

Anemia



Learning Objectives

- What is anemia
- What are symptoms and signs of anemia
- What is classification and different types of anemia
- What are causes of different types of anemia

Anaemia

- Significant reduction (at least 10 %) in circulating **red cell mass** or their **hemoglobin content** appropriate for the age and sex, **leading to corresponding decrease in the Oxygen - carrying capacity of blood.**
- **WHO** criteria - Hb < 13 gm/dl in men & Hb < 12 gm/dl in women

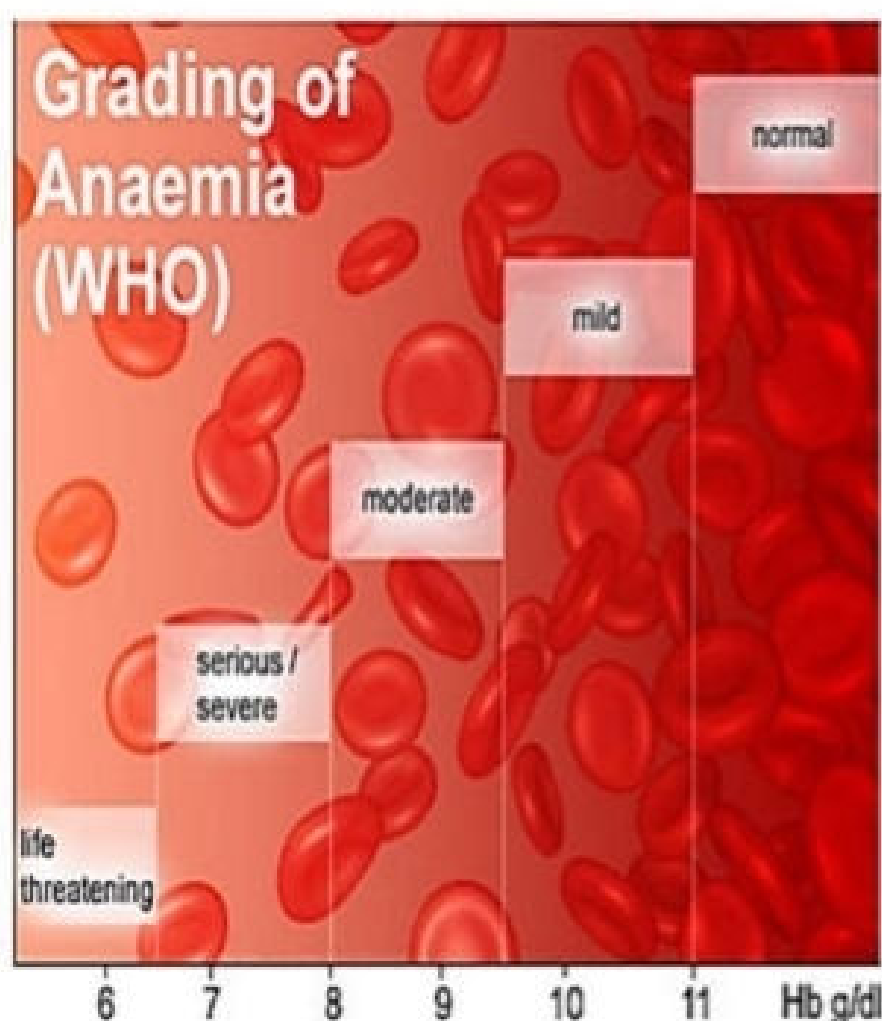


Normal Appearance



Pallor due to Anemia

Grades of Anaemia



Anemia Grades

- Grade 1 (Mild) = 9.5 – 11 g/dl Hb
- Grade 2 (Moderate) = 8 – 9.5 g/dl Hb
- Grade 3 (Severe) = 6.5 – 8 g/dl Hb
- Grade 4 (Life Threatening) = < 6.5 g/dl Hb

Approach to diagnosis for a case of anemia- Understanding Anemia

- What are patients complaints- (Symptoms)
- What are findings in patients on examination- (Signs)
- Probable diagnosis of anemia
- Investigations – RBCs count, Hb esti. and PCV –
Hematological Indices to reach to near the diagnosis
- Specific tests for final diagnosis

Presentation of Anemia

What are patients complaints- (Symptoms)

What are findings in patients on examination- (Signs)

In anemia, body lacks oxygen, so following signs & symptoms may be experienced:

Anemia symptoms

Lloyd Healthcare Pvt. Ltd.
f t y /lloydhealthcare



Tiredness



Weakness



Pale skin



Irregular heartbeat



Shortness of breath



Chest pain



Dizziness



Cold hands and feet



Headache

Decreased Red Cell Production- Nutritional Deficiency- Iron Deficiency

Fe^{++} is required for Heme Synthesis (\downarrow Haemoglobin)

Causes of Iron deficiency anemia:

Decreased Red Cell Production- Nutritional Deficiency- Iron Deficiency

Clinical Features:

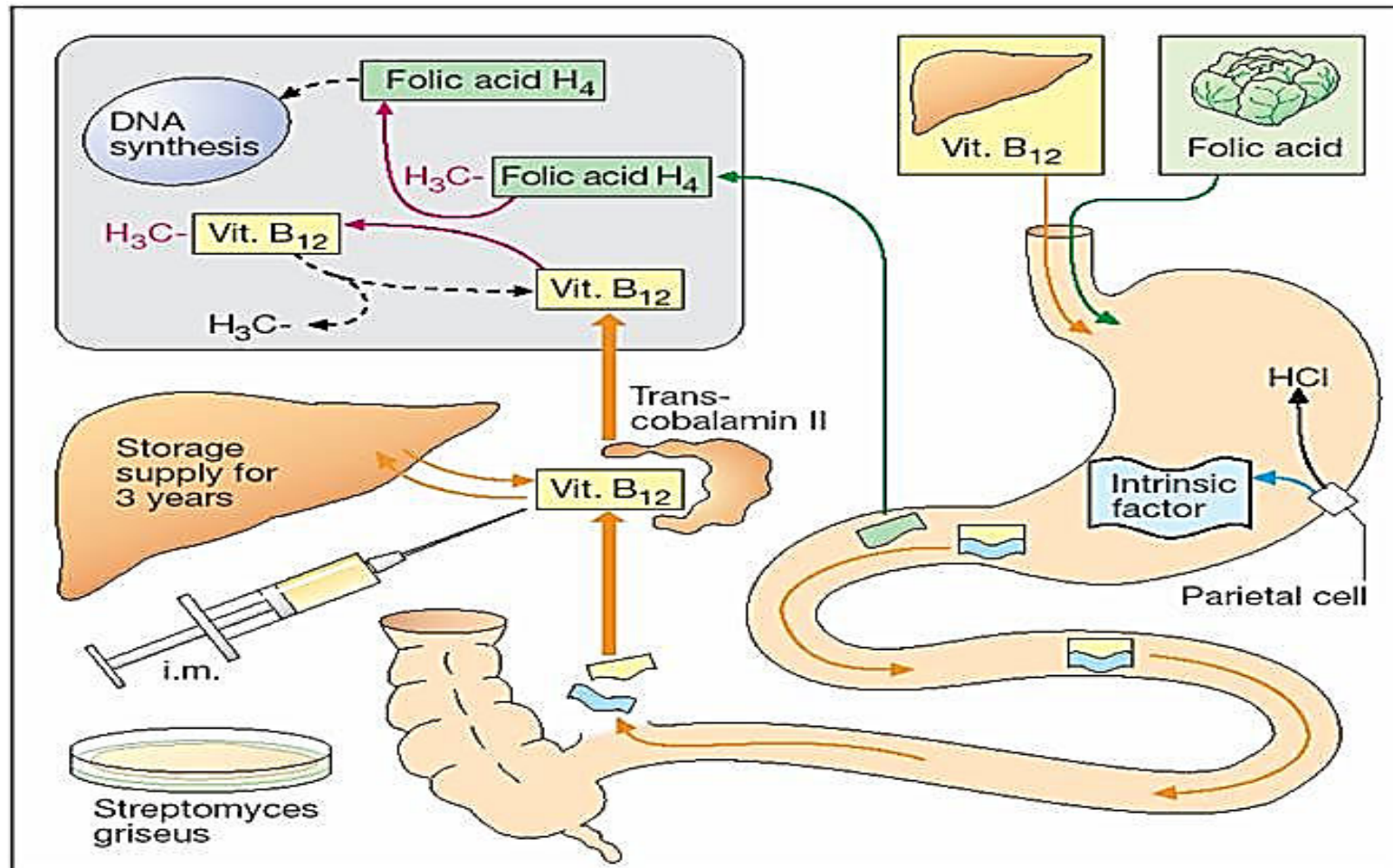
During Early Phase- General for anemia

Iron Therapy :



Decreased Red Cell Production- Nutritional Deficiency- Maturation factors Deficiency (Megaloblastic Anaemia)

