# Ped Hematology

***All PYQ before 2020* (4th + 6th year)**

1) ***Patient with MCV 110, hypersegmented neutrophils, low platelets, low WBC, Hb=8***:
   a) ***+B12 deficiency***
   b) *Iron deficiency anemia*
   c) *Sideroblastic Anemia*

2) ***A 5 days old child was born at home have bruising and melena, all was normal (perinatal) and he was healthy, he was found nursing vigorously every 2 hours, LAB showed Hb-8 mg/dl, PT 47 and PTT 98, WBC 9500, what could it be?***
   a) *Liver disease*
   b) ***+Vitamin K deficiency***
   c) *vWF deficiency*
   d) *Hemophilia A*
   e) *DIC*

3) ***A male child fell on his knee and developed hematoma, what should be given?***
   a) ***+Factor VIII***
   b) *Factor VII*
   c) *Factor XI*
   **Note**: *it is hemophilia A which is deficiency in Factor VIII*

4) ***A male child patient presented with Anemia, on blood film there was small erythrocytes with varying sizes and upon Hemoglobin electrophoresis the Band for Beta hemoglobin was absent, the patient disease is?***
   a) ***+Beta-thalasemia***
   b) *Alpha – Thalassemia*
   c) *Iron def. anemia*

5) ***An 18 month old child present to the physician for routine well-child care, the mother states that the patient still drinks from a bottle and consume cow's milk. The child appears pale. Hb is 6.5 g/dl and Hct is 20%. The MCV is 65 fl, what test would you do next to confirm your diagnosis?***

a) ***+serum ferritin***
b) *Hemoglobin Electrophoresis*
c) *Bone Marrow Aspiration*
d) *measure B12 level*

***NOTE****: the presentation goes with microcytic anemia , and since cow milk is poor in Iron we think of Iron def anemia and the test to confirm that is serum ferritin*.

6) ***Heparin is best monitored by:***
   a) *PT*
   b) ***+PTT***
   c) *INR*

7) ***What is true concerning Hodkgin lymphoma:***
   a) *It affects females more than males*
   b) *It's common in < 5 years old age group*
   c) *Stage II is by involvement of the bone morrow*
   d) ***+Blood film shows 5% blasts***

   ***Note****: Ann Arbor staging system*
   ***Stage I:*** *Involvement of a* ***single*** *lymph node region (I), or a single extralymphatic organ or site (IE).*

   ***Stage II:****Involvement of ≥2 lymph node regions on the* ***same side*** *of the diaphragm (II), or localized involvement of an extralymphatic organ or site and of ≥1 lymph node regions on the same side of the diaphragm (IIE).*

   ***Stage III:*** *Involvement of lymph node regions on* ***both sides*** *of the diaphragm (III), which may be accompanied by localized involvement of an extralymphatic organ or site (IIIE), by involvement of the spleen (IIIS), or both (IIISE).*

   ***Stage IV:*** *Diffuse or* ***disseminated*** *involvement of ≥1 extralymphatic organs or tissues, with or without associated lymph node enlargement, including any involvement of the liver, bone marrow, or nodular involvement of the lungs.*
8) ***The most common cause of increase eosinophilia in the peripheral blood smear****:*

a) *Chronic allergic rhinitis*
b) ***+Helminth infection***
c) *Fungal infection*
d) *TB*
e) *Bacterial infection*

***Note**: Helminthic infections are the most common cause of eosinophilia worldwide due to the high prevalence of helminthic parasite infections, several of which are estimated to involve hundreds of millions of people.*

9) **Most common presentation of sickle cell hemolytic anemia**:
a) ***+. vaso-occlusive crisis***
b) *B. acute sequestration crisis*
c) *C. aplastic crisis*
d) *D. acute chest syndrome*

10) ***A case of 4 years old girl with rudiment thumb, weight & height below 5th centile, microcephalic and irregular pigmentation on her trunk & anogenital areas. What is the most likely hematological disorder associated with her presentation?***
a) ***+Fanconi anemia***
b) *Diamond-blackfan syndrome*
c) *Bloom syndrome*
d) *ALL*
e) *Thrombocytopenia & absent radii (TAR) syndrome*

