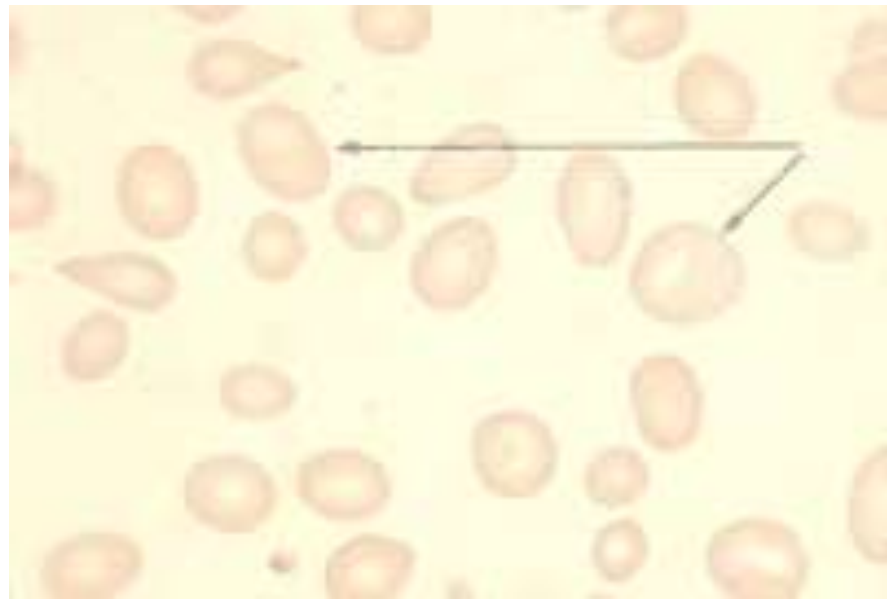


# Iron Deficiency Anemia

- Remember that ferritin levels increase with age so may not be useful
- GI work up may not be warranted
- Trial of iron – low dose oral- use of newer agents with less GI side effects, or use IV venofer
- See ferritin increase in 3 – 6 months if no further bleeding
- Severe iron deficiency anemia with low hemoglobin can be corrected by IV iron rather than by regular blood transfusions



# Low B12 level- Cobalamin deficiency

- B12 deficiency common (15%) , anemia is not (1%) - check MCV
- lack of gold standard to measure deficiency- Schilling test extinct!
- Clinically important definition is when IF absorption fails = pernicious anemia
- Follow up of patients on tx important

# Food Cobalamin Deficiency States

- CLINICAL

- symptomatic
- B12 < 100 ( low)
- MMA high
- known cause
- malabsorption of free cobal
- progressive course
- tx needed
- uncommon

- SUBCLINICAL

- asymptomatic
- mild low-normal B12
- normal MMA
- 50% no cause found
- food cobal. malabsorption
- slow course (>10 yrs)
- tx probably needed
- dose?
- 10-20% of elderly

# True B12 Deficiency- Tx

- IM 1000 ug weekly or daily oral 1200 ug
  - 1 week – reticulocytosis
  - 8<sup>th</sup> week – MCV and Hgb correction
  - 6<sup>th</sup> week- 3 months – neuro sx clear
- Oral vs IM
  - Commitment to tx
  - Monitoring patient compliance
  - Patient preference- monthly vs daily

