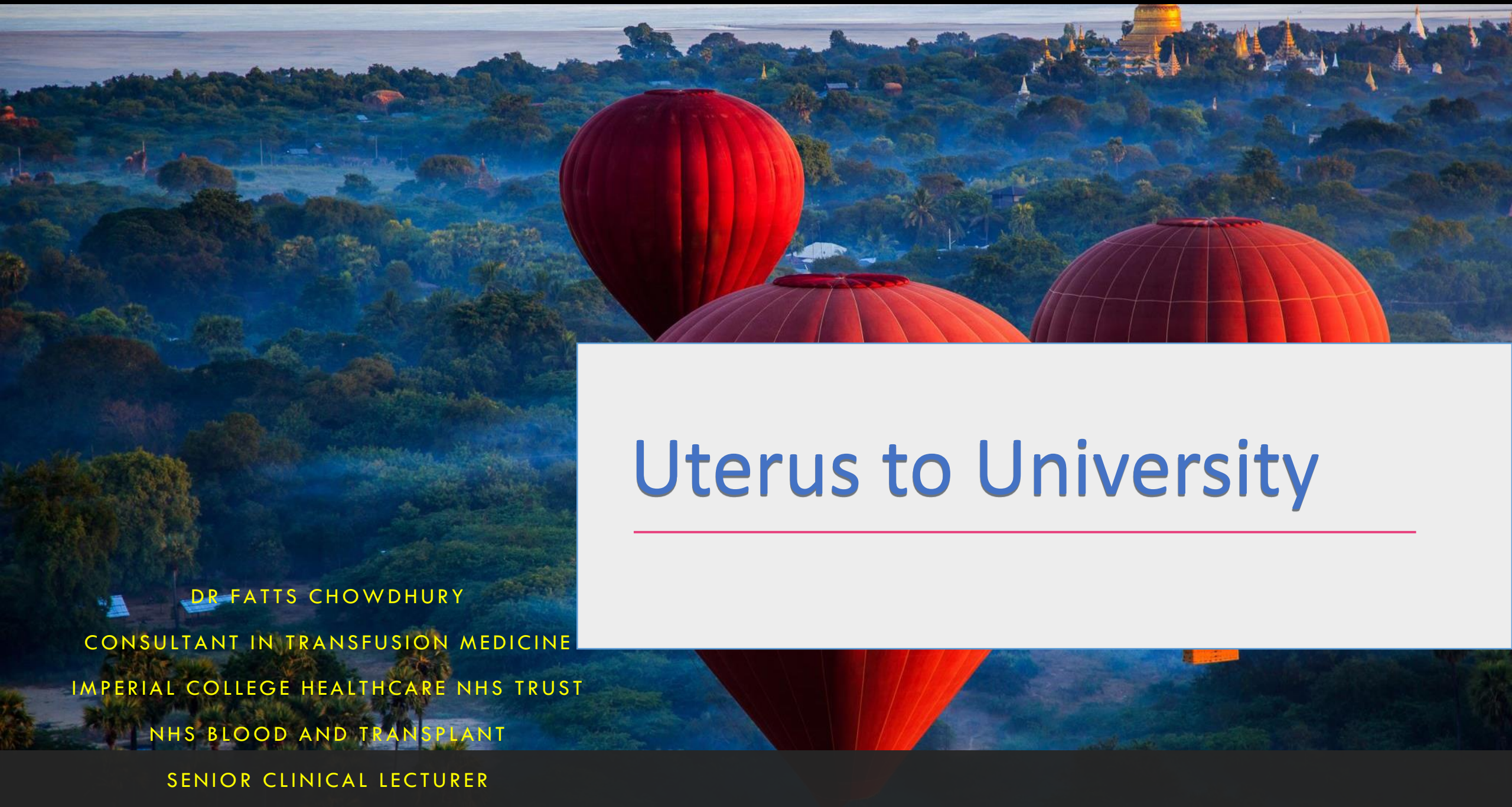


Uterus to University

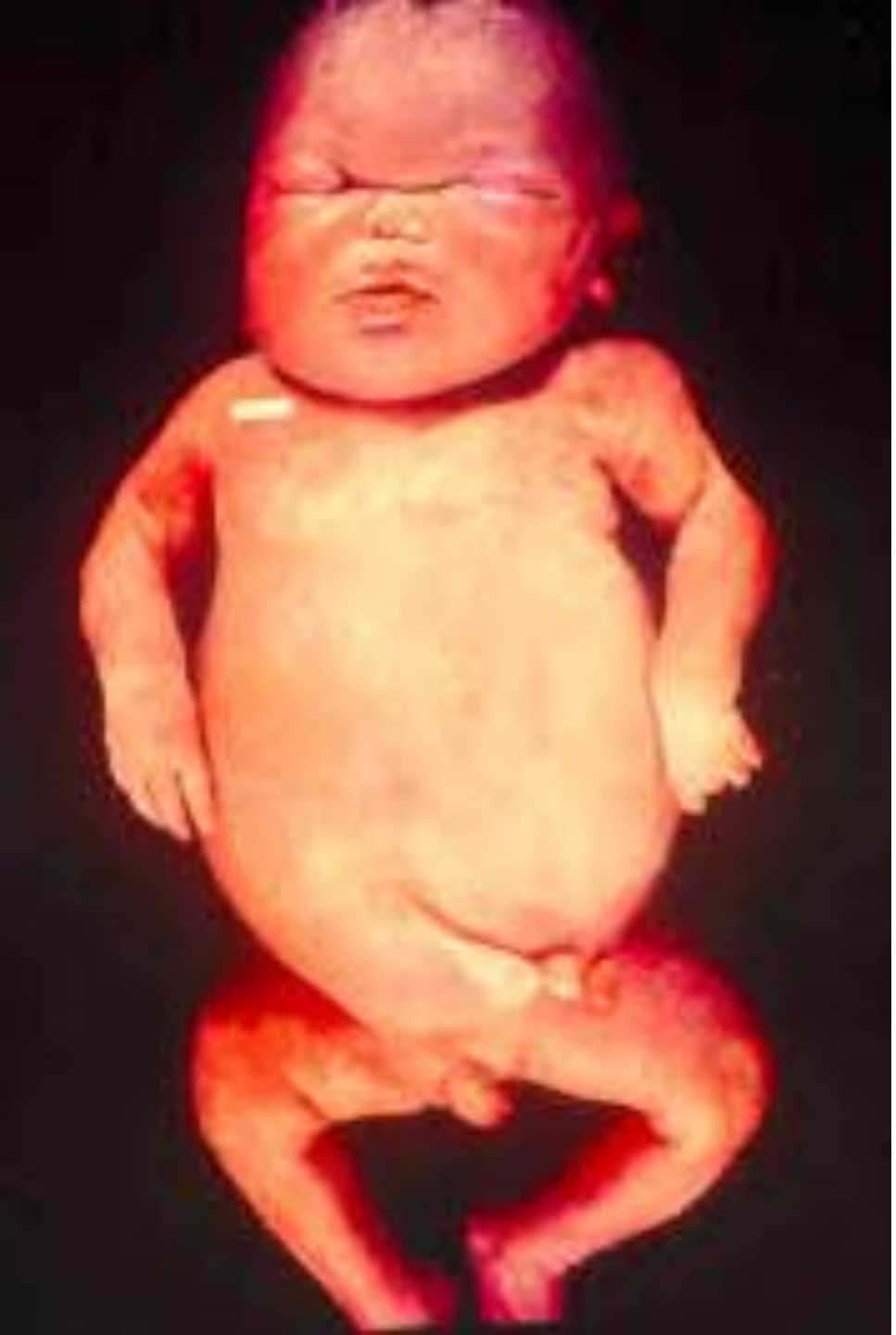
DR FATTS CHOWDHURY

CONSULTANT IN TRANSFUSION MEDICINE

IMPERIAL COLLEGE HEALTHCARE NHS TRUST

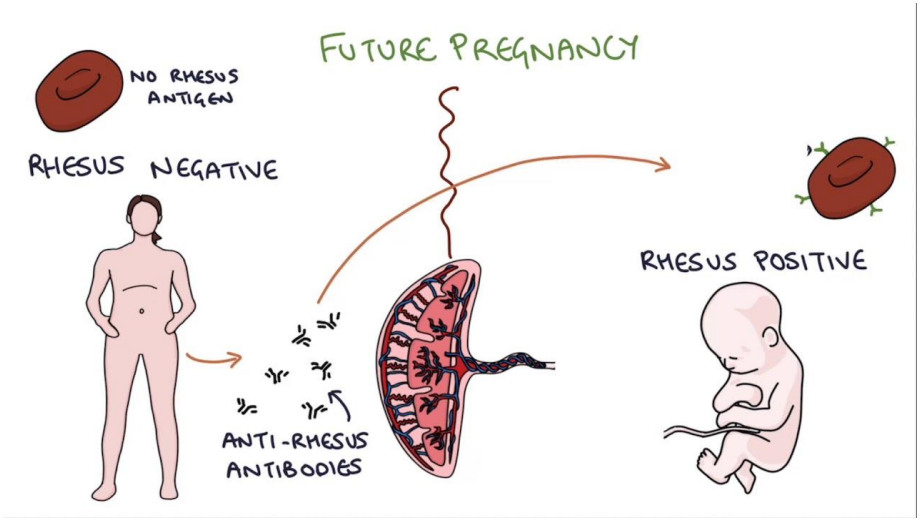
NHS BLOOD AND TRANSPLANT

SENIOR CLINICAL LECTURER



What is the cause of this condition?

What blood results would you like to know ?



Immune system attacks unborn baby's red blood cells. This causes anemia. Hydrops can occur if the developing baby's organs