***Note**: **Fanconi anemia**: Onset before the age of 10 (mean 8 Years). Characteristics: AR, pancytopenia, microcephaly, absent thumbs, café au lait spots, cutaneous hyperpigmentation, short stature; chromosomal breaks, high MCV and hemoglobin F, horseshoe or absent kidney, and leukemic transformation.*
***Treatment**: Androgens, corticosteroids, bone marrow transplant.*

11) ***In beta thalassemia the cause of short stature in an 8 Years old girl is:***
a) *gonadotropin deficiency*
b) ***+GH defeciency***
c) *thyroid Hormone def*
***NOTE**: Short stature in thalassemic children are attributed to GH*

*defeciency.*

12) ***All of the following can present in lab results of patient with DIC except:***

a) *decreased platelets*
b) ***+decreased D-Dimer***
c) *increased prothrombin time*
d) *decreased fibrinogen*

***NOTE**: in DIC there is increase D- Dimer since there is excessive activation of coagulation system so increase in clot formation and then destruction which lead to D-Dimer formation.*

13) ***Pt developed jaundice and is pale, his brother has similar symptoms, all the following are true except:***

a) *low haptoglobin*
b) *low G6PD level*
c) ***+high HbF in Hb electrophoresis***
d) *myoglobinuria*

***Note**: the presentation goes with G6PD deficiency , myoglobinuria is not the answer because if there is* deficiency G6PD in muscles. Myalgia and myoglobinuria can occur.

14) ***Pale child with Hb=8, low MCV and MCH. What is the next question you ask in history?***

a) ***+Daily nutritional assessment***
b) *B. hx of radiation*
c) *C. Drug hx*
d) *D. hx of blood transfusion in his family*

***Note**: suspecting Iron deficiency anemia requiring knowing of the nutritional status of the child.*

15) ***About Hodgkin lymphoma, what it is false?***

a) *BM involvement is gradual in grade 4*
b) ***+more common in < 10 Years***
c) *Reed Sternberg cell is diagnostic*
d) *predominant in male*

e) ***+Most common in abdomen***

***Note****: The incidence of Hodgkin disease has a* ***bimodal distribution****, with peaks in the adolescent/young adult years and again after age 50; it is rarely seen in children younger than 5.*
*In children, boys are affected more commonly than girls, but in adolescents, the sex ratio is approximately equal.*

*Painless, firm lymphadenopathy often confined to one or two lymph node areas, usually the* ***supraclavicular and cervical nodes****, is the most common clinical presentation of Hodgkin disease.* ***Mediastinal lymphadenopathy*** *producing cough or shortness of breath is another frequent initial presentation. The presence of one of three B symptoms has prognostic value: fever (>38°C for 3 consecutive days), drenching night sweats, and unintentional weight loss of 10% or more within 6 months of diagnosis.*

16) ***All are favorable prognostic factors in ALL except?***
a) *Age btw 1-10Years*
b) *early pre-B cell lineage*
c) ***+large mediastinal mass***
d) *No CNS manifestation*
e) *Low WBC*

***Note****: poor prognosis in ALL :*
*1) high WBC count*
*2) age above 10 Year or younger then 1 Year*
*3) Philadelphia chr. (9:22), hypodiploidy (<45 chr.)*
*4) precursor T-cell and mature B-cell*
*5) Mediastinal mass is common with T-cell ALL (lymphoblastic leukemia).*

17) ***Least likely for parvovirus B19 to cause hemolysis is in:***
a) *H spherocytosis*
b) *sickle cell disease*
c) ***+alpha thalassemia***
d) *pyruvate kinase def*

18) ***All are poor prognostic factors in ALL except :***
a) *Hypoploidy (chromosomal count < 44)*

b) **+Age more than 1 year and less than 10 years**
c) B-cell precursor cells

*Note: Poor Prognosis features:*
*1-Age <1 y/o and >10 y/o*
*2-MALE*
*3-WBC initial > 100,000*
*4-Chromosom count <50 (Hypoploidy)*
*5-Precursor B-cell*
*6-t(9,22), t(4,11)*
*7-CNS involvement*

19) ***Anemia that can be found in IBD :***
a) *Normocytic*
b) *Microcytic*
c) *Macrocytic*
d) ***+Normo & microcytic***

20) ***A 9 Years old child known case of sickle cell disease , presented with abdominal pain , what is the least likely Dx:***
a) ***+Aplastic crisis***
b) *Splenic sequestration*
c) *Gallbladder stones*

21) ***Which is most likely activated after release of tissue factor from a wound :***
a) ***+Factor VII***
b) *Factor VIII*
c) *Factor IX*

