV = mean cell/corpuscular volume (fL)

MCH = mean cell/corpuscular haemoglobin (pg)

Footnotes

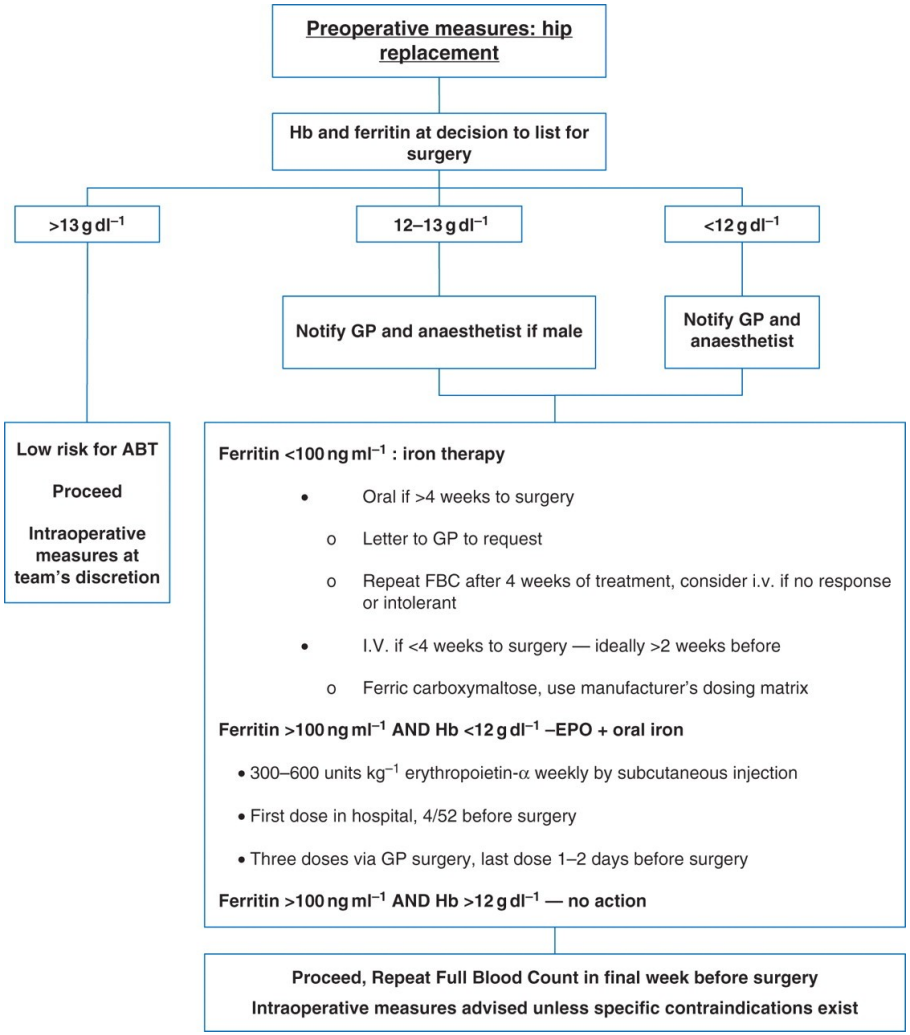
1. Anaemia may be multifactorial, especially in the elderly or in those with chronic disease, renal impairment, nutritional deficiencies or malabsorption.
2. In an anaemic adult, a ferritin level <15 mcg/L is diagnostic of iron deficiency, and levels between 15–30 mcg/L are highly suggestive. However, ferritin is elevated in inflammation, infection, liver disease and malignancy. This can result in misleadingly elevated ferritin levels in iron-deficient patients with coexisting systemic illness. In the elderly or in patients with inflammation, iron deficiency may still be present with ferritin values up to 60–100 mcg/L.
3. Patients without a clear physiological explanation for iron deficiency (especially men and postmenopausal women) should be evaluated by gastroscopy/colonoscopy to exclude a source of GI bleeding, particularly a malignant lesion. Determine possible causes based on history and examination; initiate iron therapy; screen for coeliac disease; discuss timing of scopes with a gastroenterologist.
4. CRP may be normal in the presence of chronic disease and inflammation.
5. Consider thalassaemia if MCH or MCV is low and not explained by iron deficiency, or if long standing. Check B12/folate if macrocytic or if there are risk factors for deficiency (e.g. decreased intake or absorption), or if anaemia is unexplained. Consider blood loss or haemolysis if reticulocyte count is increased. Seek haematology advice or, in presence of chronic kidney disease, nephrology advice