can't overcome the anemia. The heart starts to fail. Large amounts of fluid build up in the baby's tissues and organs. This type of hydrops is not common today because Rh negative women are usually treated with Rh immunoglobulin to prevent this problem.

What product might this girl need?

What investigations would you request?

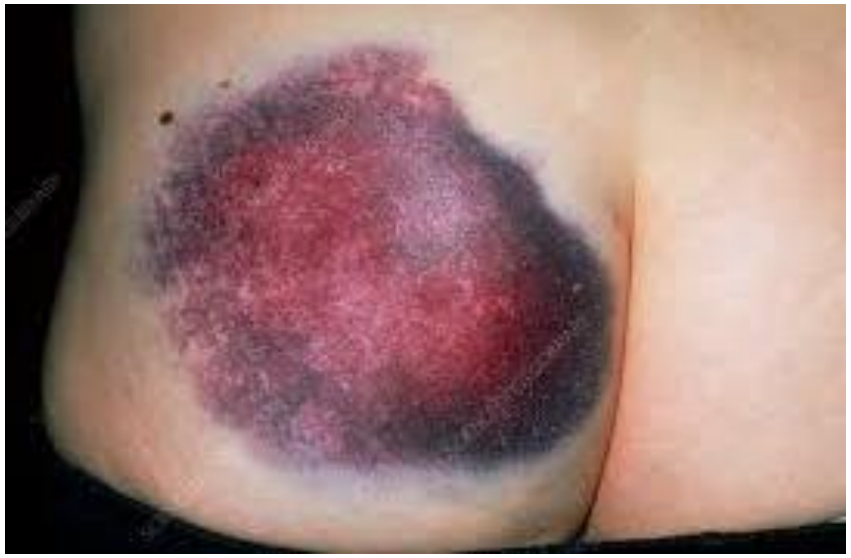
Glanzmann's thrombasthenia

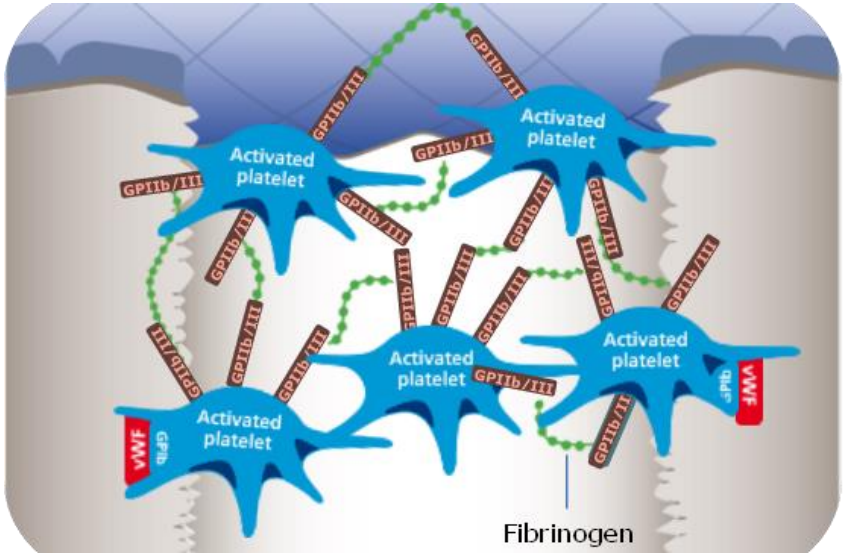
Very rare bleeding disorder - abnormality of the platelets