22) ***Erythropiotin stimulates RBC production by affecting which of the following :***
a) ***+Colony stimulating***
b) *Polypotent stem cells*
c) *Reticulocytes*

23) ***The deficiency of one of the following leads to thrombosis:***
*a)* ***+Factor V leiden***
b) *Factor VII*

c) *Factor VIII*

24) ***One is a cause for splenomegaly and thrombocytopenia:***
a) ***+Gauchers disease***

25) ***A case of ALL, complains of fever, normal Hb and WBC 4000, What to do:***
a) ***+Absolute neutrophilic count (ANC)***

26) ***A case of macrocytosis, low Hb, hypersegmented neutrophils. Diagnosis:***
a) **Vitamin B12 deficiency**

27) ***A case of Hb 5, increased HbA2, increased HbF. Diagnosis:***
a) ***+Thalassemia B major***

28) ***A difference between thalassemia and sickle cell disease:***
a) ***+Ineffective erythropoiesis in thalassemia***

29) ***Which factor stabilizes fibrin clot formation:***
a) ***+Factor XIII***
b) *Thrombin*
c) *HMWK*

30) ***A case of hemearthrosis and prolonget PT and bleeding time:***
a) ***+Factors II, VII, IX and X deficiency***

***Note****: The answer should be DIC. DIC causes an increase in PT, PTT and Bleeding time and may cause Hemearthrosis. Vitamin K inreases PT and PTT but doesn't affect the bleeding time.*

31) ***A patient who has coagulopathy secondary to liver disease, the best to give him prior to surgery is:***
a) ***+FFP***
b) *Albumin*
c) *Cryoprecipitate*

32) ***After endothelial injury, the tissue factor activates which factor firstly:***

a) ***+Factor VII***

33) ***A 2 years old child developed petechial skin rash after a febrile URTI. Hb= 8, WBC: 9000, Plts: 15000. The best management is:***

a) ***+1 g/kg IVIG***
b) *Reassure the mother that the disease with resolve spontaneously*
c) *Platelets transfusion 3 units daily for 3 days*

***Note****: ITP, when PLT < 20,000 or there is active bleeding , treat with IVIG or corticosteroids.*

34) ***A patient with thalassemia major, on regular blood transfusion, has symptoms of HF, liver failure, hypogonadism and growth retardation. The cause is:***

a) ***+ Iron overload***
b) *Chronic anemia*

35) ***A boy presented with dark urine, pallor, jaundice after taking and antibiotic Hb:8, normocytic normochromic, Heinz bodies were seen. What is the diagnosis:***

a) ***+G6PD deficiency***
b) *Pyruvate kinase deficiency*

36) ***Patient took trimethoprime-sulfamethaxozole , developed Heinz bodies ( case of G6PD) , the best to follow up this patient is :***

a) *Serum bilirubin*
b) ***+LDH***
c) *Hb*

37) ***What causes Burkitt lymphoma :***

a) ***+EBV***
b) *HIV*
c) *HHV-8*

38) ***Patients with increased HbA2 :***

a) ***+Beta thalassemia trait***

39) ***Poor prognostic factor in leukemia patients is :***

a) *Age is 6 Years old*
b) *Hyperploidy*

c) ***+Mediastinal mass***
d) *Early B cells*

40) ***Sickle cell patients with pain in hand and foot , the cause is***
a) ***+Vaso-occlusive crisis***

41) ***True about DIC:***
a) ***+Increased D-dimer***
b) *Increased fibrinogen*

42) ***All are true regarding IDA except :***
a) *Increased TIBC*
b) *Increased RDW*
c) ***+Increased retics count***

43) ***A 3 Year old boy who developed a febrile illness and was given TMP-SXT presented with jaundice, pallor, fatigability and red urine. The cause of his urine is:***
a) ***+Hemoglobinuria***
b) *Myoglobinurea*
c) *Direct bilirubinurea*

44) ***2 week old newborn found on routine screening program to have sickle cell disease, Management is by:***
a) *Meningococcal polysaccharide vaccine recommended*
b) *Daily prophylactic tetracycline*
c) *IVIG every 6 weeks*
d) ***+Teach mother how to palpate abdomen and take temperature****.*

45) **Wrong about IDA:**
a) ***+MCV: 88 fL (In the other form low TIBC)***
b) *Low ferritin*
c) *Low serum iron*
d) *High TIBC*
e) *Low MCHC*

