

نحوه برخورد با خانم ۳۴ ساله مبتلا به آنمی فقر آهن در درمانگاه های پزشکی خانواده

استاد راهنما: دکتر زنده دل

ارائه دهنده: نازنین براتی، کارورز پزشکی خانواده

CHIEF COMPLAINTS

- بیمار خانم ۳۴ ساله با شکایت از خستگی زودرس و ضعف جنرالیزه

PRESENT ILLNESS

- بیمار خانم ۳۴ ساله با شکایت از رنگ پریدگی و خستگی بیش از حد از حدود سه ماه گذشته همراه با تنگی نفس هنگام راه رفتن . بیمار سابقه بیماری را ذکر نمیکرد و از خون ریزی های بیش از حد در زمان menstruation شکایت دارد.

PMH: (-)

AH: (-)

DH: (-)

HH: (-)

FH: (-)

PHYSICAL EXAMINATION

- بیمار خانم جوان هوشیار و اورینته
- ملتحمه pale است. اسکلرا ایکتریک نیست.

V/S •

BP:110/70 •

PR: 78 •

RR:19 •

SpO2: 98% •

• سمع قلب S1/S2 و بدون سوفل

• سمع ریه نرمال و قرینه بدون ویزینگ و کاهش صدا

• نبض رادیال دو دست پر و قرینه بود


• در معاینه شکم بدون دیستانسیون، ارگانومگالی، نرم بدون تندرns و گاردینگ بود. اسکار جراحی مربوط به سزارین مشاهده شد.

• وزن: ۷۵ کیلوگرم

• قد: ۱۶۵ سانتی متر

BMI: 27 •

Lab data


آزمایشگاه امام محمد باقر
 تلفن:

شماره پذیرش: 01-141 تاریخ پذیرش: 1403/01/21 سن: 34 سال
 نام مراجعه کننده: خانم سولماز محمدیان نام پزشک: سرکار خانم دکتر - عیادت
 تاریخ تولد: 1403/02/06

Hematology

Test	Result	Unit	Normal Range	Differential
C.B.C	-			
W.B.C	7.50	ulx1000	4.5-13	Neutrophils 70
RBC	4.36	Mul	4.1-5.1	Lymphocyte 30
Hemoglobin	9.00	g/dl	men 13.5-17.5 women 12-16	Monocyte - Eosinophilia -
Hematocrite	31			
M.C.V	71	fL	80-96.1	
M.C.H	20.0	pg	27-33.2	
M.C.H.C	28	g/dl	32-36	
Platelets	259	*1000/mm ³	150-450	

Biochemistry

Test	Result	Unit	Normal Range
Fasting Blood Sugar	100	g/dl	70-115
Creatinine	1.10	mg/dL	M 0.7 - 1.4 F 0.6 - 1.3
Triglycerides	124	mg/dL	N <200 Borderline 200-400 H >400
Cholesterol Total	163	mg/dL	N <200, Borderline 200-240 H >240
L.D.L Cholesterol (Formula)	91	mg/dL	<100 BorderLine 130-160 AbNormal >160
HDL Cholesterol	47	mg/dL	Males >35 Females >45
Cholesterol/HDL Ratio (Coronary Risk Factor)	3.47	mg/dL	<4.5 Low risk 4.5-9 Moderate >9 High
LDL/HDL Ratio (Atherosclerosis Index)	1.94	mg/dL	<3 Low risk 3-6 Mod. risk 6< High
V.L.D.L Cholesterol	24	mg/dL	<50
L.D.L Cholesterol	-	mg/dL	<100 BorderLine 130-160 AbNormal >160
S.G.O.T	21	U/L	M <35 F <31
S.G.P.T	15.0	U/L	M <41 F <31
Hemoglobin A1C	6.00		

Hormone Analysis

Test	Result	Unit	Method	Normal Range
Ferritin	3.00	ng/ml		Males 16-220 Females 10-124
TSH	1.40	IU/ml		Adult 0.4-5.0
Vitamin D (25 OH)	22	ng/ml		Deficiency <10, Insufficiency 10-30 Sufficiency 30-100, Toxicity >100

مرکز بهداشت جنوب تهران

Definition

World Health Organization (WHO) criteria for anemia in adult males are hemoglobin <13 and in adult females are hemoglobin <12 g/dL.

