ANEMIA

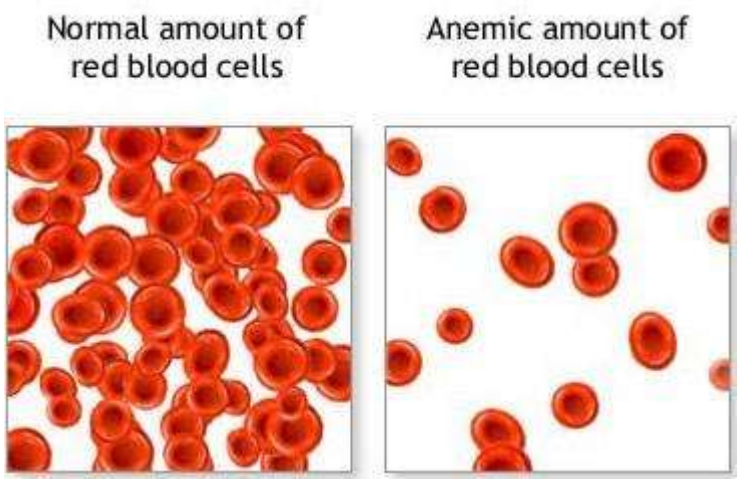
DEFINITION

- Anemia is defined as a reduction of below normal in the volume of red blood cells (RBC) or in the concentration of hemoglobin.

  -Dorothy R.Marlow

- Anemia is defined as a quantitative and qualitative deficiency of circulating red cells.

  -Suraj Gupta



CLASSIFICATION

- 1.Etiology or physiology, manifested by erythrocyte or Hgb depletion
- 2.Morphology.

I.Classification of anemia based on etiology

A) Decreased RBC and Hb Production

-Nutritional deficiency

-Bonemarrow failure

B)Increased RBC destruction

-**Congenital** (sickle cell anemia, G-6-PD deficiency, Heriditary Spherocytosis)

-**Acquired** (hemolysis of normal RBCs, Effects of toxic drugs, Thermal injury of burns, Transfusion reaction, Infections, Splenic enlargement, Irradiation)

- **C] Increased RBC loss**

  -Acute

  -Chronic

II] Classification based on morphology of RBC

A) Size

-Normocyte

-Microcytes

-Macrocytes

B] Shape

-Sherocytes

-Drepanocytes

C] Color

-Normochromic

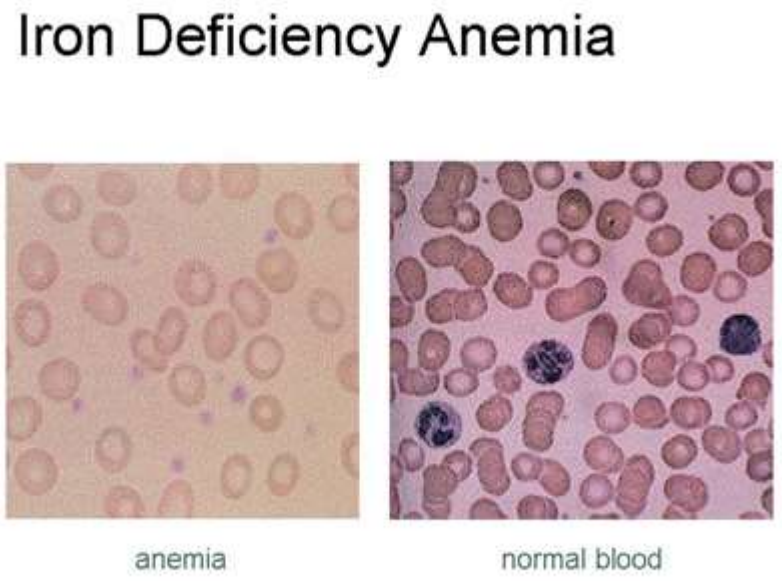
-Hypochromic

-Hyperchromic

IRON DEFICIENCY ANEMIA

DEFINITION

Iron deficiency anemia is caused by a lack of sufficient iron in the diet for the synthesis of hemoglobin.