46) ***The least likely to develop leukemia:***
a) *Wiskott-Aldrich syndrome b) Ataxia talangectasia*
b) *Fanconi syndrome*
c) *Shwachman-Diamond syndrome*

d) ***+Cystic fibrosis***

47) ***One of the followings is found in blood transfusion:***

a) ***+Thrombocytopenia***

***Note****: **dilutional** thrombocytopenia*

48) ***Child with eczema unresponsive to steroids , thrombocytopenia 20000 , WBCs normal , Dx ?***

a) ***+Wiskott Aldrich syndrome***

b) *Digeorge syndrome*

***Note****: Wiskott Aldrich Syndrome: Mr. TEXT M: Low IgM*
*r: Recurrence infection*
*T: **Thrombocytopenia***
*E: **Eczema** unresponsive to steroid*
*X: X-linked*
*T: **T cell & B cell deficiency***

49) ***Child with rudimentary thumb ,anogential and trunk pigmentation and short stature ( 4 Years ) , your Dx :***

a) ***+Fanconi anemia***

b) *Diamond blackfan syndrome*

c) *TAR syndrome*

50) ***8 months old, triphalengeal thumb:***

a) ***+Diamond blackfan***

***Note****: Diamond-Blackfan syndrome (congenital hypoplastic anemia)* ***Onset****: Newborn-1 month; 90% are <1 Year of age.* ***Characteristics****: Pure red blood cell aplasia; AR; elevated fetal hemoglobin, fetal i antigen present, macrocytic, short stature, web neck, cleft lip, triphalangeal thumb; late onset leukemia* ***Treatment****: Prednisone, transfusion.*

51) ***18 months old female , pale , Hb 4 , MCV 74 , diet is good , Hb electrophoresis normal and everything else is normal , Dx:***

a) *Diamond blackfan*

b) ***+Transient erythroblastopenia of childhood***

**Note:** **Diamond-Blackfan anemia (DBA**) is an inherited red blood cell aplasia that usually presents in the first year of life. The main features are normochromic macrocytic anemia, reticulocytopenia, and nearly absent erythroid progenitors in the bone marrow. Patients show growth retardation, and approximately 30 to 50% have craniofacial, upper limb( **Triphalangeal trumb**), heart, and urinary system congenital malformations. Diamond-Blackfan Syndrome will present earlier in the first 3 months of life with pallor and poor feeding**.**

52) ***Associated with Beckwitkth wiedman syndrome:***

a) ***Wilms tumor***

***Note****: Beckwith-Wiedemann syndrome: is characterized by macroglossia, omphalocele, macrosomia, hyperinsulinemic hypoglycemia, cytomegaly of the fetal adrenal gland and increased risk of wilm's tumor.*

53) ***Abnormal RBC skeleton :***

a) ***+Spherocytosis***

54) ***PT normal , PTT normal , CBC is normal , Child is bleeding :***

a) ***+Factor XIII deficiency***

***Note****: Patient bleeding BUT NORMAL PT and PTT = Factor XIII def. Patient NORMAL PT and NO bleeding BUT Prolonged PTT = Factor XII def.*

55) ***PT normal , PTT 200 , Not bleeding :***

a) ***+Factor XII deficiency***

56) ***One comes with thrombosis:***

a) ***+Antithrombin III defeciency*** *( other form protein C deficiency)*

57) ***One is normal :***

a) ***+Hb A 95.5% A2 2.2 % , F 2%***

58) ***NHL one is suggestive of stage 4:***

a) ***+Mets to bone marrow ( other form : stage II : same side of diaphragm)***

59) ***Tumor lysis syndrome :***

a) ***+K elevated , Phosphorus elevated , LDH elevated , Na normal***

60) ***Not a cause of thrombocytopenia:***

a) *Ranitidine*
b) *Cephalosporin*
c) *Valproic acid*
d) ***+all are true***

61) ***Case of UTI , they give TMP/SMX, jaundice :***

a) ***+G6PD***

62) ***Child with acute pallor, jaundice , best test :***

a) ***+G6PD level***

63) ***A child of thalassemia , comes with diabetes and hepatomegaly and CHF , what*** *to do:*

a) ***Iron chelation***

64) ***All are causes of G6PD except:***

a) *Chloramphenicol*
b) *Nalidix acid*
c) *Sulfamethexazole*
d) *Broad beans*
e) *Nitrofurantoin*