- Absolute iron deficiency: refers to the absence of storage of iron in the monocyte-macrophage system, including bone marrow, liver, and spleen. Low ferritin (<30 ng/mL) reflects absolute iron deficiency.
- Functional iron deficiency (also referred to as iron-restricted erythropoiesis) – In some individuals, iron is not available for RBC production. There are two main categories/mechanisms:
 - ✓ Anemia of chronic disease/anemia of inflammation
 - ✓ Erythropoiesis-stimulating agents (ESAs)

Laboratory findings in different stages of iron deficiency

	Normal	Iron deficiency without anemia	Iron deficiency with mild anemia	Iron deficiency with severe anemia
Hemoglobin	Normal range*	Normal range*	9 to 12 g/dL (90 to 120 g/L)	6 to 7 g/dL (60 to 70 g/L)
Red blood cell size and appearance	Normal	Normal	Normal or slight hypochromia (slight decrease in MCHC)	Microcytosis (decrease in MCV) and hypochromia (decrease in MCHC)
Serum ferritin	40 to 200 ng/mL (40 to 200 mcg/L; 89.9 to 449 picoM/L)	<40 ng/mL [¶] (<40 mcg/L; <89.9 picoM/L)	<20 ng/mL (<20 mcg/L; <45 picoM/L)	<10 ng/mL (<10 mcg/L; <22.5 picoM/L)
Serum iron	60 to 150 mcg/dL (10.7 to 26.7 microM/L)	60 to 150 mcg/dL (10.7 to 26.7 microM/L)	<60 mcg/dL (<10.7 microM/L)	<40 mcg/dL (<7.1 microM/L)
Total iron-binding capacity (TIBC; transferrin)	300 to 360 mcg/dL (53.7 to 64.4 microM/L)	300 to 390 mcg/dL (53.7 to 69.8 microM/L)	350 to 400 mcg/dL (62.6 to 71.6 microM/L)	>410 mcg/dL (>73.4 microM/L)
Transferrin saturation (serum iron/TIBC)	20 to 50%	20%	<15%	<10%
Reticulocyte hemoglobin ^[1]	30.6 to 35.4 pg	22.3 to 34.7 pg	14.8 to 34.0 pg	Data not available
Bone marrow iron stain	Adequate iron present	Iron absent	Iron absent	Iron absent
Erythrocyte zinc protoporphyrin, ng/mL RBC	30 to 70	30 to 70	100 to 200	100 to 200

Causes and risk factors for iron deficiency in adults

Decreased intake

Vegetarian, vegan, or other diet with limited sources of iron

Decreased iron absorption

Celiac disease

Atrophic/autoimmune gastritis

Helicobacter pylori

Bariatric surgery

Medications that reduce gastric acidity (unlikely to be the sole cause)

Genetic disorders such as IRIDA (rare)

Blood or iron loss

Heavy menstrual bleeding

Pregnancy and lactation

Gastric ulcer disease or gastritis

Colorectal cancer

Gastrointestinal telangiectasias, HHT

Bleeding disorders such as VWD

Gastrointestinal parasites

Frequent blood donation

Surgical blood loss

Iatrogenic (frequent blood draws)