Autosomal recessive inheritance

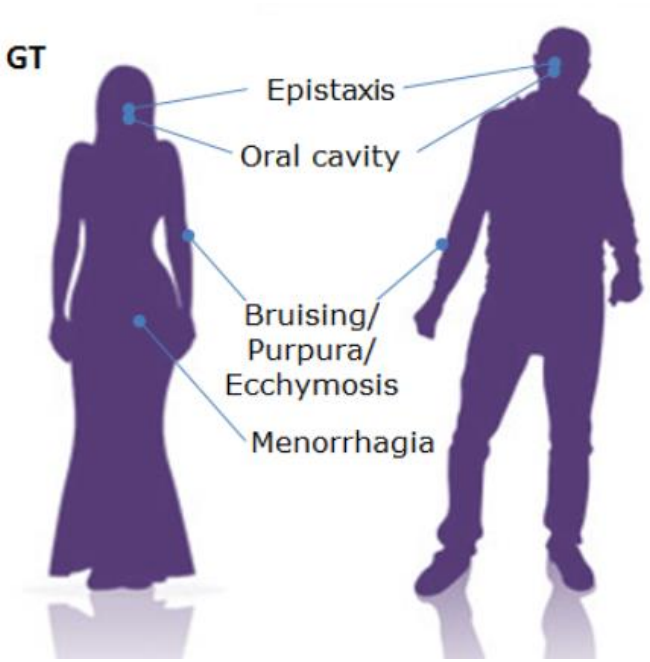
Platelets contain defective or low levels of glycoprotein IIb/IIIa (GpIIb/IIIa), which is a receptor for fibrinogen.

First identified in children in 1918 in the Swiss Alps by Dr Edward Glanzmann





Glanzmann Thrombasthenia



2 genes ~ chromosome 17

Either gene can be abnormal and passed on to result in GT

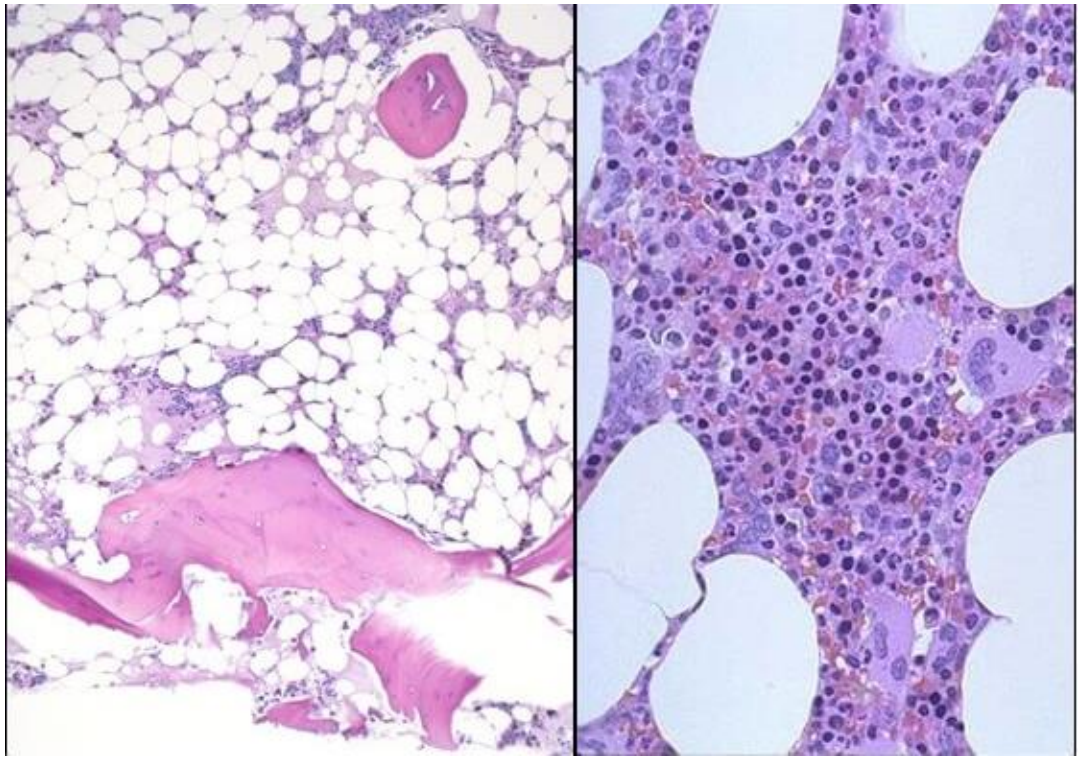
1,000,000 people worldwide

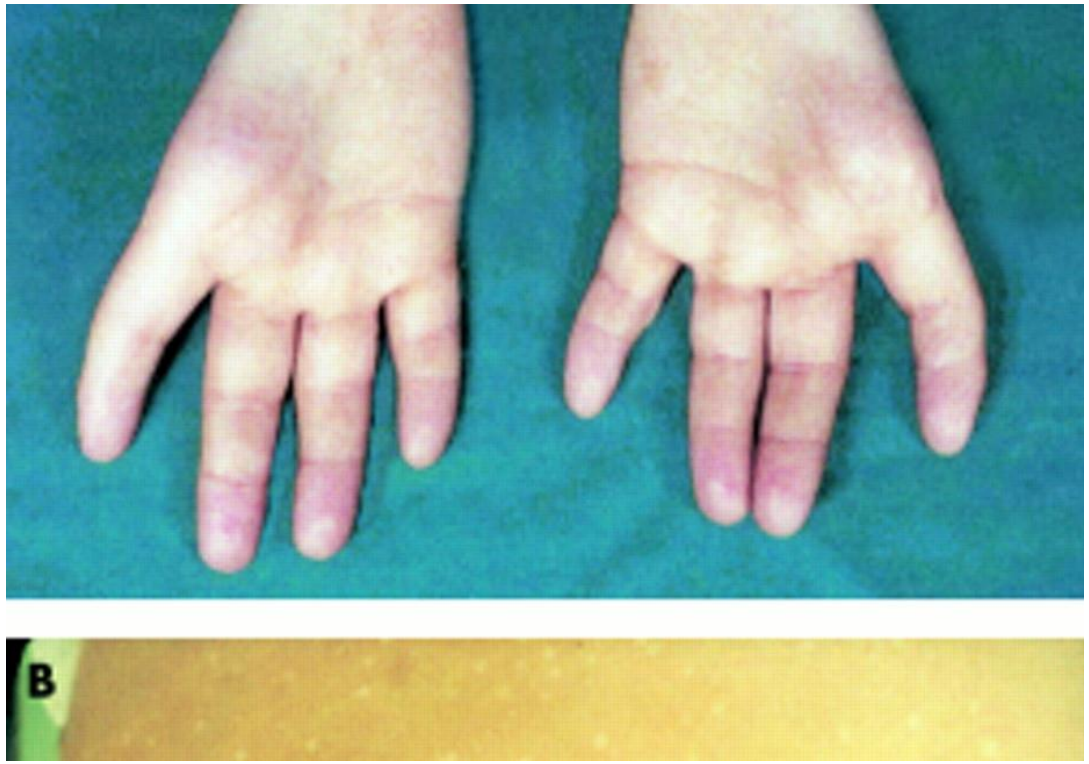
Diagnosed usually before 5yrs due to serious bleeding episodes