For more information on the diagnosis, investigation and management of iron deficiency anaemia refer to Pasricha SR, Flecknoe-Brown SC, Allen KJ et al. Diagnosis and management of iron deficiency anaemia: a clinical update. Med J Aust, 2010, 193(9):525–532.

Disclaimer

The information above, developed by consensus, can be used as a guide. Any algorithm should always take into account the patient's history and clinical assessment, and the nature of the proposed surgical procedure.

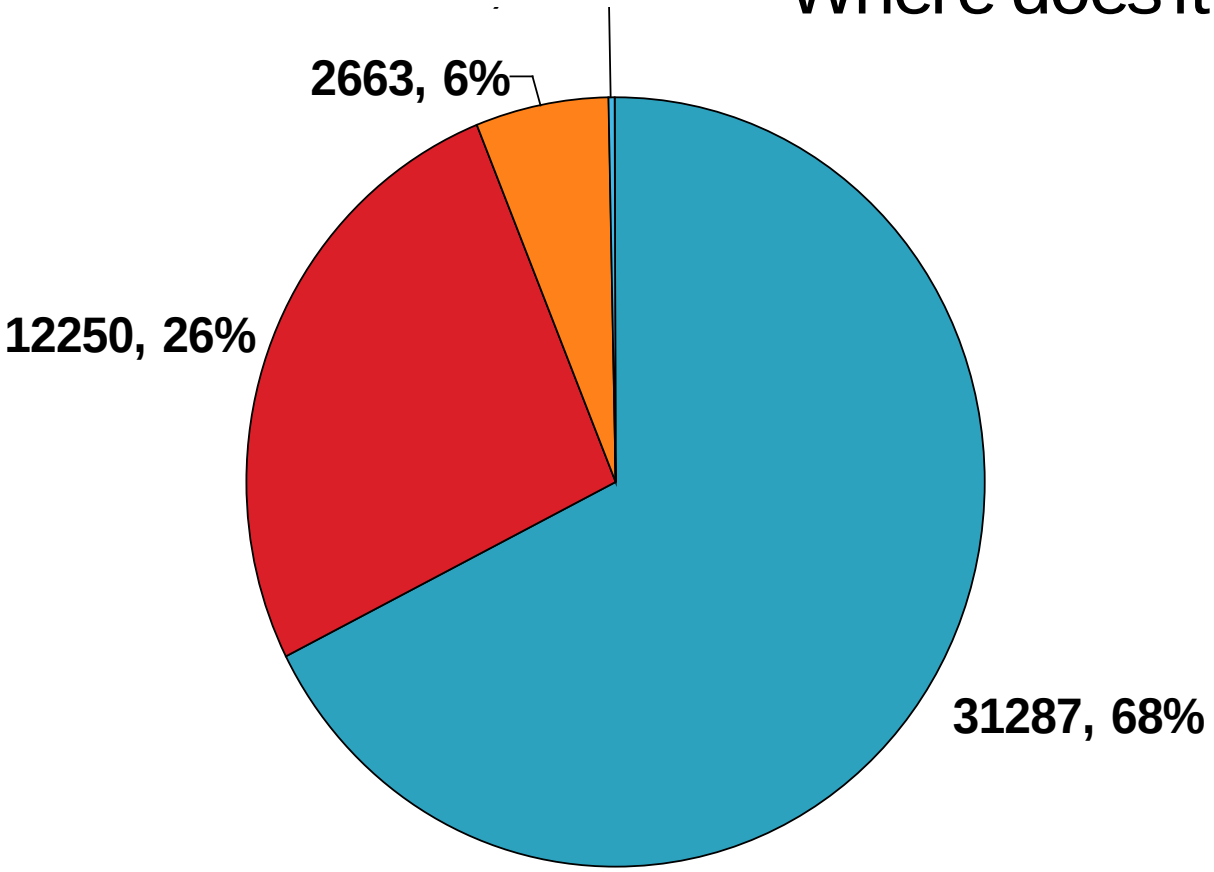
Preoperative blood management algorithm for primary hip replacement.