Hemodialysis

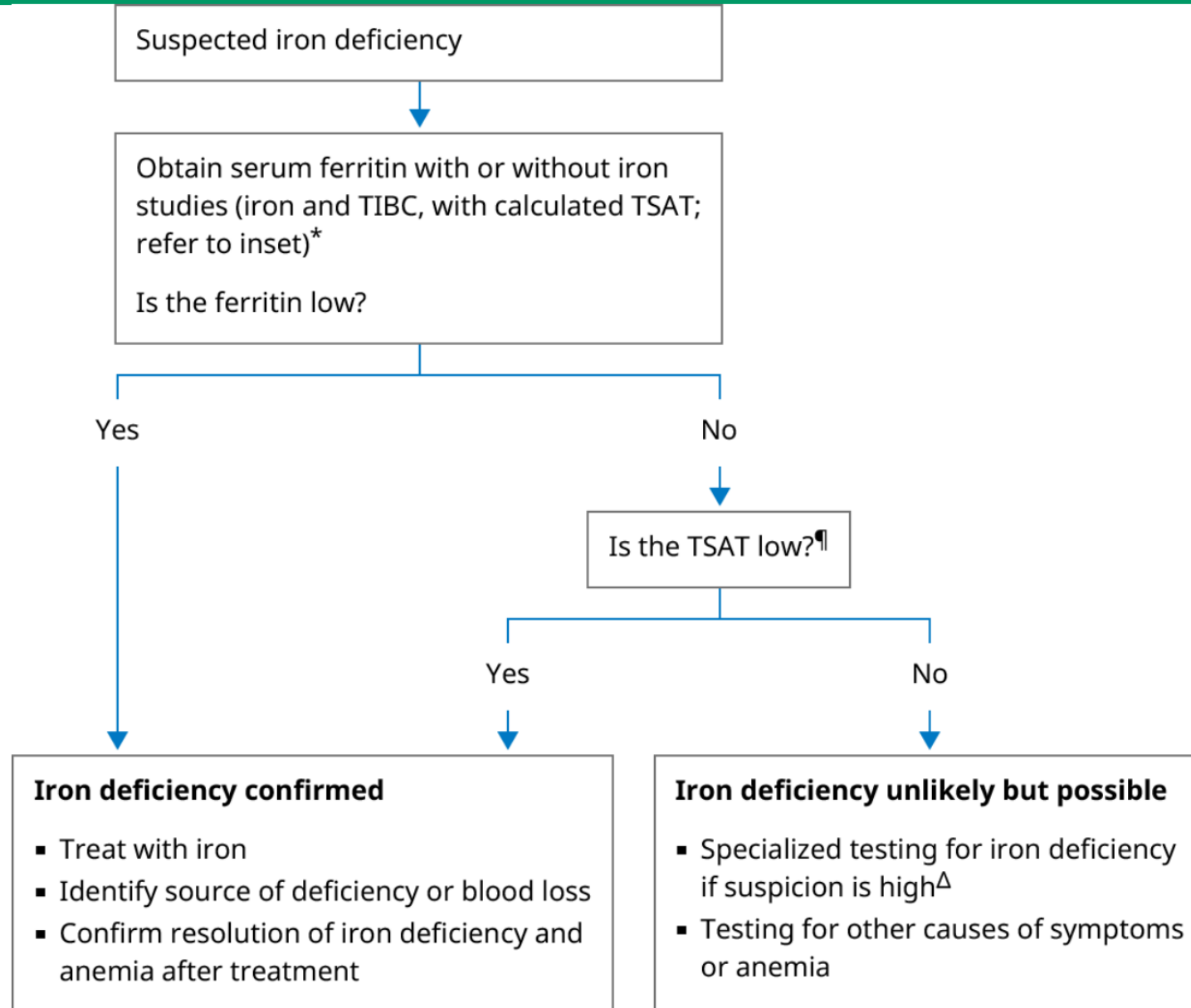
Diagnosis

— We consider the diagnosis of iron deficiency to be confirmed by any one of the following findings in the appropriate clinical setting

- Serum ferritin <30 ng/mL
- Transferrin saturation <20 percent, mostly used in patients for whom the ferritin is thought to be unreliable due to an inflammatory state
- Anemia that resolves upon iron administration
- Absence of stainable iron in the bone marrow (providing that adequate staining controls are performed)

Diagnosis should be accompanied by identification for the cause of iron deficiency and a strategy to treat the deficiency

Diagnosis of iron deficiency in adults



Findings in iron deficiency (selected examples)

History:

- Symptoms of anemia such as undue fatigue
- Pica, pagophagia, or restless legs syndrome
- Autoimmune gastritis or celiac disease
- Heavy menses or prior pregnancies
- GI bleeding or frequent blood donation

Examination:

- Pallor, brittle skin
- Fingernail changes (spoon shape, horizontal lines)
- Cheilosis, loss of tongue papillae
- Occult blood in stool

CBC:

- Anemia, low RBC count
- Normocytic or microcytic RBCs
- Low reticulocyte count
- High platelet count

Iron studies:

- Ferritin <30 ng/mL (or <41 ng/mL if anemia and comorbidities are present)*
- TSAT <20%¶