INCIDENCE

- Occurs in all races but more frequently among blacks and Caucasians
- 50% of children are anemic in India
- Common among premature and adolescents

ETIOLOGY

Insufficient supply at birth

-Preterm & small for date babies

-Twins

-Early cord clamping at birth

-Hemorrhage from cord & placenta

Diminished iron intake

-Cow milk

-Inadequate intake of iron during pregnancy

Impaired absortion

-Malabsorption syndrome

Blood loss

-Hookworm infestations
-Polyposis
-Prolapse rectum
-Portal hypertension
-Ulcerative colitis
-Hiatus hernia
-Dysentery
-Cephal hematoma

Increased demands

-Premature

-LBW

Errors of iron metabolism

-Idiopathic pulmonary hemosiderosis

-Sideroblastic anemia

-Congenital transferrin deficiency

CLINICAL FEATURES

- Pallor
- Irritable,listless
- Anorexia
- Constipation
- Cardiac dilatation and tachycardia
- Systolic murmur
- Splenomegaly
- Milk baby
- Pica
- Impaired intellectual and neurological functioning

DIAGNOSTIC EVALUATION

Diet history

Blood examination

-RBC count

-Hemoglobin count

-Hematocrit

-Peripheral blood smear

-Reticulocyte count

-Serum ferritin concentration

-Serum iron

Stool occult blood

THERAPEUTIC MANAGEMENT

Oral iron therapy

Elemental iron 3-6mg/kg orally thrice a day

- Anhydrous ferous sulphate
- Ferrous fumarrate
- Ferrous succinate
- Ferrous carbonate
- Ferrous lactate
- Ferruos gluconate
- Ferric ammonium citrate
- Vitamin C

-Parentral iron therapy

-Iron (mg)=$\frac{\text{Wt (Kg)*Hb deficit (g/dl)*80}}{100*3.4*1.5}$

-Iron (mg)= Wt(kg)8Hb deficit (g/dl)*4

-Iron Dextron complex to infant 50mg deep IM

Indications

-Intolerance to oral iron

-Poor compliance by the patient

-Chronic diarrhea

-Bleeding from GIT

- **Side effects-** pain, chills, fever, arthralgia, shock,
- **IV Iron therapy-**
- **Bllod transfusion-** if Hb level <4g/dl

  -Frusamide 1-2 mg/kg/IV

Screening test

Oral iron supplements

-Given between meals

-Vitamin C

-Use dropper to administer liquid iron

-Oral care

-Keep medication safely

-Counseling

Interferron-Deep IM – 'Z' tract method

Check for fresh packed or sedimented RBCs

- Supplementary food
- Preterm babies & LBW infants should receive 10-15 mg of elemental iron
- Treat hook worm infestations
- Encourage to wear shoes
- Iron supplementary given during adolescent period.

Nursing Management

- Asses for fatigue, activity intolerance, and other sings of impaired tissue oxygenation
- Promote an adequate intake of iron-rich foods (iron fortified formula and cereals, liver, egg yolk, and organ meats
- Emphasize to family members or care givers proper administration of oral iron supplements. Give supplements in two or three divided doses in small amount of Vitamin C-containing liquid. (This enhances absorption)
- Explain the potential adverse effects of iron which includes nausea and vomiting, diarrhea or constipation or black stools and tooth discoloration.
- Instruct care givers to keep iron supplements out of reach of children since it is toxic when overdosed.


THANK YOU

PATHOPHYSIOLOGY

Depletion of iron stores, Blood loss, insufficient intake of iron, impaired absorption or increased demands

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Reduction of serum transferrin saturation

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Decreased production of hemoglobin

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Newly formed RBCs became smaller,less well filled with hemoglobin and pale

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Reduced oxygen carrying capacity of the blood

PROGNOSIS

- Good if the child receives iron therapy and iron rich diet

NURSING DIAGNOSIS

- Activity intolerance related to impaired oxygen transport secondary to diminished RBC count
- Altered nutritional status less than body requirement related to lack of intake of iron rich diet and anorexia
- Altered bowel elimination related to oral iron therapy
- Risk for infection related to decreased resistance secondary to tissue hypoxia

- Risk for interrupted growth and development related to Iron deficiency
- Risk for altered cerebral tissue perfusion related to hypoxia and poor performance at school.
- Risk for hemorrhage related to splenomegaly
- Knowledge deficit regarding prevention and management of iron deficiency anemia related to lack of information