Bleeding from

- gums during teething or losing baby teeth.
- vaccination site

Tests	Values
Routine	
PT	Normal
aPTT	Normal
Platelet count	Normal
Specialized	
Platelet aggregation	Absent or severely diminished except ristocetin
Flow cytometry for GP 2B-3A	Diminished





What is the diagnosis?
What blood product(s) might this child need?

Fanconi Anaemia

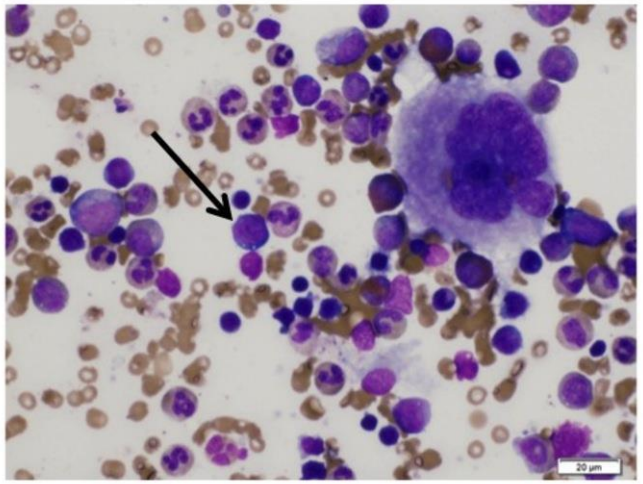
- Inherited in an autosomal recessive or X-linked pattern
- Congenital malformations
- Progressive bone marrow failure
- Increased susceptibility to cancer
- Mutations in any of 15 genes that play a role in the repair of DNA interstrand cross-links (ICL)
- The defect in DNA repair results in sensitivity to DNA cross-linking agents such as cisplatin, diepoxybutane and mitomycin C

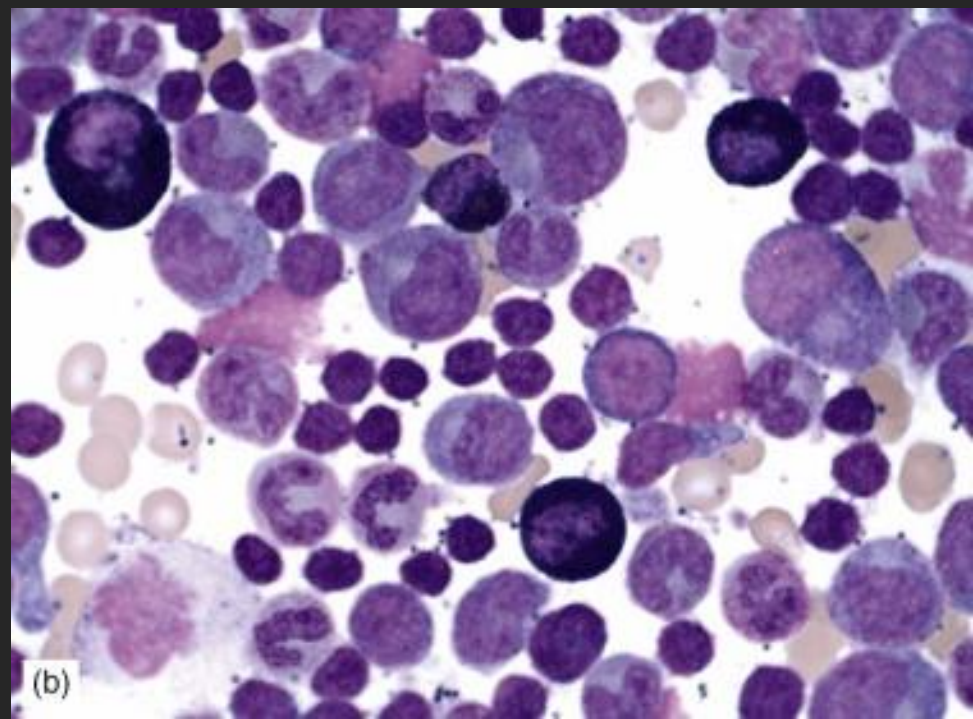
What is the condition?

What blood product(s) might this child need?

Would you like a clue?

Marked myeloid predominance w/ rare early erythroid precursors (pic w/ mega)





Diamond-Blackfan anemia

Dominantly inherited mutation in a ribosomal protein (RP) gene, RPS19, in 25% cases.

