GREENLANE MEDICAL SPECIALISTS CME 18.05.20

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COUNTIES MANUKAU HEALTH

OBJECTIVES

- Iron deficiency anaemia
  - Case
- Iron replacement
- Endoscopy during pregnancy

CASE

- Ms K
- 25 year old female
  - 2 kids: age 1 and 3

- Recent General Surg admission
- PR bleed. ? Haemorrhoidal bleed
- Lowest Hb 75

HISTORY: THE MORE THE BETTER

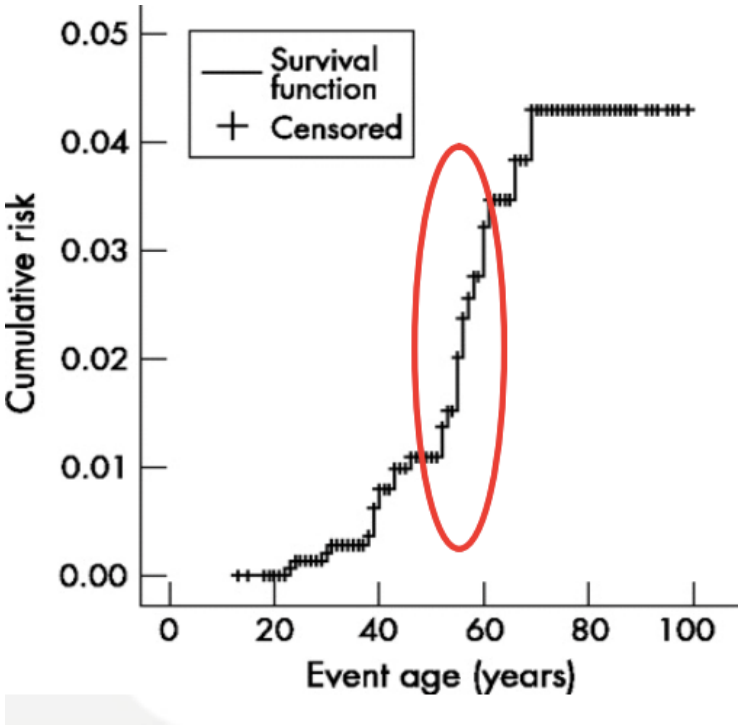
- Intermittent PR bleed
  - Fresh. Different shade of red
  - On tissue paper, in the toilet bowl,
  - Frequency
  - Volume
- One year
- Lower abdominal pain
- Smoker
- Other symptoms?

ALARM SYMPTOMS

- PR bleed
- Unintentional weight loss
  - 5% of body weight or 4.5kg over 6 months
- Change of bowel habit- diarrhoea, thinning of the stool > constipation
- Severe unremitting symptoms
- Iron deficiency anaemia without apparent cause

HIGH RISK FACTORS: SOMETHING YOU CAN'T CHANGE

- Getting older. Especially above age 50
- Personal history of colorectal polyps or colon cancer
- Personal history of IBD, especially >8 years
- Family history of colon polyps or colon cancer
  - First degree relative <55
- Genetics <5%: FAP, Lynch, SSPS



HIGH RISK FACTORS: SOMETHING YOU CAN CHANGE

- Overweight/Obese
  - Especially larger waistline
  - Obesity BMI >29 RR 1.45
- Smoking: Cigarette smoking RR 1.18
- Diabetes: RR 1.38
- Physical inability
- Diet: BBQ meat, processed meat
  - 17% increase risk if > 100g red meat/day
  - 18% increased risk if >50g processed meat
- Heavy alcohol use: 4 drinks/day, RR 1.21

CASE CONTINUE

- 25 year old female
- Fresh PR bleed for one year ? Haemorrhoidal bleed
- Lowest Hb 75