A. Kotzé et al. Br. J. Anaesth. 2012;108:943-952

BJA British Journal of Anaesthesia

Where does it all go?



2014 NCA red cell use

Case 1

- Booking: Hb 115g/l MCV 87.9fl MCH 28.1pg
- 28/40: Hb 101g/l MCV 85.3fl MCH 26.3pg

- 15% pregnant women in UK had Hb < 110g/l

  (WHO global database on anaemia 1993 – 2005)

- 85% cases of anaemia in pregnancy due to iron deficiency
- Iron depletion: 30 – 40% pregnant women

Case 1 management

- 85% due to iron deficiency
- Trial of oral iron

	Dose per tab	Elemental iron
Ferrous fumarate	200mg	65mg
Ferrous gluconate	300mg	35mg
Ferrous sulphate	200mg	65mg
Ferrous feredetate (Sytron)	190mg/5ml	27.5mg/5ml
Pregaday	Fumarate 305mg	100mg

- Repeat Hb after 2 – 3 weeks
  - Expect Hb to have increased by 10g/l

Taking oral iron - advice

- Improve efficacy
  - Take 1 hour before or after food
  - Single tablet without food as effective as tds dosage with meals (estimated 80% requirement)
  - Absorption increased by vitamin C – take with a glass of orange juice
  - Do not take with milk, tea or coffee
  - Avoid antacids

- Improve compliance
  - Gastric side effects are dose dependent can be minimised by slow dosage escalation
  - Constipation not dose dependent – bran, lactulose
  - Compliance improved with od or bd dosage

Parenteral iron in pregnancy

- Ferinject/Cosmofer/Venofer/Monofer
  - No adequate and well controlled trials in pregnancy
  - Careful risk:benefit evaluation
  - Confine use to 2nd/3rd trimester if "benefit judged to outweigh potential risk for both mother and fetus"

- Pragmatically useful if significant anaemia in 3rd trimester
  - Predictable and rapid response

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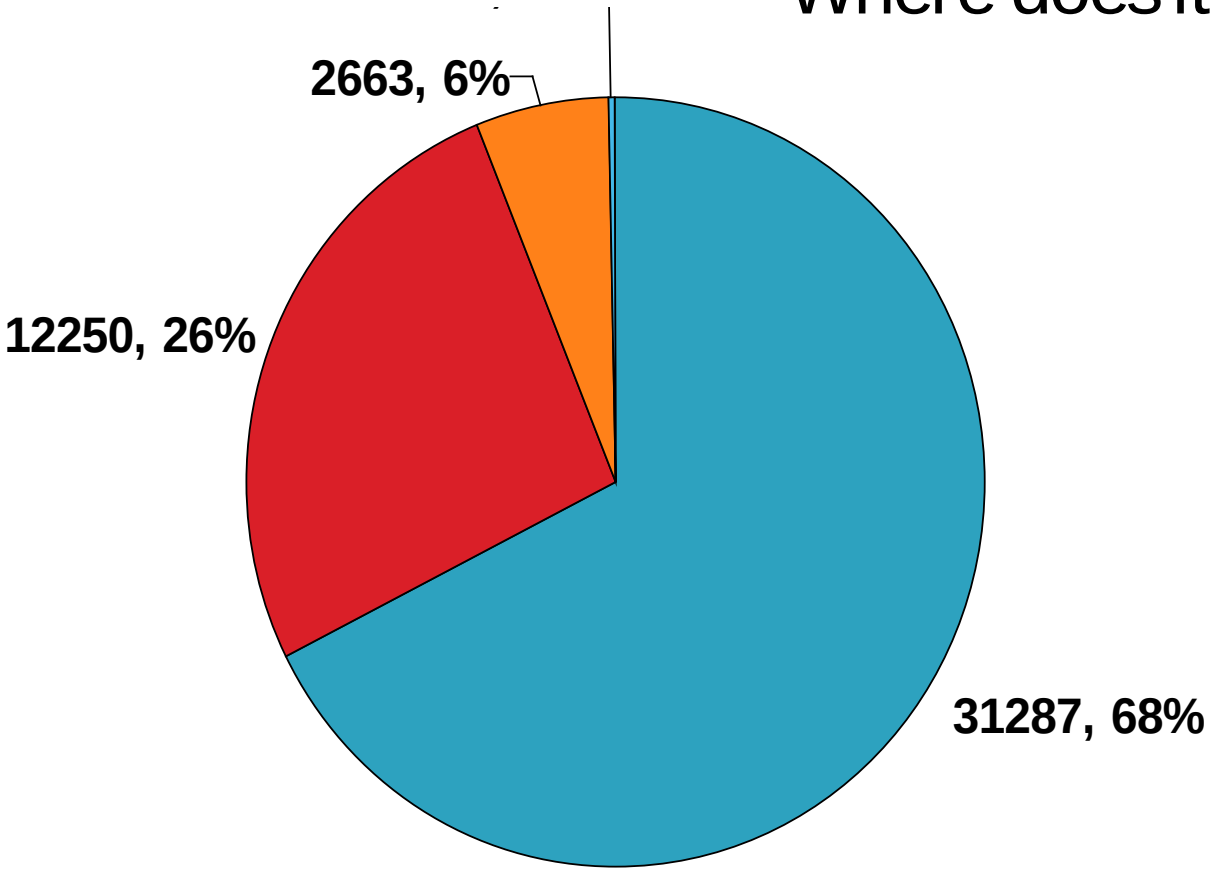