Eleven other RP genes also shown to be mutated in DBA

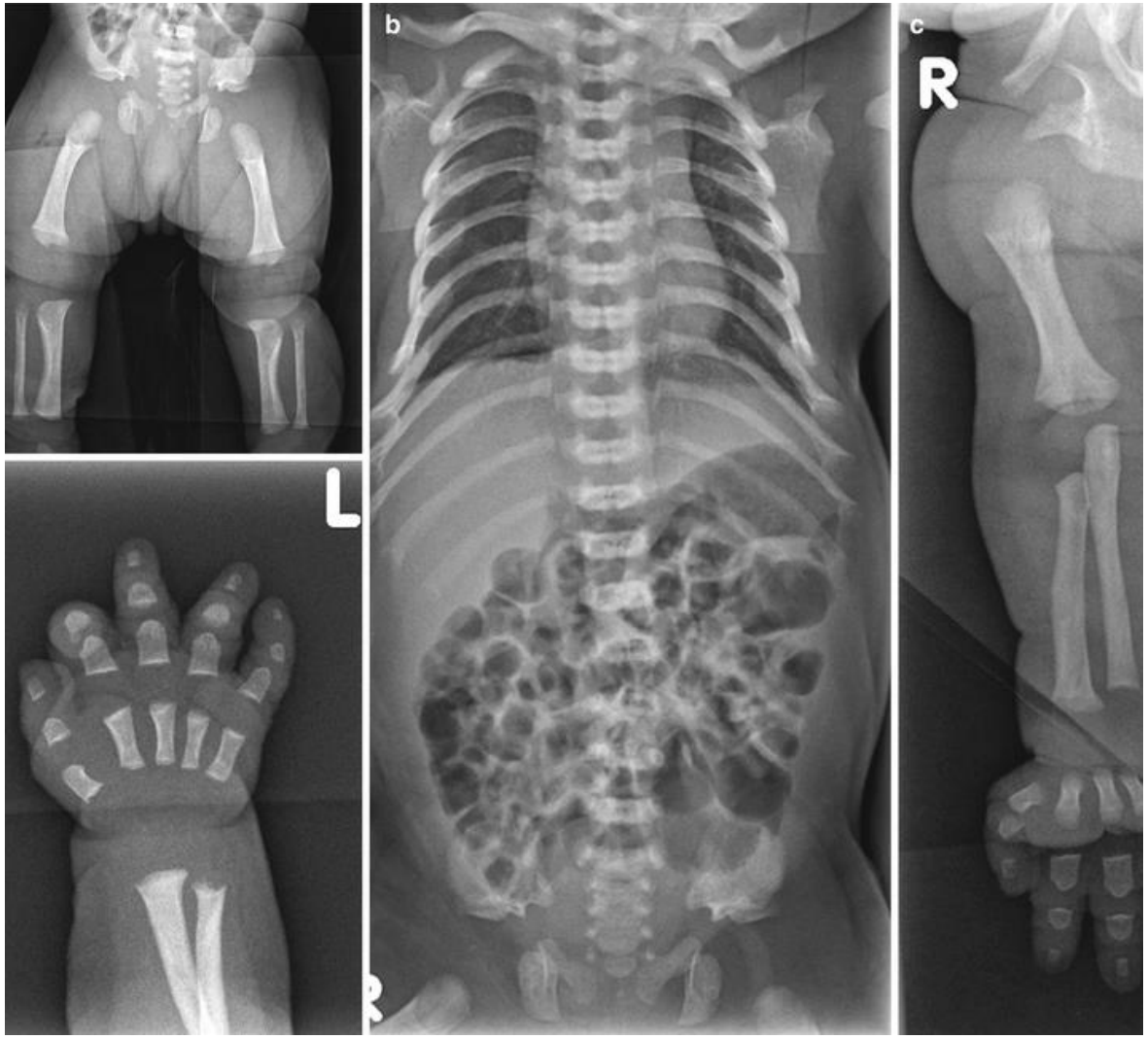
Commonest are RPL5, RPL11, and RPS26.

Known RP mutations account for approximately 50% of cases. The mutations usually result in haploinsufficiency of the protein.

RP gene mutations result in a block in ribosome biogenesis.

Ribosomal stress, which is a consequence of the defect in ribosome biogenesis, leads to stabilization of p53 and cell death by apoptosis.

- Erythroid progenitors are preferentially affected
- May relate to the rapid proliferation and high demand for RNA synthesis in the cells during early stages of erythropoiesis, particularly during late fetal development.



What is the diagnosis?

Schwachman-Diamond Syndrome

Autosomal recessively inherited mutations (90% of cases).

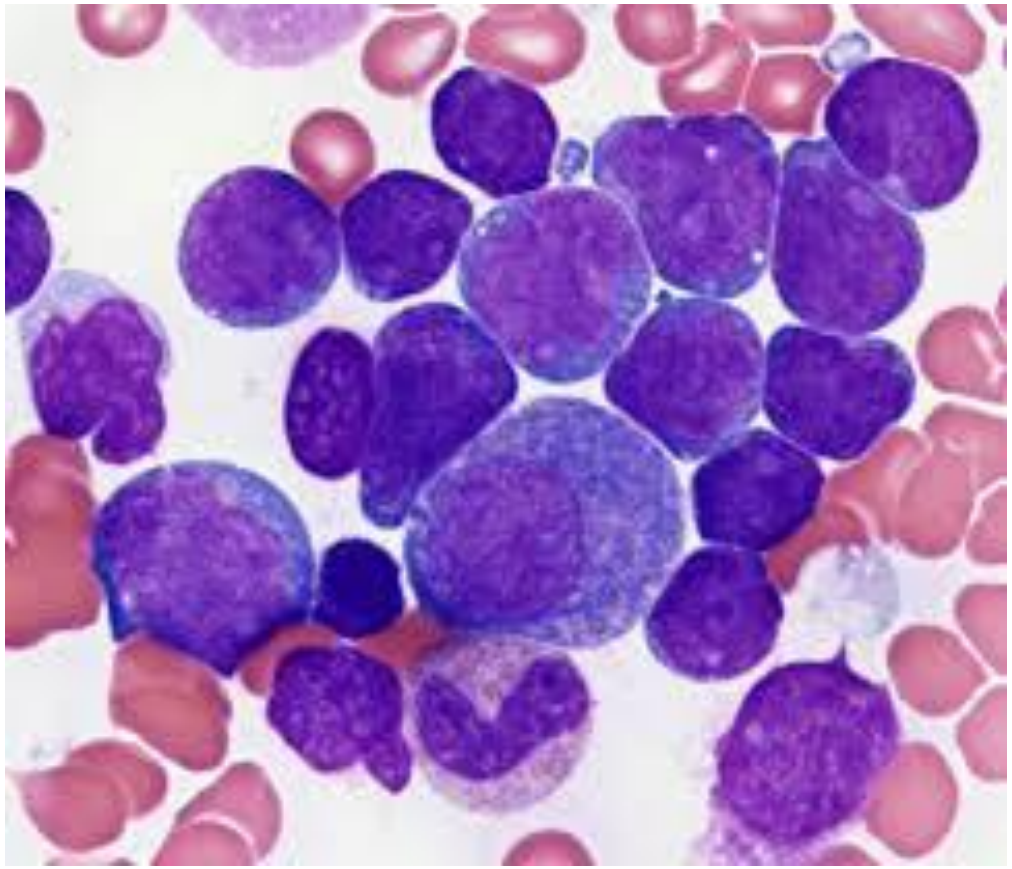
Pathogenesis not fully understood- classified as a ribosomopathy, along with Diamond-Blackfan anaemia, dyskeratosis congenita, cartilage-hair hypoplasia and Treacher Collins syndrome.

The SBDS protein plays a role in maturation of the large 60S ribosomal subunit, but is also a multifunctional protein that has functions in mitotic spindle stabilization, actin polymerization, vacuolar pH regulation and DNA metabolism.