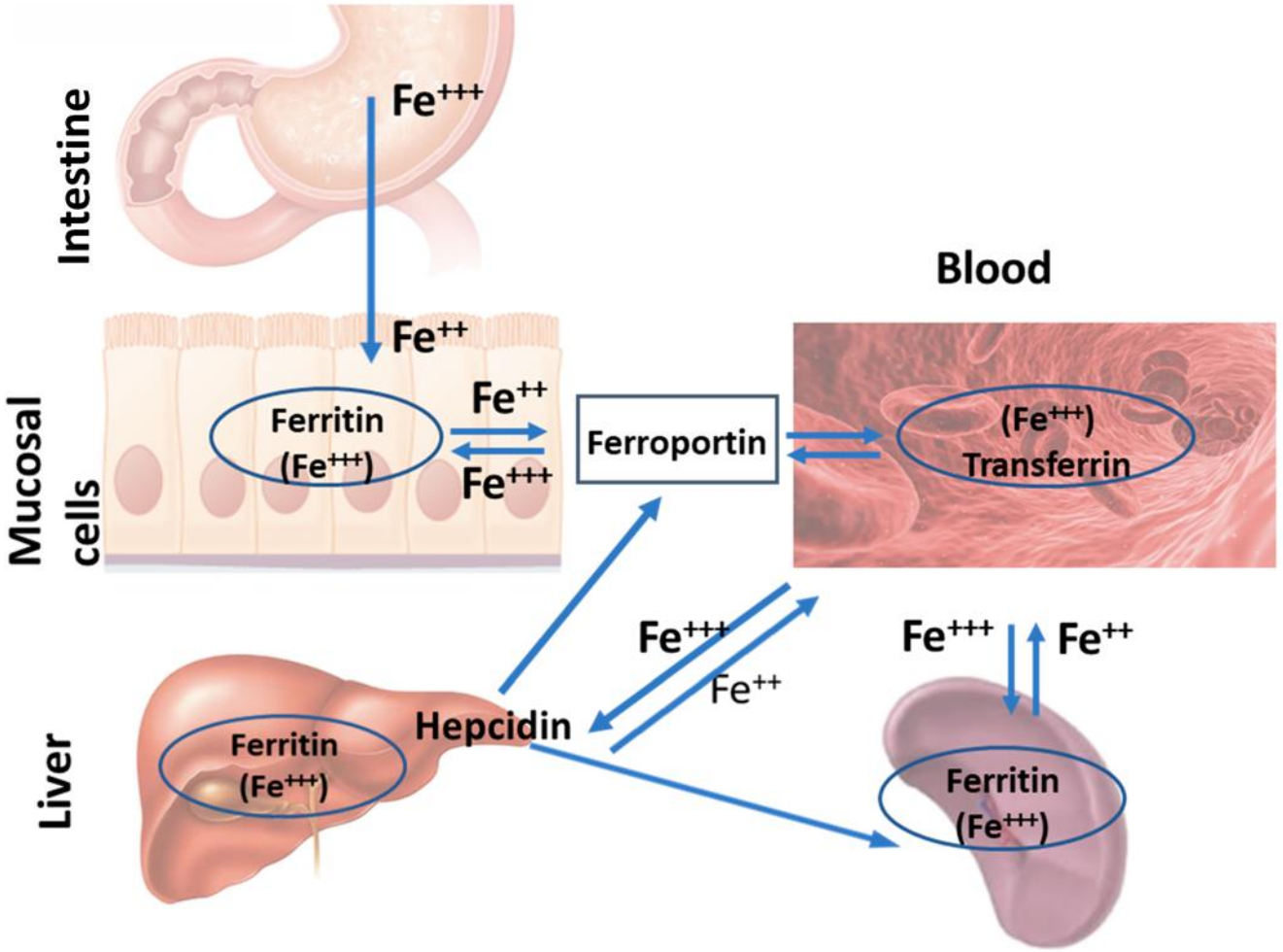
- O/E not unwell. BMI 37
- Distended abdomen. Non-tender
- PR: no blood on the glove. No mass palpated.

- Hb75, MCV 72
- Ferritin 7
- Liver function: ALT 60, ALP 80, GGT 100
- Faecal spec –ve for infection

IRON DEFICIENCY ANAEMIA

- Ferritin <20, increase transferrin, increase TIBC, low transferrin sat, increase sTfR
- Common referral to Gastro department: 15%
- 5% in men and post-menopausal women
- Management
  - Identify the cause
  - Treat
  - Replace iron