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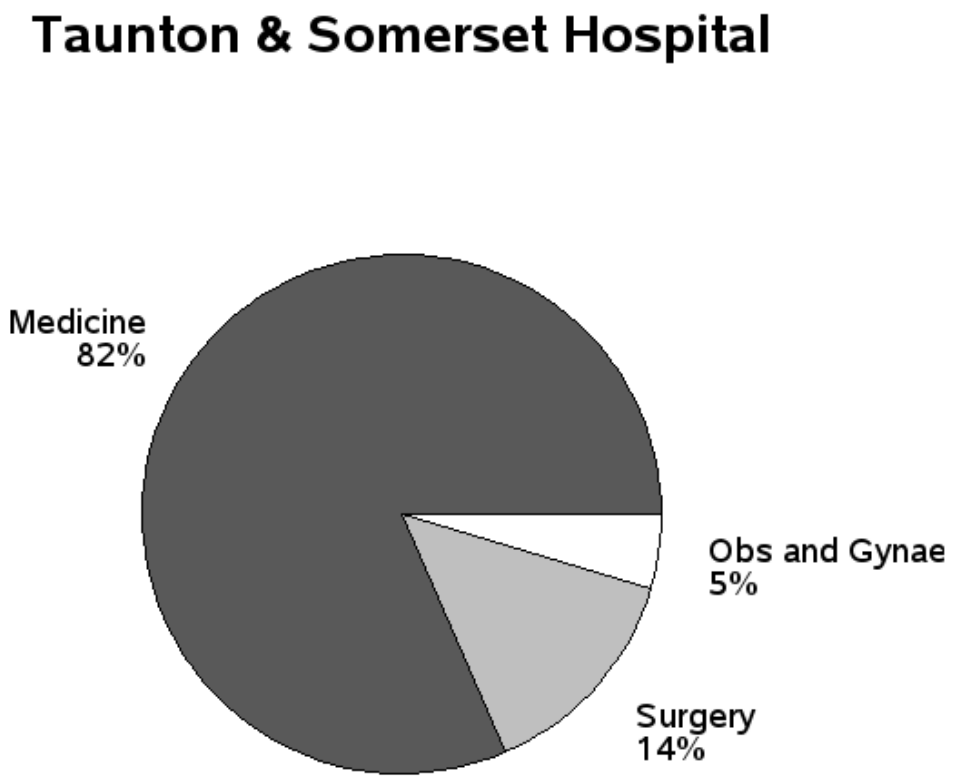
Transfusion in the medical patient