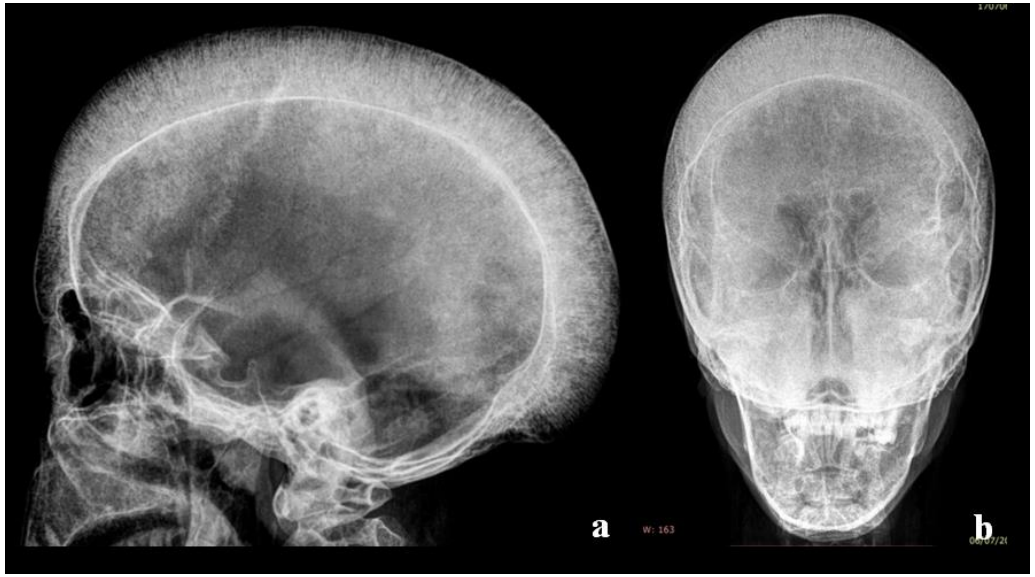
The precise role of defects in these pathways in the bone marrow failure (in particular neutropenia), exocrine pancreatic deficiency with malabsorption, skeletal defects, and cancer susceptibility is not understood.

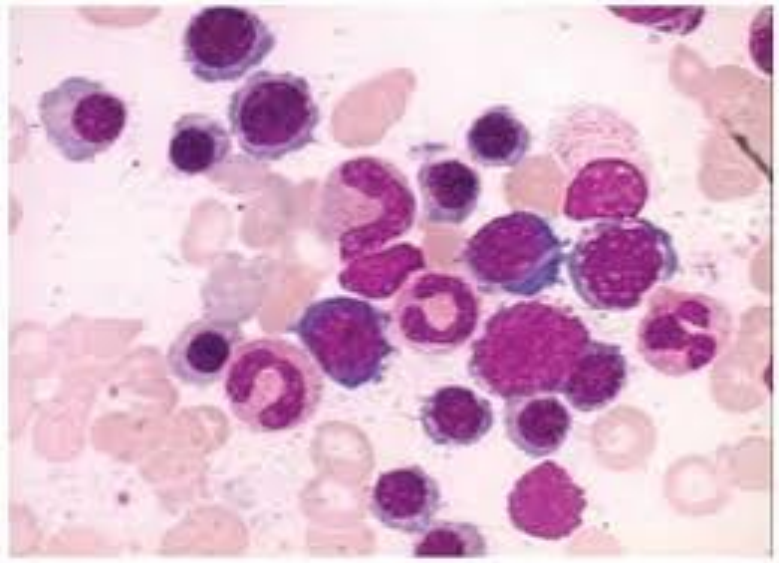
What is the diagnosis ?

What product(s) are likely to be needed?



What blood product is needed?





Heart

Left ventricular dysfunction

Heart failure

Arrhythmias

Liver
(>80% of NTBI is cleared by hepatocytes)

Increased ALT, AST

Fibrosis

Cirrhosis

Endocrine glands

Hypogonadism

Hypothyroidism

Hypoparathyroidism

Diabetes

Lifelong supportive care with regular blood transfusion if Hb <70g/L or if have facial changes, poor growth, fractures or clinically significant extramedullary haematopoiesis