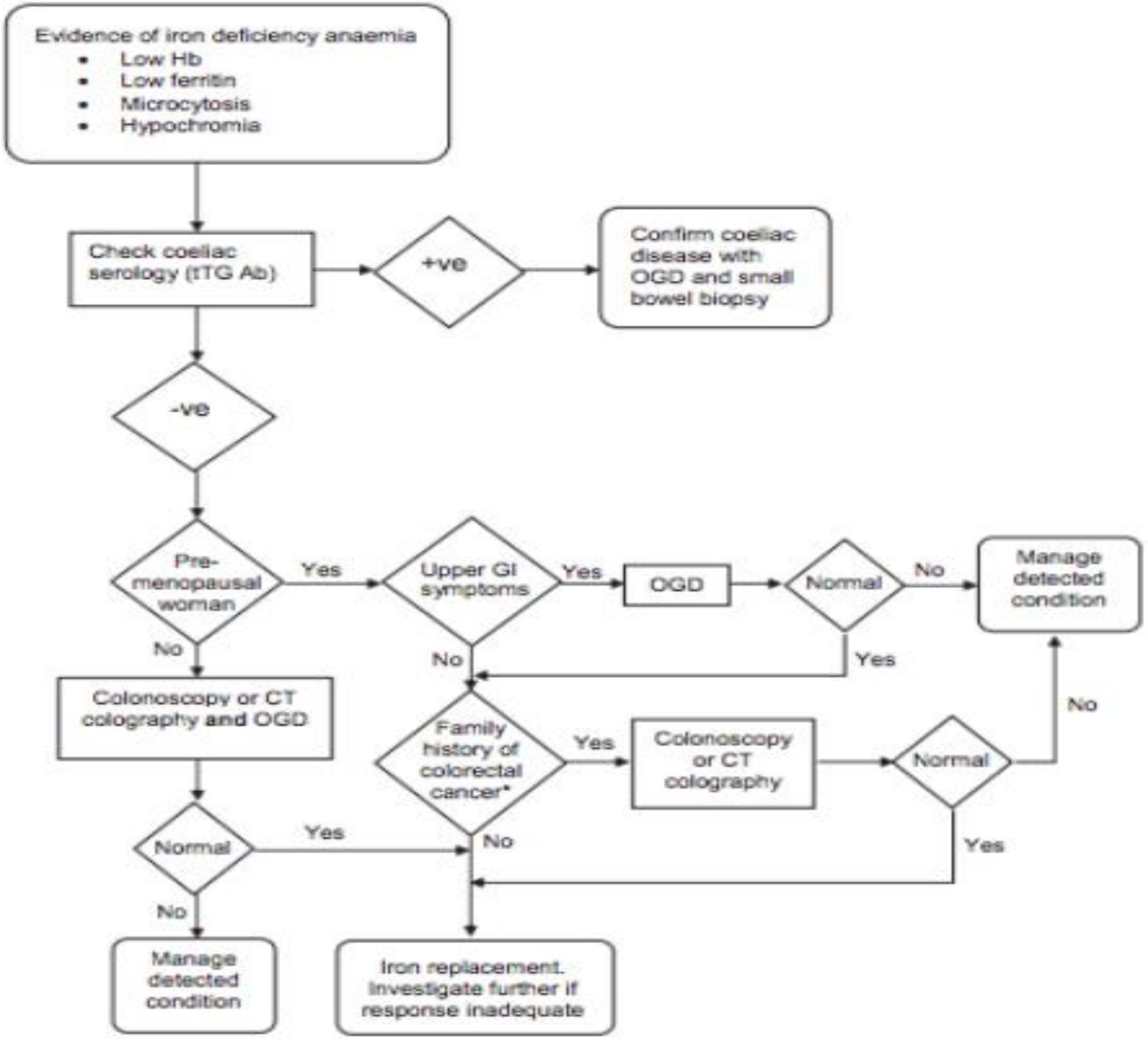
IRON METABOLISM



IRON TEST INTERPRETATION

	Iron Deficiency	Anaemia of Chronic Disease	Acute Phase Reaction	Iron Overload
Serum Iron	↓	↓	↓	↑
Transferrin / TIBC	↑	↓	↓	N / ↓
Transferrin Saturation	↓	↓	↓	↑
Ferritin	↓	Normal	↑	↑
Soluble Transferrin Receptor	↑	Normal	Normal	↓

Occult GI blood loss		Malabsorption		Non-GI loss	
Common		Common		Common	
• Aspirn/NSAID	10-15%	• Coeliac disease.	6%	• Mensturation.	30%
• Colon cancer	10%	• Gastrectomy	<5%	• Blood donation.	5%
• Gastric cancer.	5%	• H. Pylori	<5%		
• Benign gastric ulcer.	5%				
• Angiodysplasia	5%				
Uncommon		Uncommon		Uncommon	
• Oesophagitis	2-4%	• Gut resection.	<1%	• Haematuria	1%
• Oesophageal cancer.	1-2%	• Bacterial overgrowth.	<1%	• Epistaxis	1%
• GAVE	1-2%			• Renal loss	
• Small bowel tumour.	1-2%				
• Cameron ulcers in hiatus.	<1%				
• Ampullary cancer	<1%				