Symptoms

- Fatigue or exercise intolerance
- Pica (craving for non-food substances such as clay or paper), especially pagophagia (ice craving)
- Restless legs syndrome
- Hair loss
- Headache
- Beeturia (red urine following beet ingestion; not specific for iron deficiency)
- More severe fatigue
- Irritability
- Dyspnea
- Tachycardia
- Hemodynamic compromise, if severe
- Mood changes
- Hearing loss

Findings on examination

- Pallor
- Dry or rough skin
- Atrophic glossitis with loss of tongue papillae
- Cheilosis (also called angular cheilitis)
- Koilonychia (spoon nails)
- Esophageal web, which may be accompanied by dysphagia (eg, Plummer-Vinson or Patterson-Kelly syndrome; rare)
- Alopecia (rare) in especially severe cases
- Chlorosis (pale, faintly green complexion; extremely rare)

2024 guideline from the European Hematology Association (EHA) screening

- All people who menstruate
- Anyone who is pregnant
- Athletes
- Vegetarians
- Regular blood donors
- Individuals with bleeding disorders or receiving an anticoagulant
- Individuals with a history of gastric surgery
- Patients with chronic infections
- Any patients undergoing major surgery
- Patients at risk for reduced access to medical care (socioeconomically disadvantaged)
- Older adults, especially those with chronic conditions
- Adolescents, due to increased iron requirements during growth spurts
- Individuals taking aspirin

Treatment

All patients with iron deficiency anemia and most with iron deficiency without anemia should be treated, regardless of symptoms.

Oral treatment

Dosing schedule – There are two dosing schedules, with only marginal differences in efficacy; we believe clinicians and patients should choose the schedule that best suits them:

- Daily dosing (one dose per day). May be preferable for those who find it easier to remember taking a daily dose. In theory may provide overall more iron absorption due to the overall greater amount of iron per time period.
- Every other day dosing (one dose every other day or on Monday, Wednesday, and Friday). May be preferable for those who wish to reduce gastrointestinal side effects. In theory may provide better absorption due to effects on hepcidin, as discussed in the supporting evidence for the dosing schedule.

Examples of available preparations (with the amount of elemental iron per dose) include:

- **Ferric citrate** – 1 gram tablet contains 210 mg of elemental iron
- **Ferric maltol** – 30 mg tablet contains 30 mg elemental iron
- **Ferrous fumarate** – 324 or 325 mg tablet (contains 106 mg elemental iron per tablet)
- **Ferrous gluconate**
 - 240 mg tablet (contains 27 mg elemental iron per tablet)
 - 324 mg tablet (contains 38 mg elemental iron per tablet)
 - 325 mg tablet (contains 36 mg elemental iron per tablet)
- **Ferrous sulfate**
 - 325 mg tablet (contains 65 mg elemental iron per tablet)
 - 220 mg/5 mL oral elixir (contains 44 mg elemental iron per 5 mL)
 - 75 mg/mL oral solution (contains 15 mg elemental iron per mL)

Iv treatment

- IV iron may be needed for those with severe/ongoing blood loss (eg, telangiectasias, varices).
- IV iron may be preferable if anemia is severe (eg, Hb <7 g/dL) or causing significant fatigue. In contrast, severe anemia with organ ischemia is treated with transfusion.
- Gastric surgery (bypass, resection) that reduces gastric acid may severely impair intestinal absorption of oral iron.
- Inflammatory bowel disease.
- malabsorption syndromes (celiac disease, Whipple's disease, bacterial overgrowth) may limit absorption of oral iron.
- In the second trimester of pregnancy, if the Hb is less than 10.5 g/dL, or at any time in the third trimester, at which oral iron is unlikely to supply adequate iron to the developing fetus

FERRIRISE: 50 mg in 1 ml (10 ml)

Venofer: 20 mg in 1 ml (2 ml)

Ferinject: 50 mg in 1 ml (5 ml)



Final calculations [△]

**Hemoglobin iron deficit (mg) = BW x (14 - Hgb) x (2.145)
+ iron to replenish stores if desired (mg)**

Volume of product required (mL) = BW x (14 - Hgb) x
(2.145) ÷ C (if no added iron for stores)