Case 2

- Mrs LW 52 years old
- Saw GP 6.2.15 recovering from cold, known fibroid
- Hb 63 – referred for transfusion by GP
- On admission 7.2.15
  - Tired for a few months
  - Occasional palpitations
  - No chest pain or breathlessness

Management plan

- F1: gynae referral and transfuse ?2 units
- Post take Consultant WR: home post Gynae review and transfuse 9.2.15 (Mon)

- C2 ACCS review 9.2.15
  - Progressive SOB on exertion only noted with hindsight
  - Hb incidental finding by BP
  - ?transfuse or for iron infusion (ferritin 7 microg/l)
- Consultant: 2 units packed rbc with iron infusion 10.2.15.....
- Patient declined iron infusion but had 2 unit transfusion...

Highest using sub-categories in medicine

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Audit of GP admissions to MAU

- Admitted via GP with anaemia (79 patients over 6 months)
  - Notes obtained for 34 (43%)

Reason for anaemia	Number of patients
Anaemia under investigations – cause unknown	17 (50%)
Anaemia of chronic disease	1 (3%)
Anaemia related to radiotherapy/chemotherapy/oncology condition	7 (20%)
Upper GI Bleed but not actively bleeding	8 (23%)
Post surgical	1(3%)

Anaemia under investigations (17 patient), cause unknown – blood results looked at in detail

•12/17 had low MCV/MCH – usually indication that iron deficient

•10/12 had low Ferritin

Audit of GP admissions to MAU

Notes looked at in details for 12 patients

- Symptoms of anaemia (over half – mild symptoms for over 1 month prior to admission)
- Other issues (age, underlying conditions)

Conclusion

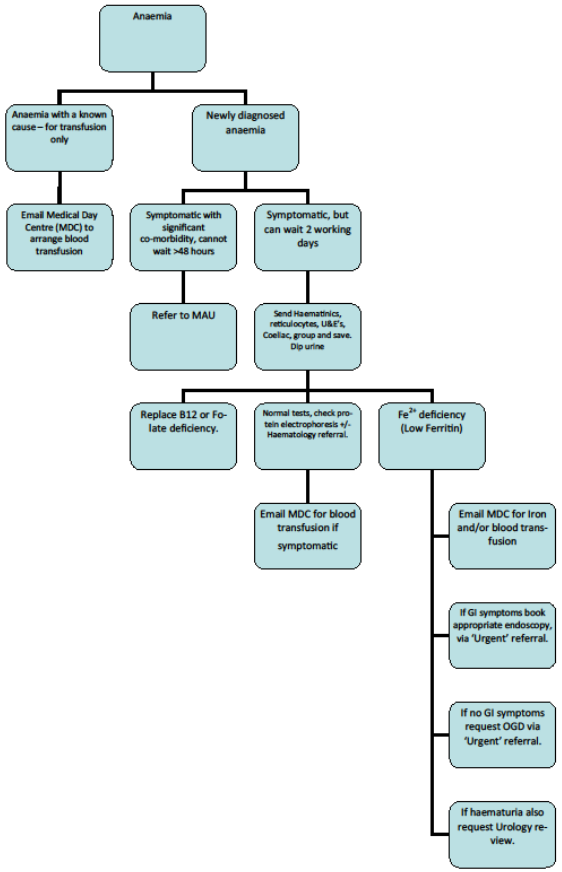
- 50% of these 12 could have been treated with IV iron

- 2 unit blood transfusion costs £250 and takes 6 hours to administer (plus lab time)
- 1G of IV iron (Ferinject) takes 1 hour to administer and could be kept as stock drug on ward.

Current state

- Education of MAU doctors
- Early identification of IDA
  - Quick turn around of Ferritin tests
  - Use of logic rules within lab computer to automatically test ferritin in cases of anaemia
- Use of Ferinject for quick administration and therefore shorten length of stay
- Promote direct referral by GPs to TP for IV iron as a daycase

Future proposal



Rapid access anaemia clinic