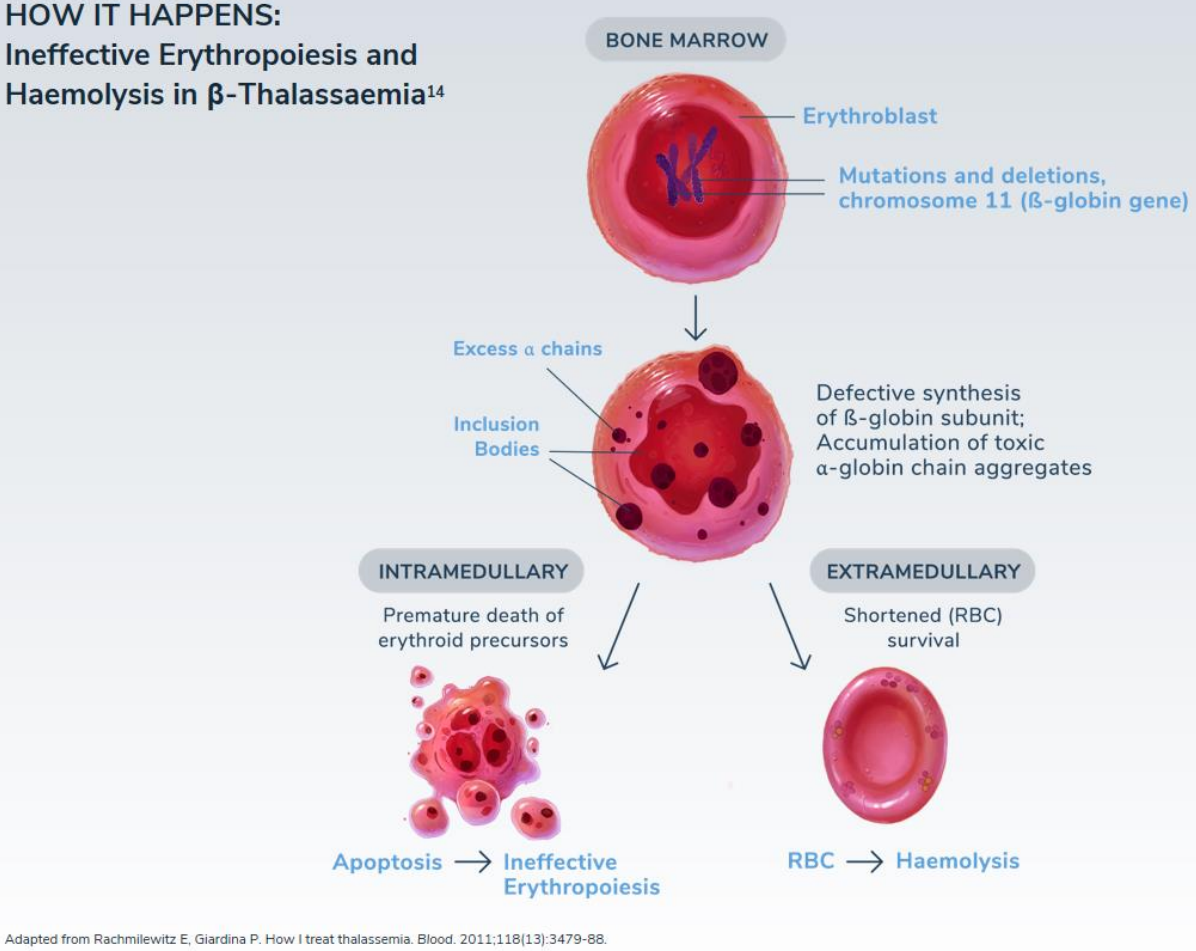
Maintain Hb 90-105g/L

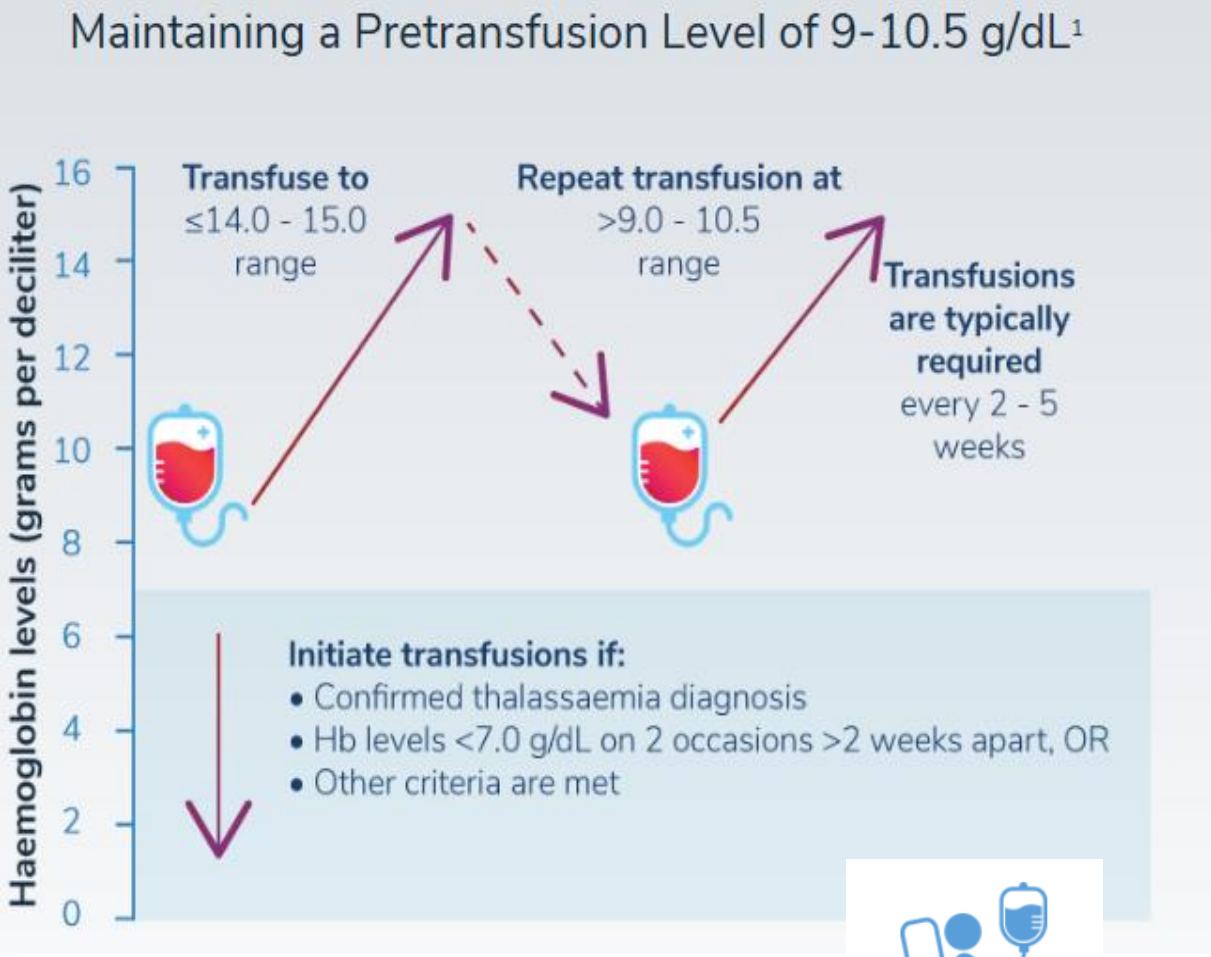
- Treat anaemia
- Suppresses ineffective erythropoiesis

Iron chelation therapy

Many patients have complications and organ damage due to disease and iron overload