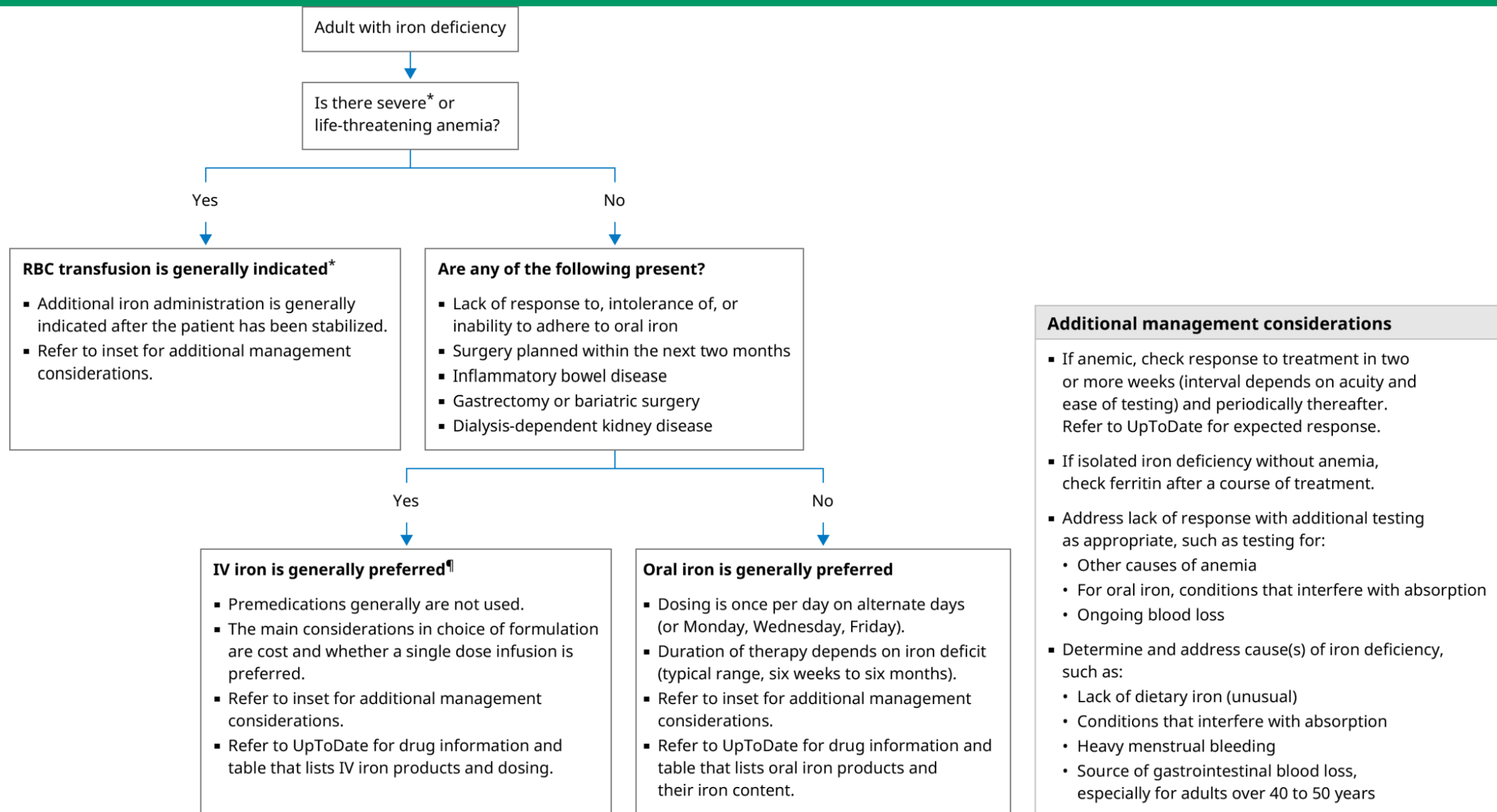
Example

60 kg woman with a hemoglobin concentration of 8 g/dL.
Parenteral iron product is iron sucrose (C = 20 mg elemental
iron/mL). No additional iron to replenish stores.

Hemoglobin iron deficit = 60 x (14 - 8) x (2.145) = 772 mg
iron

Volume of iron sucrose needed = 60 x (14 - 8) x (2.145) ÷
20 = 38.6 mL [◇]

Treatment of iron deficiency in nonpregnant adults



Prevention

Primordial: education

Primary: fortifying food

Secondary: screening

Tertiary