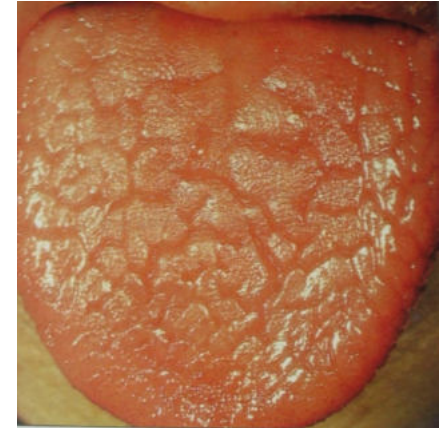
Pathophysiology



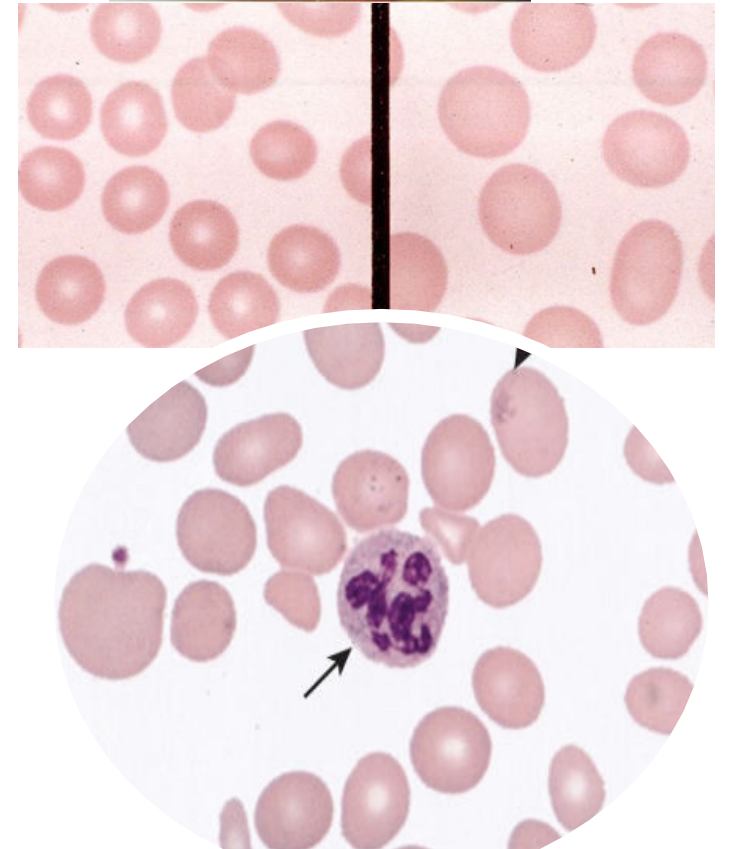
Causes:

Megaloblastic anaemia

Clinical feature:



Management/Treatment:



Decreased Blood Cells Production - Dysplastic / Aplastic Anaemia

Bone marrow is the site of Blood cells production

Causes:

Primary
Secondary

Dysplastic /Aplastic Anaemia

Presentation-



Management-



Decreased Red Cell Production - Anaemias of chronic disease

Pathophysiology

Causes

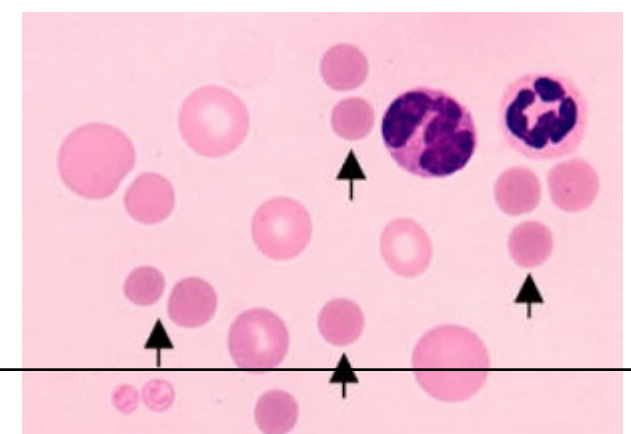
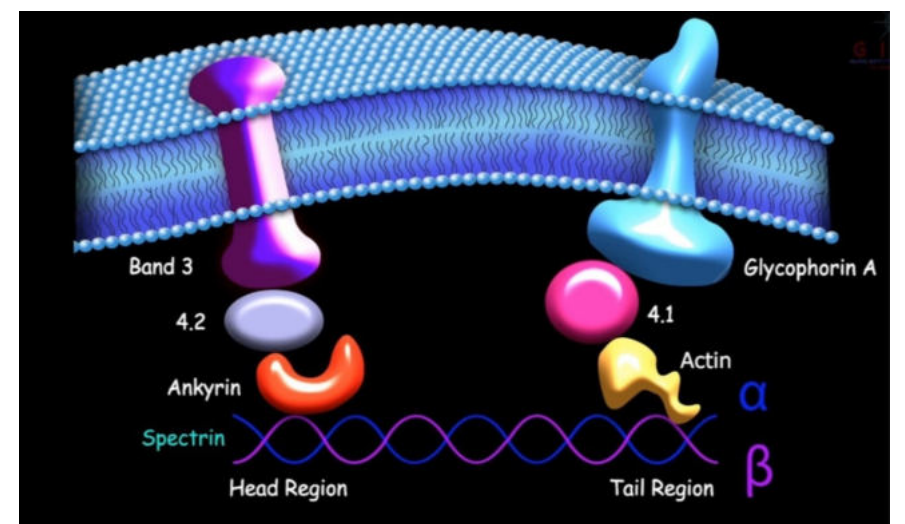
Decreased Red Cell Survival - Hemolytic anemia- Intracorpuscular Defect-Hereditary Disorders

Pathophysiology

Causes

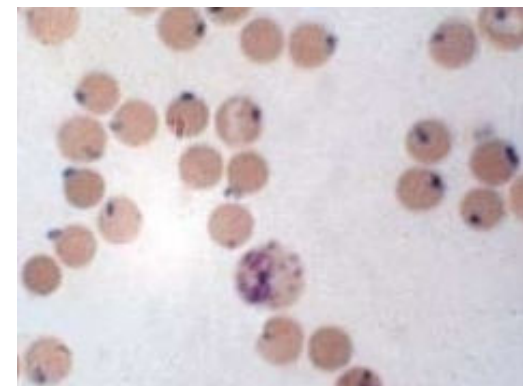
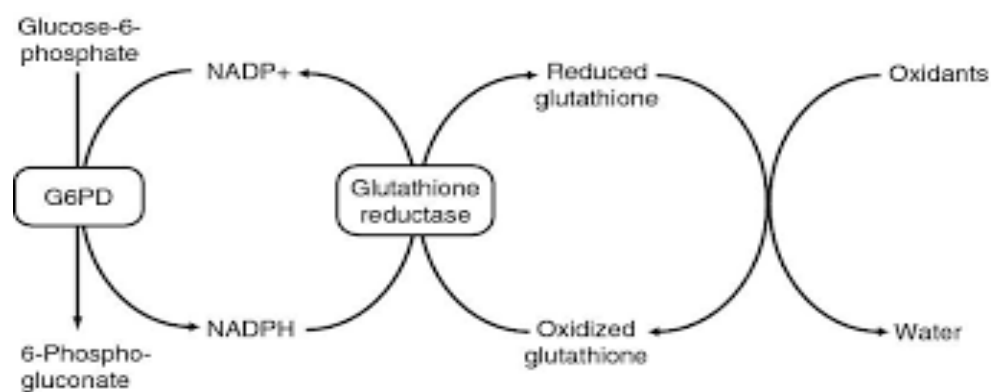
Decreased Red Cell Survival - Hemolytic anemia- Hereditary Spherocytosis

Pathophysiology -



Decreased Red Cell Survival - Hemolytic anemia- Glucose-6-PO₄ – Dehydrogenase Deficiency

Pathophysiology



Decreased Red Cell Survival - Hemolytic anemia- Globin chain Synthesis abnormality-

Most common of haemoglobinopathies- **Sickle Cell Anaemia**
Thalassemia

Decreased Red Cell Survival - **Extra corpuscular Hemolytic Anemia** **-Acquired disorder-**Nonimmune hemolytic anemias