BETA THALASSEMIA MAJOR

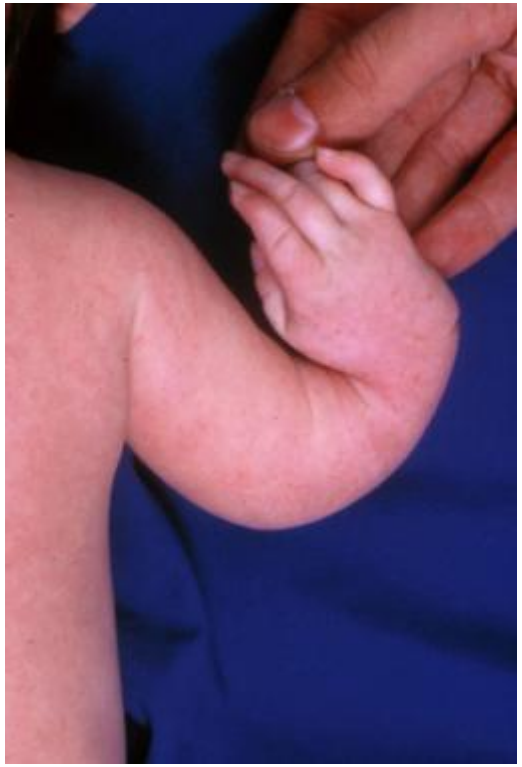


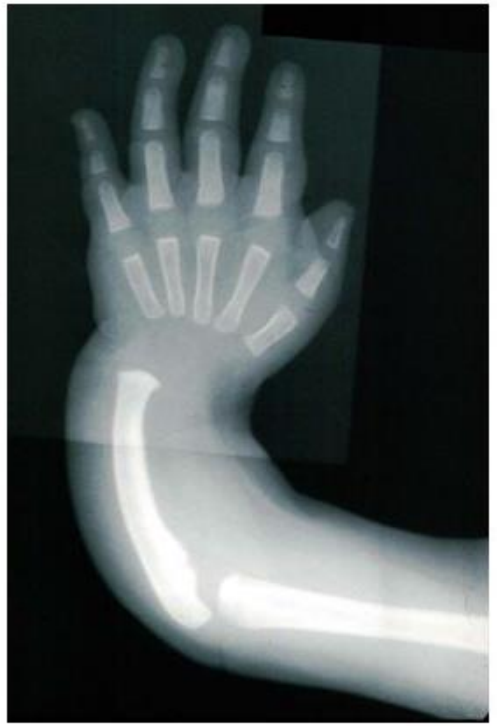


BETA THALASSAEMIA MAJOR

https://www.challengetdt.co.uk/transfusion-therapy

What is the diagnosis





Thrombocytopenia-absent radius (TAR) syndrome

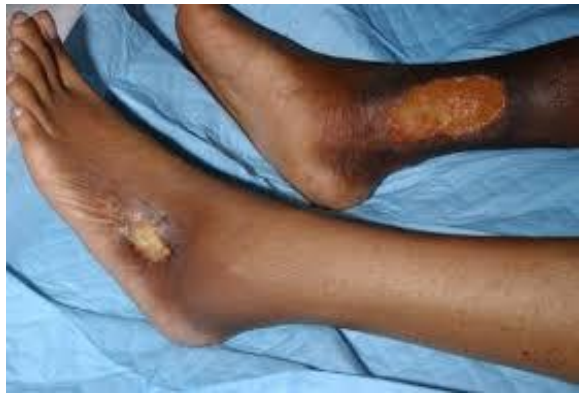
Rare congenital **disorder**

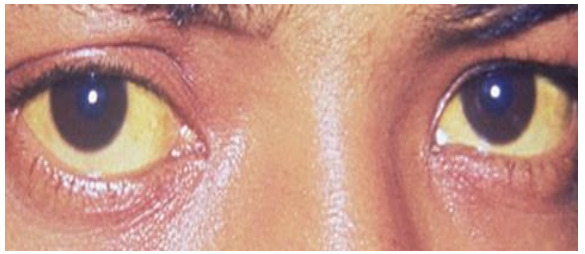
Characterized by t**hrombocytopenia**)and **absence** (aplasia) of the long, thin bones of the forearms (**radii**).

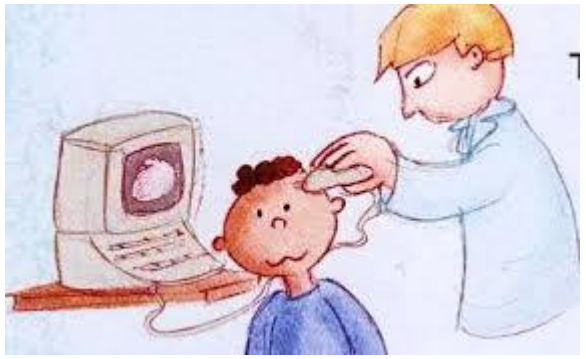
The similarity of TAR syndrome to congenital rubella suggests intrauterine injury when the involved systems develop, but a common etiologic agent has not been identified

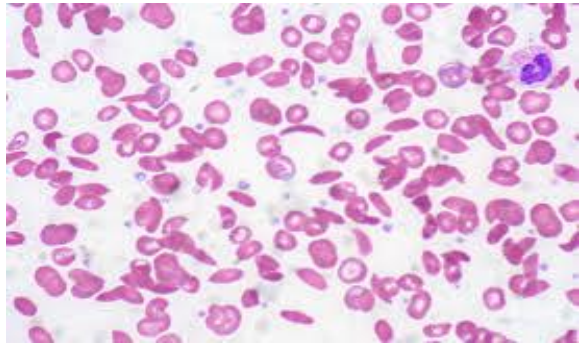
What is the diagnosis?

What blood product is required?

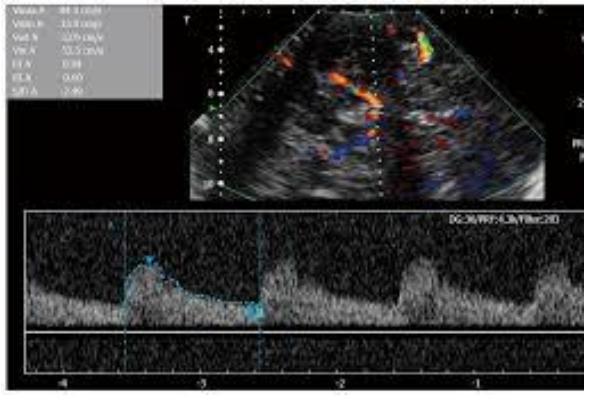








What is the treatment of choice?



Sickle Cell Disease

Sickle cell disease is an inherited blood disorder characterized by defective haemoglobin – red cell shaped like sickles

Mutation in B-globin gene - chromosome 11

Autosomal recessive inheritance

Sickle cell disease primarily affects those of African descent and Hispanics of Caribbean ancestry, but the trait has also been found in those with Middle Eastern, Indian, Latin American, American Indian and Mediterranean heritage.

Affects >4.5 million people

Signs & Symptoms

Heterogenous , usually appear around 5 months of age

Anaemia life span 10 to 20 days - lack of oxygen and fatigue

Pain crisis block blood of flow through tiny blood vessels to chest, abdomen , bones and joints. Variation in intensity and duration , chronic pain, which can result from bone and joint damage, ulcers, and other causes.

Swelling of hands and feet blocking blood flow to the hands and feet

Frequent infections damage to spleen

Delayed growth or puberty slow growth in infants and children and delay puberty in teenagers

Vision problems plugging of tiny blood vessels that supply eyes

Stroke block small blood vessels in the brain. Signs include headache, seizures, weakness in the arms and legs, speech problems, a facial droop, or loss of consciousness

THE END