***Note****: all are true , broad = fava.*

65) ***Sickle cell with low Hb and low retics :***

a) ***+Parvovirus***

66) ***2 years old male with recurrent hands and feet pain , with hepatomegaly and spleen just palpable :***

a) *Leukemia*
b) *JRA*
c) ***+Sickle cell anemia***

67) **Most common tumor in children**;

a) brain tumor
b) **+ALL**
c) Wilm's tumor
d) Hebatoblastoma

68) **Fever and chemotherapy-induced neutropeia all drugs should be given empirically pending blood cuture results except :**

a) Meropenem
b) Vefepime
c) Ticarcillin/clavulanate
d) Piperacillin/tazobactam
e) **Cefetaxime**

**Note: let's agree something now:"Anti-pseudomonal drugs are gem" memorize them:**

**1) Ureidopenicillins: Pipercillin, Carbenicillin, Ticarcillin.**
**2) One 3rd gen Cephalosporin: Ceftazidime.**
**2) One 4th gen Cephalosporin: Cefepime.**
**4) Carbapenems: Meropenem & her sisters. except: Ertapenem!**
**5) Aminogycosides**
**6) Flouroguinolones: Ciprofloxacin**

69) **Anemia, hypersegmented neutrophils, mcv high?**

a) B12 deficiency

70) **Vitamin k antagonist ingestion, what factor is not affected?**

a) 2
b) 7
c) 9
d) 10

e) **+5**

71) **There was a question about right abdominal mass , abdominal swelling,, "crossing the right to left" what is Dx?**

a) wilms tumor

b) **neuroblastoma**

72) The pt started walking recently complains from bruising on his lower limbs. The factor VIII level = 1% & vWF : Ag = ... what is the most likely diagnosis ?

a) Severe hemophilia A

b) vWF Disease

c) mild hemophilia A

d) **Moderated hemophilia A**

73) **Edema, Abdominal mass, bluish discoloration of eyes?**

a) **Neuroblastoma**

74) **A known case of sickle cell anemia, hx of URTI few days ago, presented with pallor and fatigue. Hb: 5.4mg/dl, Retics <1%, WBCs 13*10^9. What is the cause?**

a) **+ Parvovirus B19**

b) do CXR for acute chest syndrome

c) G6PD enzyme def

75) **5 yrs old pt with mild anemia(10gm/dl), MCV:57, neonatal hb electrophoresis HbH 4, now normal Hb electrophoresis. what is your dx?**

a) **+ alpha thalassemia trait**

b) alpha thalassemia silent carrier

76) **Child with a hx of falling down and joint swelling. his brother has coagulopathy. what is the best to be given?**

a) **+ Factor VIII concentrate**

77) **A child presented with anemia, Hb=6 , MCV= 72, MCHC= high, splenomegaly, positive osmotic fragility test, what's correct:**

a) This type of anemia is caused by abnormal RBC metabolism
b) This type of anemia is caused by cell membrane defects
c) **+ This type of anemia is inherited as Autosomal Dominant**

78) **A 2 year old drinking 900cc of cow milk daily presented with anemia (Hb=6?), what to tell his mother:**
a) Iron transfusion will increase Hb 1g/dl weekly (something like this)
b) **+Decrease drinking of milk because it can cause micro hemorrhages in intestines**
c) continue milk because its rich in iron

79) **Case of ITP, presented with mild purpuric rash, Platelets = 70000, which is correct:**
a) Give IVIG 2g/kg
b) Prednisolone
c) **+No treatment and follow up of platelet count**
d) Anti-D

80) **Which of the following is not a cause of macrocytic anemia?**
a) **+hereditary spherocytosis**
b) hypothrodism
c) bone marrow failure

81) **Characteristic for T ALL over B ALL:**
a) Philadelphia chromosome
b) **+ CD3, CD4, CD5, CD8**
c) CD10, CD19, CD20

82) **True about Hodgkin lymphoma?**
a) **+ Bone marrow involvement is grade IV**

83) Pt with anemia what is the most appropriate question:
a) **ask about his diet**

84) **anemia in progressive chronic renal disease**:
a) **+normocytic normochromic anemia**

b) normocytic hypocormochromic anemia
c) microocytic normochromic anemia

85) **case with Hx of trauma and knee swelling:**
a) **factor ix**
b) von willebrand factor

