Thalassemia

1. Beta thalassemia caused by point mutation
   - Reduced or absent beta chains
   - High gamma globin production
   - Hemoglobin A2 increased
   - Hemoglobin F increased
   - Increased in developing iron deficiency

2. Alpha thalassemia
   - Hemoglobin Barts
   - Hemoglobin H disease
   - Hemoglobin Bart's-Hartnup disease

3. Hemoglobin H disease
   - Beta chains absent
   - Alpha chains present
   - Beta globin synthesis impaired
   - Alpha globin synthesis increased

4. Hereditary persistence of fetal hemoglobin (HPFH)
   - Increased fetal hemoglobin
   - Reduced adult hemoglobin

5. Hemoglobin C disease
   - Decreased hemoglobin A1c
   - Increased hemoglobin F

6. Hereditary spherocytosis
   - Decreased osmotic fragility
   - Increased membrane turnover

7. Radiographic abnormalities
   - Skeletal abnormalities
   - Hepatosplenomegaly
   - Nephrotic syndrome

8. Cardiac failure
   - Elevated right ventricular pressure
   - Elevated pulmonary artery pressure

9. Skin changes
   - Hyperpigmentation
   - Nail changes

10. Neurological abnormalities
    - Seizures
    - Psychomotor retardation

11. Hypothyroidism
    - Reduced thyroid hormone production

12. Abnormal clotting factors
    - Disseminated intravascular coagulation

13. Increased platelet count
    - Thrombocytosis

14. Increased risk of infection
    - Neutropenia
    - Decreased antibody response