Evidence of iron deficiency anaemia
Low Hb
Low ferritin
Microcytosis
Hypochromia
Check coeliac serology (tTG Ab)
+ve
Confirm coeliac disease with OGD and small bowel biopsy
-ve
Pre-menopausal woman
Yes
Upper GI symptoms
Yes
OGD
Normal
No
Manage detected condition
No
Yes
No
Colonoscopy or CT colography and OGD
Family history of colorectal cancer*
Yes
Colonoscopy or CT colography
Normal
No
Normal
Yes
No
Yes
No
Manage detected condition
Iron replacement. Investigate further if response inadequate

- Not Vegetarian
- Menorrhagia: 7/30. Heavy clots for first 4 days
- ? Enough to explain severity of IDA

- " By the way, doc, something I need to tell you……
- " I AM PREGNANT, 10 weeks"
- And…." My bleeding is worse in the last 2 months…"

WILL THIS CHANGE YOUR MANAGEMENT?

ENDOSCOPY IN PREGNANCY

- Not well-studied
- Risky
- Foetus is particularly sensitive to maternal hypoxia and hypotension
- Justified when it is clear that failure to perform the procedure could expose the mother/or foetus to greater risk
- IF it has to be done, defer to 2nd trimester

- Risk vs Benefit
  - Teratogensis
  - Premature labour

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SAFETY OF MEDICATIONS USED IN ENDOSCOPY

Drugs	Suggestions
Fentanyl	**Human Data Suggest Risk**
Midazolam	Limited Human Data\—Animal Data Suggest Low Risk
Naloxone	Compatible
Flumazenil	**Human Data Suggest Risk**
Propofol	Limited Human Data—Animal Data Suggest Low Risk
Bowel prep	**???**

TABLE 2. Indications for endoscopy in pregnancy
Significant or continued GI bleeding
Severe or refractory nausea and vomiting or abdominal pain
Dysphagia or odynophagia
Strong suspicion of colon mass
Severe diarrhea with negative evaluation
Biliary pancreatitis, symptomatic choledocholithiasis, or cholangitis
Biliary or pancreatic ductal injury

GENERAL PRINCIPLES FOR ENDOSCOPY IN PREGNANCY

- Every procedure requires a pre-operative consultation with an obsterician
- Strong indication!!!
- Talk to the patient!
- Defer to second trimester if possible
- Use Category B drugs if possible
- Minimize procedure time
- Contraindicated in placental abruption, imminent delivery, ruptured membrane or uncontrolled eclampsia

CASE CONTINUE...

- Proceed to have flexible sigmoidoscopy on the same day
- Seen by surgeon 1 day after flexible sigmoidoscopy
- Staging: not CT. but chest xray and Abdominal MRI
- Day 6: Spontaneous miscarriage day6
- Day 6: CT: no distant metastasis
- Day 18: Anterior resection
- Post resection chemotherapy.
- Doing well

IRON REPLACEMENT

- Diet
  - Once a person has already become low in iron and anaemic it is difficult to get enough iron back into the body even with a diet that is high in iron
- Oral iron replacement
- IM injection
- IV iron infusion

The IRON List...

3 Basic Food Groups
which are high in iron or help in iron absorption.

GROUP I
MEATS:
Liver, Lamb, Veal, Pork, Hearts, Gizzards, Kidneys, Brain, Tongue
SEAFOOD:
Clams, Oysters, Shrimp, Fish (Cods, Sardines, Tuna)
POULTRY:
Chicken, Eggs, Yolks

GROUP II
VEGGIES:
Broccoli, Chard, Spinach, Greens, Asparagus, Turnips, Parsley, Kale, Cress, Brussel Sprouts
BEANS:
Lentils, Lima, Chick Peas, Garbanzo, Soybeans
FRUITS & NUTS:
Dates, Prunes, Figs, Apricots, Apples, Raisins, Coconut, Hazelnuts, Peanuts, Almonds

GROUP III
BREADS & CEREALS:
Enriched, Fortified, Whole Grain
GRAINS:
Wild Rice, Corn Meal, Oats, Rye, Buckwheat, Popcorn, Barley, Wheat Germ, Millet
CEREALS:
Farina, Cream of Wheat, Shredded Wheat, Macaroni

- Vitamin C enriched fruits & veggies help increase Iron absorption if consumed at the same meal as iron source.
- Dairy foods hinder the absorption of Iron. Do not use 1 hour before/after the ingestion of high Iron foods
- High Fiber foods, caffeine and antacid medications decrease iron absorption.