86) **case of anemia with very high wbc and was asking about the next step in dx :**
a) **BM biopsy**
b) Hb electrophoresis

87) **Patients receiving treatment for Hodgkin's lymphoma, bulky non-Hodgkin's lymphoma and some forms of leukemia are liable to develop tumor lysis syndrome due to the treatment. Which of the following electrolyte changes isn't correct in tumor lysis syndrome?**
a) Increase in serum phosphate
b) Increase in serum potassium
c) **+Increase in serum calcium**
d) Increase in serum uric acid
e) Oliguria (acute renal failure)

88) **A 19 year old patient presents to the physician and reports having a bleeding problem that wasn't followed up or diagnosed since childhood. Which of the following suggest a coagulation pathway defect rather than a platelet defect?**
a) Epistaxis
b) **+Joint bleeding**
c) Mucous membrane bleeding

89) **A patient who is being given chemotherapy for a hematological malignancy started reporting abdominal pain, nausea and vomiting. His labs show an elevated glucose level and elevated amylase and lipase levels. Which of the following agents is the most likely cause of his condition?**
a) Doxorubicin
b) Vincristine

c) Prednisone
d) **+L-asparaginase**

90) **A 5 year old child who has had an anemia since birth, hepatosplenomegaly and a positive osmotic fragility test presents to your clinic. All of the following are possible findings except:**
a) **+HbF level of 90% on electrophoresis**
b) Negative Coomb's test
c) Indirect hyperbilirubinemia

91) **All of the following can be seen in a patient with G6PD deficiency except:**
a) **+High haptoglobin**
b) High indirect bilirubin
c) Free hemoglobin in the serum
d) High LDH

92) **Which of the following is the body's greatest reserve of iron;**
a) Bone marrow
b) **+Liver and macrophages**
c) Erythrocytes
d) Transferrin
e) Cytochromes and…

93) Which of the following statements is false about Non-Hodgkins lymphoma**:**
a) The most common type of lymphoblastic lymphoma is T-cell
b) **+Bone marrow involvement is stage II**
c) CNS treatment is essential in B-cell lymphomas
d) A bulky tumor has a worse outcome

**Note:** Bone marrow involvement in NHL is stage IV**.**

94) **Which of the following statements about alpha thalassemia is incorrect?**
a) **+The average survival age for hydrops fetalis is not more than 5 years**

b) Patients who are alpha thalassemia carriers have 10-15% HbH at birth
c) Alpha thalassemia carriers are asymptomatic
d) Patients with 3 gene deletions can have microcytic anemia, splenomegaly and…
e) Alpha thalassemia trait can have microcytic anemia

95) Which of the following statements about anemia in chronic renal failure is incorrect?
a) **+EPO can be administered orally**
b) It is usually normocytic normochromic
c) It can be due to blood loss

96) **Hb A=0... HA2=0....Hb f=100% :**
a) thal βδ
b) thal β major
c) thal β minor
d) **+Hereditary persistence of fetal hemoglobin .**

97) **the most common type of bone tumor in 12 yr old child is :**
a) **+ osteosarcoma**

98) **a case of ,Hb A=0% , Hb A2=0% , Hb F=100%**
a) minor alpha thalassemia
b) beta thalassemia major
c) beta thalassemia minor d
d) delta thalassemia
e) **+Hereditary persistence of fetal hemoglobin**

99) **Very long case about ALL treated with chemotherpy , one goes with tumor lysis syndrome :**
a) **+high K,P,LDH and low Ca to prevent it give allopurinol**

100) **A case of a child with anemia, rudimentary thumb & hyperpigmentation , what is wrong:**
a) **low Hb F .**

**Note**: A case of fanconi anemia they have high HbF.

101) **A case of 2mo old female infant diagnosed to have a hematological malignancy, developed anemia , thrombocytopenia , prolongef PT & PTT & LOW FIBRINOGEN , what do you expect she has:**

a) AML M4
b) ALL
c) AML M1
d) LYMPHOBLASTIC LYMPHOMA
e) **+AML M3 (DIC) .**

102) **Acase of neonate with jaundice , blood group A & mothers blood group is O+, NEONATAL BLOOD tests revealed 5% spherocytes ,anemia and indirect hyperbillirubenemia, what to do next:**

a) indirect coomb's
b) osmotic fragility
c) **+direct coombs**

103) **All of the following are bad prognostic factor o ALL except:**

a) age less than 1 year
b) **+wbc =14000**
c) philadelphia chromosome.

