

## **IRON DEFICIENCY ANAEMIA:**

Average adult contains 3-5 g of iron, of which 2/3rd is in haemoglobin.

### **Daily dietary iron requirements per 24 hours**

Male	1 mg
Adolescence	2-3 mg
Female (reproductive age)	2-3 mg
Pregnancy	3-4 mg
Infancy	1 mg

Maximum bioavailability from normal diet about 4 mg

**Absorption:** 5-10% is absorbed, in the duodenum and upper jejunum.

Iron deficiency causes first a normocytic, normochromic anaemia with anisocytosis.

When the anaemia is more severe hypochromia and microcytosis develop.

### **Causes of iron deficiency anaemia:**

**Reproductive system:** Menorrhagia

**Gastrointestinal tract:** Bleeding, Oesophagitis, Oesophageal varices, Hiatus hernia, Peptic ulcer, Inflammatory bowel disease, Haemorrhoids, Malabsorption, Coeliac disease, stomach and colorectal carcinoma, Atrophic gastritis, Angiodysplasia, hereditary haemorrhagic telangiectasia (rare)

**Physiological:** Growth spurts, Pregnancy

**Dietary:** Malnutrition

**Genitourinary system:** Haematuria (? cause)

*Worldwide commonest cause of iron deficiency is hookworm infection*

### **Clinical features of iron deficiency**

**Symptoms:** lethargy, dyspnoea, headaches, tinnitus, and taste disturbance.

**Signs:** Atrophy of the skin occurs in 1/3 of patients, and nail changes such as koilonychia, platynychia, brittle nails.

Patients may also complain of angular stomatitis, glossitis. oesophageal and pharyngeal webs can be a feature of iron deficiency anaemia.

### **Management:**

(a) The appropriate management of the underlying cause and

(b) Iron replacement therapy.

Ferrous sulphate 200 mg three times daily.

Alternative preparations: ferrous gluconate and ferrous fumarate.

Effective iron replacement therapy should result in a Hb rise of about 2 to 4 g/dl every three weeks until the haemoglobin concentration is normal.

Maintenance iron replacement to continue for three months.

c ) Intravenous and intramuscular iron preparations: used when the patient cannot tolerate oral supplements—

### **Failure to respond to oral iron therapy**

Poor compliance, Losses (e.g.: bleeding) > amount of iron absorbed daily.

Combined deficiency states. Consider Haematology referral.

### Investigations in iron deficiency anaemia

Full blood count and blood film examination  
 Haematinic assays (serum ferritin, vitamin B12, folate)  
 Urea and electrolytes, liver function tests  
 Faecal occult bloods  
 Midstream urine (occult blood loss)  
 Fibre optic and/or barium studies of gastrointestinal tract  
 Pelvic ultrasound (females, if indicated)

### Differential diagnosis of hypochromic anaemia

<i>Factor</i>	<i>Iron deficiency</i>	<i>Chronic disorders</i>	<i>Thalassaemia trait (α or β)</i>	<i>Sideroblastic anaemia</i>
Degree of anaemia	Any	<90g/l	Mild	Any
Mean cell volume	↓	N or ↓	↓↓	N ↓ or ↑
Serum ferritin	↓	N or ↑	N	↑
TIBC	↑	↓	N	N
Serum iron	↓	↓	N	↑
Marrow iron	Absent	Present	Present	Present

N = normal; TIBC =total iron binding capacity

### Diagnosis of iron deficiency anaemia

Reduced haemoglobin	Men <135 g/l, women <115 g/l
Reduced mean cell volume	<76 fl
Reduced mean cell haemoglobin	29.5 ± 2.5 pg
Reduced mean cell haemoglobin concentration	325 ± 25 g/l
Blood film	Microcytic hypochromic red cells with pencil cells and target cells
Reduced serum ferritin *	Male <10 µg/l, women (postmenopausal) <10 µg/l, (premenopausal) <5 µg/l
Reduced serum iron *	Male <14 µmol/l, female <11 µmol/l
Increased serum iron and total binding capacity *	>75 µmol/l

\* Check with local laboratory for reference ranges

Diagnostic bone marrow seldom performed in simple iron deficiency, but if the diagnosis is in doubt a marrow aspirate would demonstrate absent iron stores.