Chemicals and drugs -

Animal venoms –

Infectious agents –

Caused by physical injury to RBCs

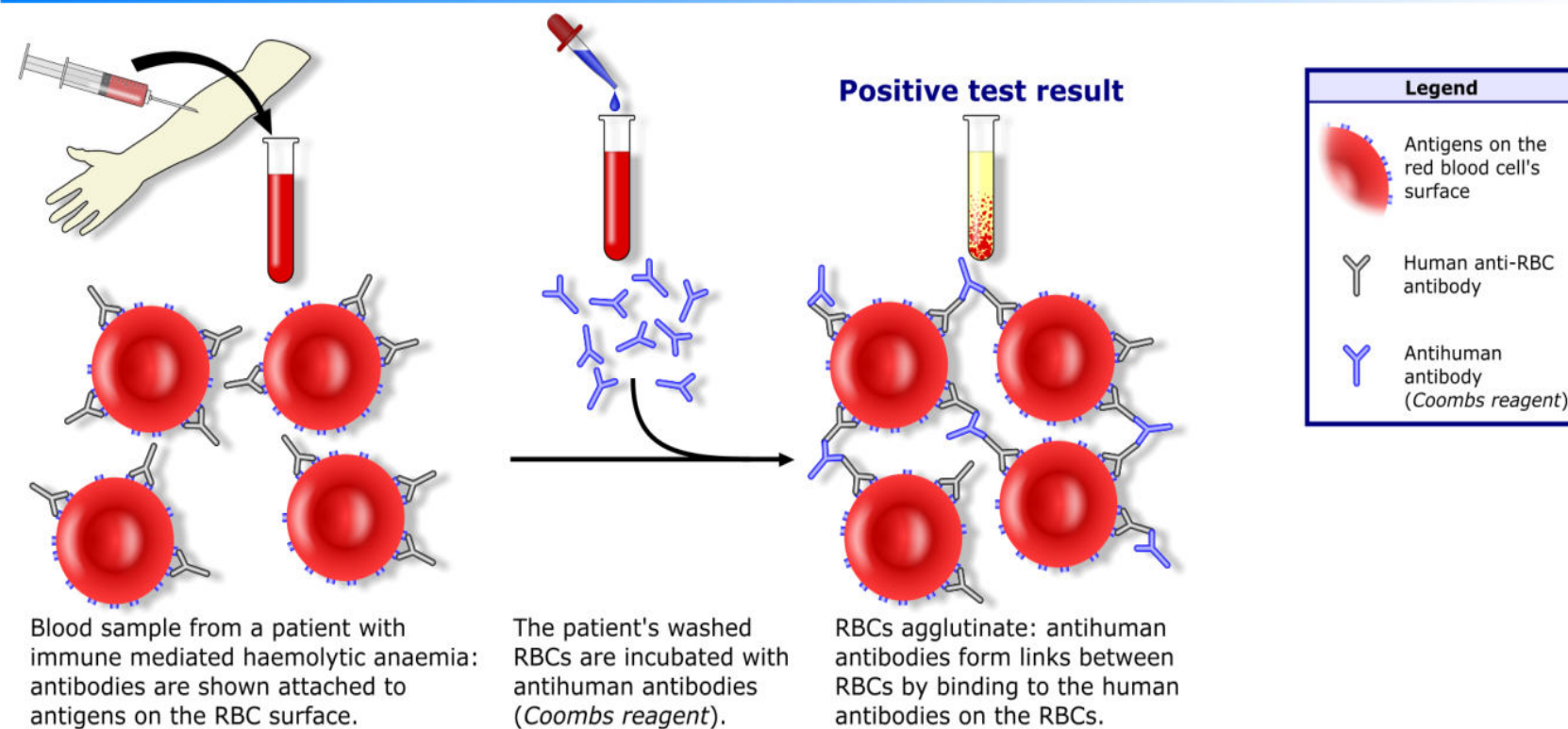
Decreased Red Cell Survival - **Extra corpuscular Hemolytic Anemia** **-Acquired disorder-**Immuno hemolytic anemias

Autoimmune hemolytic anaemia (AIHA) :

- Warm antibody hemolytic anemia -▪ Cold antibody hemolytic anemia

Decreased Red Cell Survival - **Extra corpuscular Hemolytic Anemia** **-Acquired disorder-Immuno hemolytic anemias**

Direct Coombs test / Direct antiglobulin test



Decreased Red Cell Survival - Post hemorrhagic anemia

Acute blood loss anemia, also called **hemorrhagic anemia**, occurs due to acute hemorrhage (bleeding).

Self Assessment

Significant reduction (at least 10 %) in circulating or their appropriate for the age and sex, leading to corresponding decrease in the of blood.

WHO criteria - Hb < gm/dl in men & Hb < gm/dl in women.

.....type of Anemia includes Iron deficiency, Thalassemia, lead poisoning

MCV-..... the causes include Vit B₁₂ and/or Folic acid Deficiency

Chronic blood loss leads to.....

..... anemia is a type of megaloblastic anemia there is decreased availability of IF

Tuberculosis may cause anemia

Thank you