

# Iron deficiency anemia

## Evaluation and diagnosis

### Step1. Is it anemia?

#### Clinical signs and symptoms:

- Fatigue
- Headache
- Irritability
- Exertional dyspnea
- Vertigo
- Angina pectoris
- Pallor
- Dry or rough skin
- Blue sclerae

#### CBC:

RBC count ↓  
Hb and HCT ↓  
Absolute reticulocyte count ↓  
MCV and MCH ↓

### Step2. Is it iron deficiency anemia?

#### Suspected populations

1. Anemia without reticulocytosis. 2. Pregnant women. 3. CKD ± HD

#### You may do a trial of iron therapy in:

- Poor resource settings
- Young healthy pts
- Heavy menstruation
- Pregnancy

Responded

No response

Iron studies (Serum iron, ferritin, TIBC, transferrin, TSAT)

+  
investigate  
the reasons  
for lack of  
response

TIBC = total iron binding capacity   TSAT = transferrin saturation  
S.Iron = serum iron   sTfR = soluble transferrin receptor

#### Low Ferritin?

Healthy Patient: Serum ferritin <15 ng/ml?  
Patient with co morbidities: serum ferritin < 41 ng/ml?

Yes

No

Yes

No

Iron deficiency confirmed

1. Identify source of iron loss and/or blood loss (causes section)  
2. Treat with iron (treatment section)

For very strong suspicion of iron deficiency:

- sTfR or sTfR-ferritin index.
- Bone marrow iron stain.
- Hematology consultation may be helpful.

## CAUSES

### May be primary

May be due to:

**Inadequate dietary intake**

Due to malnutrition in poor-resource settings

1. Manage the condition.  
2. Treat with iron (treatment section)

**Blood loss**

Is there overt bleeding?

Yes

No

**Stool analysis**

**Reduced absorption (uncommon)**

May be due to:

Dietary factors

Pathological factors

**May be secondary to anemia of chronic disease, anemia with co morbidities**

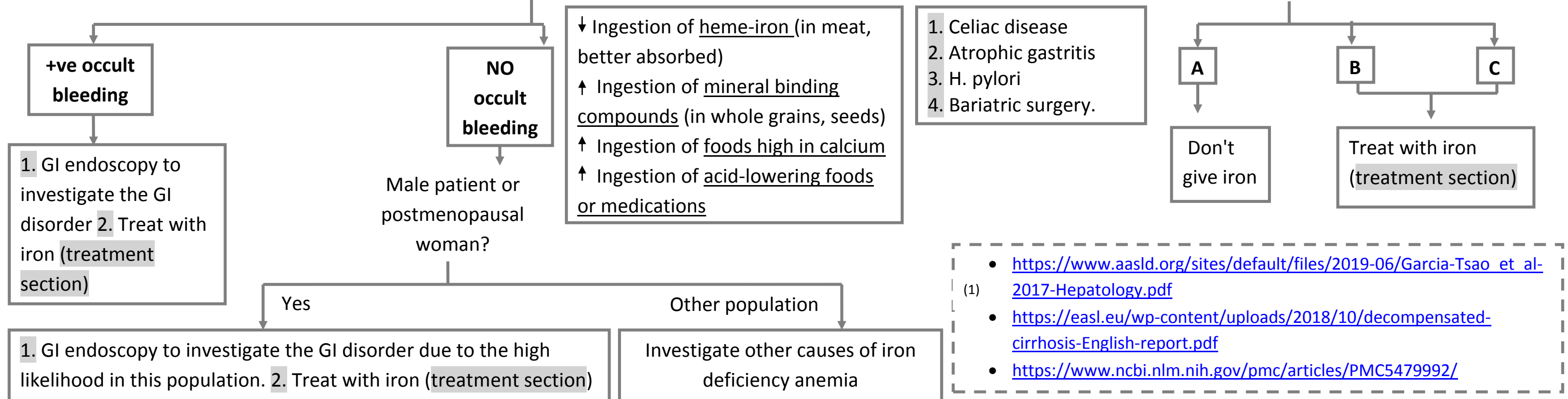
May be due

Hepatic problem

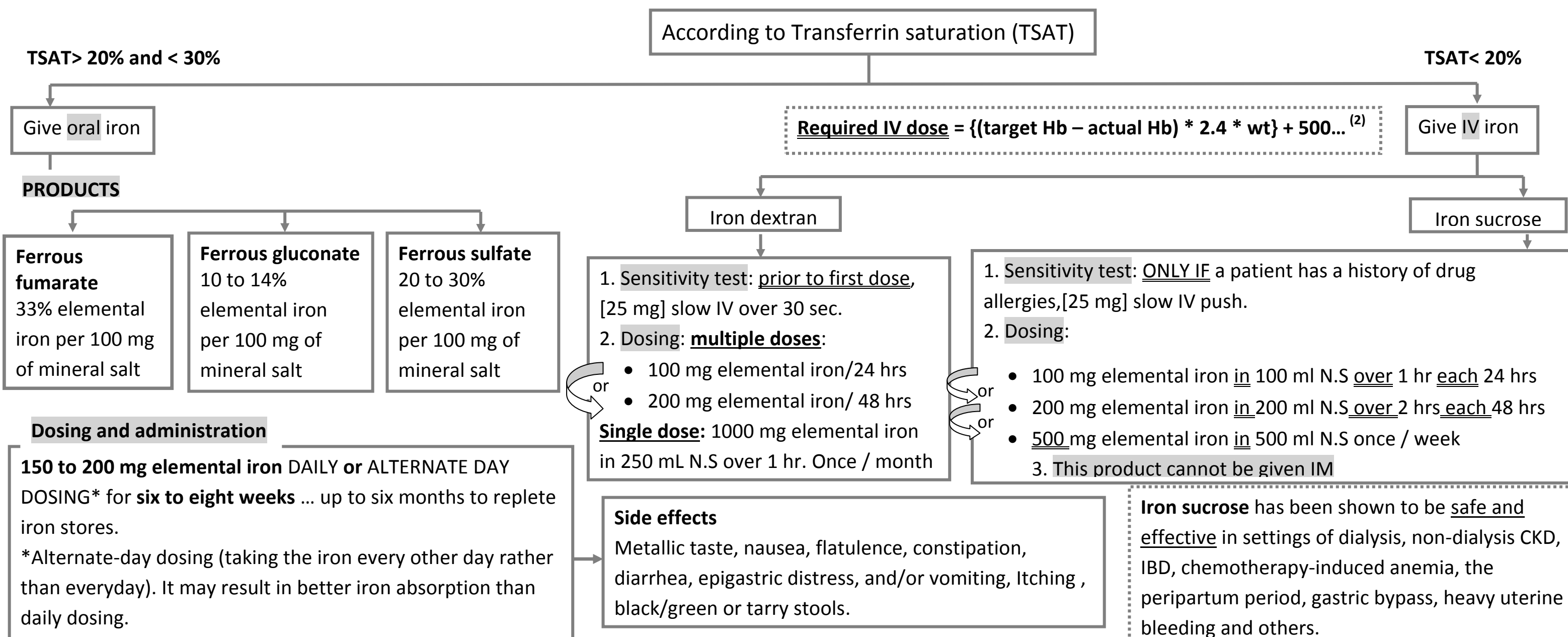
Treat according to Child-Pugh score: <sup>(1)</sup>

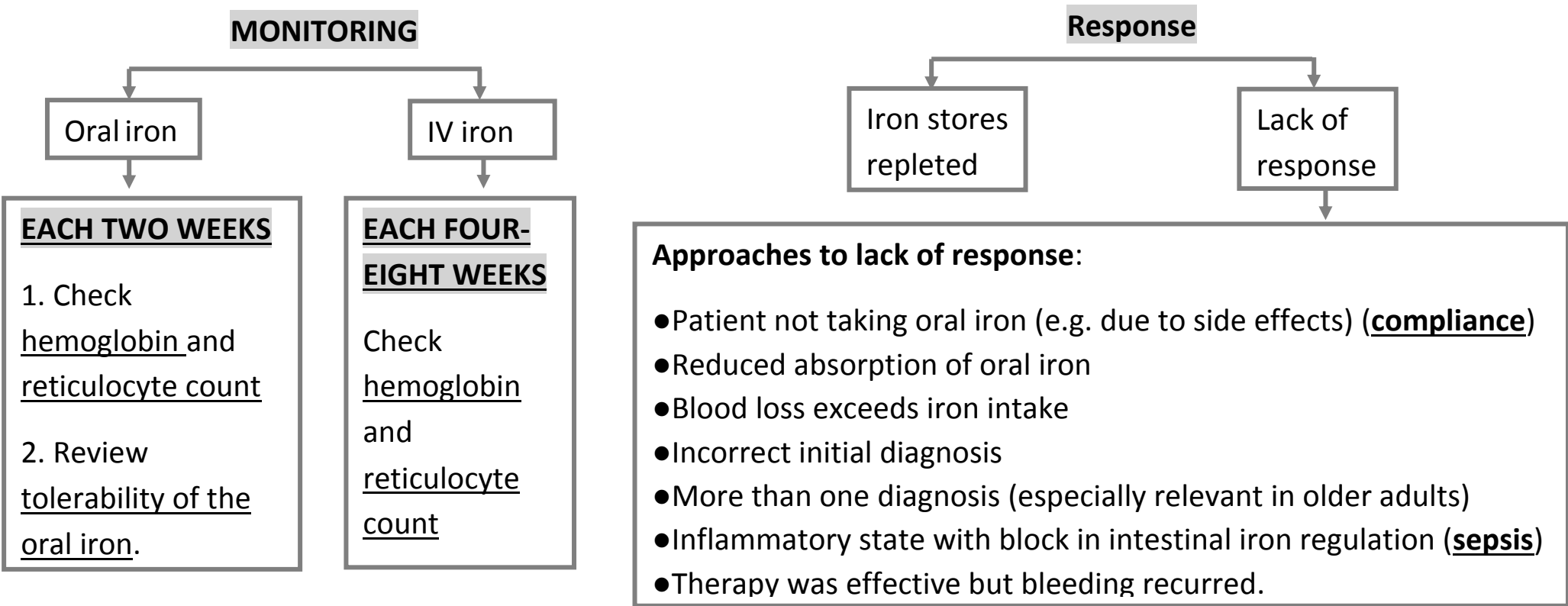
Renal problem

Treat with iron (treatment section)



## Treatment





**Strategies to improve tolerability:**

- Increasing the interval (eg, to every other day) if not done already.
- Making dietary modifications (eg, taking iron with food or milk), although this may reduce absorption.
- Switching to a formulation with a lower amount of elemental iron.
- Switching from a tablet to a liquid, for which it is easier to titrate the dose.

Target Hb values <sup>(3)</sup>	
Adult male	13.5 – 17.5 g/dl
Adult female	12 – 15.5 g/dl
CKD	11 – 12 g/dl
CKD + CV	10 g/dl

- (2) <https://teksmedik.com/uptodate19/d/image.htm?imageKey=HEME%2F54677>
- (3) <https://www.mayoclinic.org/tests-procedures/hemoglobin-test/about/pac-20385075>