ORAL IRON REPLACEMENT

- Ferrous or ferric form
- Uptake is helped by presence of acid
- Oral dose of **elemental iron** for iron-deficiency anaemia should be 100mg to 200 mg daily.

Iron content of different iron salts		
Iron salt	Amount	Content of ferrous iron (elemental iron)
Ferrous fumarate	200 mg	65 mg
Ferrous sulfate, dried	325 mg	105 mg
Ferrous sulfate	150 mg (in 5 mL)	30 mg (in 5 mL)
Ferrous gluconate	300 mg	35 mg (not currently available in New Zealand)

SIDE EFFECT OF ORAL IRON

- Gastro-intestinal irritation can occur with iron salts.
- Nausea and epigastric pain are dose-related,
- Iron preparations taken orally can be constipating, particularly in older patients and occasionally lead to faecal impaction.

THERAPEUTIC RESPONSE

- The haemoglobin concentration should rise by about 1–2 g/litre per day *or* 20 g/litre over 3–4 weeks. When the haemoglobin is in the reference range, treatment should be continued for a further 3 months to replenish the iron stores.

- Oral iron polymaltose
  - Not currently funded by Pharamc

IV IRON INFUSION

- Unable to tolerate iron taken by mouth
- Unable to absorb iron through the gut
- Unable to absorb enough iron due to the amount of blood the body is losing
- In need of a rapid increase in iron levels to help avoid important complications or a blood transfusion (such as, before or after major surgery, significant anaemia late in pregnancy or after delivery)
- Not responding to iron tablets (such as due to chronic health problems)
- Have chronic kidney or heart failure

IV IRON INFUSION

- Iron polymaltose (Ferrosig or Ferrum H)
  - can be given in a single large dose ('total dose' infusion) or less over a number of hours.
- Iron sucrose (Venofer)
  - cannot be given in a large dose but may be given as a series of small doses taking about ½ an hour and repeated over a period of days or weeks.
- Ferric carboxymaltose (Ferinject)
  - can be given as medium dose over about 15 minutes. It may need repeating on another occasion.

IV IRON POLYMALTOSE

- ***Ferrosig***® and ***Ferrum H***® contain 50 mg/mL elemental iron (as polymaltose)
- Calculated according to body-weight and iron deficit
- Total dose can be given but long time required.
- contra-indicated in first trimester
- **Hypersensitivity reactions** are more likely in patients with a history of allergic disorders including asthma, eczema and other atopic conditions, or a history of immune or inflammatory conditions;
- monitor patient during, and for at least 30 minutes after every infusion; facilities for cardiopulmonary resuscitation should be available

FERRIC CARBOXYMALTOSE

- ***Ferinject*** contains 50 mg/mL of elemental iron
- Bodyweight based calculation. Simplified Method (for patients of body weight ≥ 35 kg) The cumulative iron dose is determined according to the following table: Hb g/L Body weight 35 to < 70 kg Body weight ≥70 kg

Simplified Method (for patients of body weight ≥ 35 kg)

The cumulative iron dose is determined according to the following table:

Hb g/L	Body weight 35 to < 70 kg	Body weight ≥70 kg
<100	1500 mg	2000 mg
≥100	1000 mg	1500 mg

For patients with an Hb value ≥140 g/L, an initial dose of 500 mg iron should be given and iron parameters should be checked prior to repeat dosing.

- Ferric carboxymaltose has less reported ADRs than Iron polymaltose
  - The most commonly reported ADR is nausea (occurring in 2.9% of the subjects), followed by injection/infusion site reactions, hypophosphataemia, headache, flushing, dizziness and hypertension. Injection/infusion site reactions comprise several ADRs which individually are either uncommon or rare.

- However patients are less likely to receive the full required dose in one setting.
- Patients preference

TAKE HOME MESSAGE

- Take a full history, identify the alarm systems and factors
- Follow the IDA algothrim
- Find the cause of IDA and treat
- Replace the iron! Consider different route

- Endoscopy during pregnancy: postponed if clinically possible

- Trust your gut feeling. If in doubt, ask a friend and refer!

QUESTION?