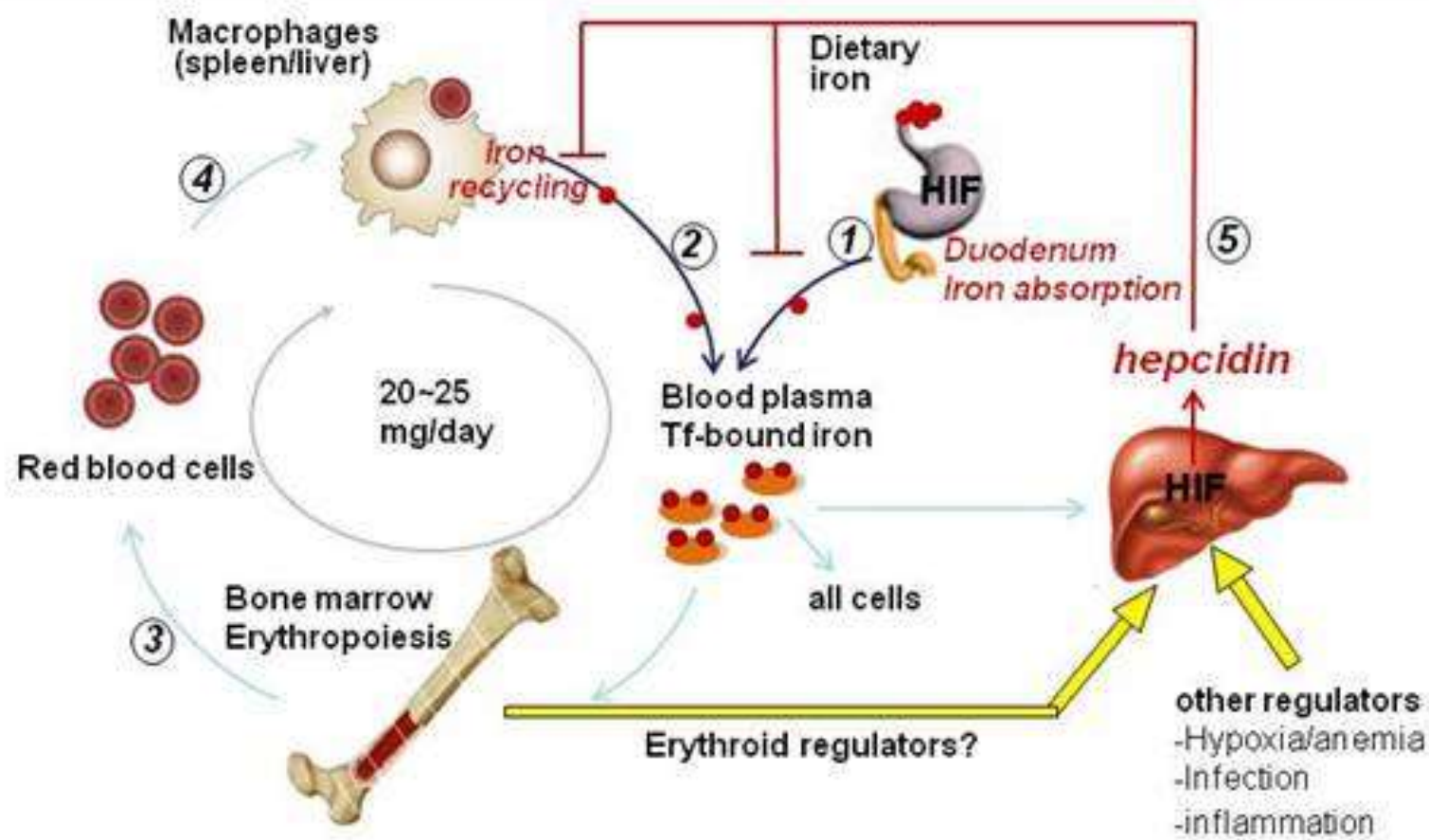
# Vitamin B12 deficiency

- Subclinical
  - Depends on clinical pretext
  - No tx needed if no CBC, MCV or IF abnormalities
- Prophylaxis
  - Vegetarians ( esp pregnant)
  - Gastric surgery ( bariatric )
  - Nitrous oxide use
  - ???elderly – unknown value

# Anemia of chronic disease

- No specific test to diagnose
- New peptide – HEPcidin – key to iron regulation and response to inflammation
- Response to inflammation may be prolonged even after stimulus gone:
  - Unique mechanism of ACD anemia in elderly-
  - ?? Anemia of aging





### Iron homeostasis: critical roles of HIF (Hypoxia Inducible Factors) and hepcidin

Blood iron is alimented by diet iron absorbed by the duodenum(1) and iron recycled by macrophages(2). Iron is delivered to the bone marrow for erythropoiesis(3). Senescent red blood cells are phagocytosed by the macrophages and iron provided by the catabolism of hemoglobin is recycled(2). Liver hepcidin (regulated by various effectors) is secreted(5) and acts to limit iron absorption and macrophagic iron release. HIF regulates liver hepcidin gene expression and iron absorption in the duodenum.



# Unexplained anemia

- Epo deficiency ( levels may need to be higher in elderly)
- Decrease in body mass – fraility
- Decrease in bone marrow cellularity, BFUe
- Occult myelodysplasia
- Changes in hormones
- Polypharmacy , Etoh

# Unexplained anemia - Tx

- No good trials available
- Use of epo +/- iron replacement
- Vitamin D
- QOL issues – tx risks and benefits need to be discussed with patient and family
  - Improved QOL vs possible risk of ESA

# Hemolysis

- Sudden onset severe anemia
- May have no classic sx or signs
- Causes :
  - Idiopathic
  - Post viral
  - Lymphoproliferative disorder = lymphoma
- Treatment includes steroids, IVIG , often chronic
- Transfusions transient effect, but not contraindicated

# Myelodysplasia

- Debate re – is this cancer?
- Clonal disorder resulting in bone marrow failure and possibly AML.
- Disease heterogeneity important
- +/- effective treatment
- 4 new drugs:
  - Vidaza
  - Decitabine
  - Exjade
  - revlimid

# Myelodysplasia

- Survival for low risk ( refractory anemia ) 33 -70 months
- Only curative treatment is allogeneic bone marrow transplant
- Treatment depending on prognostic risk group ( low risk vs preleukemic)
- Bone marrow NOT always indicated in frail elderly patient especially if tx options limited
- Most cases of unexplained macrocytic anemia in elderly

# Eprex in Anemia

- Trial of eprex may be warranted for 8 – 12 weeks , 20,000 u weekly s/c
- Side effects:
  - Hypertension
  - Thrombosis
  - Headache
  - Rare seizure, red cell aplasia ( seen in dialysis patients )
  - Recent data disturbing re use in oncology patients and cancer spread
- 25% response in MDS
- Need to maintain iron stores to be effective

# Transfusions in MDS

- Many patients remain fatigued despite tx ( Hgb usually 70 – 90 baseline )
- Morbidity higher than expected from chronic transfusions
- Avoid drops in Hgb, transfuse regularly
- Issue of iron overload
  - Use of exjade ( diarrhea, \$)
  - Usually no effect on survival in elderly with MDS
- Safety of blood transfusions , age of blood  
.....



# Anemia in the Elderly

- In conclusion:
  - Anemia in elderly can be associated with increased mortality and decreased function
  - Treatment should do more good than harm
  - Etiology remains multifactorial
  - Aging population unique re mechanisms of anemia

# Hematologic Malignancies in the Elderly

- Chronic leukocytosis ( lymphocytosis ) - likely CLL
- Pancytopenia, fever, recurrent infections - think acute leukemia
- Milder non aggressive treatments exist for lymphoma and CLL – quality of life issues
- Transfusional support may be all that is necessary
- Need to address prognostic factors in each individual patient to determine treatment options