104) **A patient who was pale and Hb 8 with small cells in film , increase Hb A2 and Hb F what is the diagnosis?**

a) sickle cell
b) **+beta thalassemia major**
c) pure red cell aplasia

105) **Patient with anemia and hypersegmented neutrophil**

a) **+B12 deficiency**

106) **A patient with recurrent joint swelling and prolonged PTT but normal PT , same problem in uncle from mother , what is the diagnosis?**

a) **+ hemophilia**

107) **Most common cause of HUS?**
   a) **+ e.coli**

108) **Patient who take bactrim , come with red urine , pale (G6PD) what you will find :**
   a) **+hemoglobinuria**

109) **All about IDA true except:**
   a) low ferritin
   b) high TIBC
   c) **+retics 1.5%**

110) **Indication of IVIG in ITP patient:**
111) **Most common infection in thalassemic patient**:
   a) Salmonella osteomyelitis
   b) **+Hepatitis c**
   c) Yersinia enterolitica
   d) Streptococcus pneumoniae

   **Note:** due to regular blood transfusions.

112) **A child has hemophilia. How many chance his son will have this inheritance?**
   a) + 0%
   b) 25%
   c) 50%

113) **A 5 years old child had falling down and has swelling in the right knee. What is the least likely questions to be asked?**
   a) **+History of pinpoint bleeding on the skin**
   b) Delayed umbilical stamp
   c) Maternal history of hemophilia
   d) Bleeding a lot after circumcision

114) **how the IVIG work in ITP?**
   a) **+Blocks Fc receptors on spleen macrophages**

115) **patient 14 yr old chronic IBD, what do you expect to find on blood smear?**
   a) Macrocytosis

b) microcytic
c) Normocytic
d) **+micro and normocytic**

116) **how sickle cell differ from other hemolytic dis:**
a) **+pain crises**

117) A child with thrombocytopenia and increased Fibrin degradation products and Ddimer. All of the following can explain this picture EXCEPT:
a) DIC
b) TTP
c) HUS
d) +HSP
e) Kassabach Merrit (hemangioma)

118) **A child with splenomegaly, Hb:5.6, maxillary hyperplasia. All of the following are possible causes EXCEPT:**
a) Pyruvate kinase deficiency
b) **+ Aplastic anemia**
c) Hereditary spherocytosis
d) Hb H disease
e) Beta thalassemia

119) **A child previously diagnosed with moderate Hemophilia B presented with right knee hemarthrosis, What is the optimal approach for this patient:**
a) Knee splint and DDAVP (Desmopressin)
b) **20 ml/kg FFP**
c) Recombinant factor VIII every 12 hours
d) Joint aspiration and bandaging

***Note: Resource-poor settings (no access to purified factor)*** — ***Purified factor products*** *(virally inactivated plasma-derived concentrates or recombinant products) should be used whenever possible, to avoid potential transfusion-transmitted infection and transfusion reactions.*

*However, individuals in resource-poor settings may not have access to these products. For such individuals, options include* ***Fresh Frozen***

***Plasma (FFP),*** *or, for those with hemophilia A, Cryoprecipitate.*

***Dosing*** *is based on the factor concentration in the product, patient* ***weight****, and the* ***desired factor level****. One bag of Cryoprecipitate is made from approximately 250 mL of FFP and contains approximately 70 to 80 units of factor VIII in a volume of 30 to 40 mL (concentration of factor VIII in Cryoprecipitate, approximately 3 to 5 units/mL). One mL of FFP contains one unit of factor activity. A dose of* ***15 to 20 mL/kg*** *will raise the factor VIII level by approximately 30 to 40 percent and the factor IX level by approximately 15 to 20 percent (different increases are due to different volumes of distribution of factors VIII and IX).*

120) **A child was diagnosed with acute lymphoid leukemia, All of the following are <u>poor</u> prognostic factors EXCEPT:**
   a) WBC count > 55000
   b) t(9;22) philadelphia chromosome
   c) **+ Early response for induction chemotherapy**
   d) Haploid <44 chromosomes
   e) CD3, CD4, CD5, CD8 positive cells

121) **A child diagnosed with large cell Burkitt lymphoma, the most important electrolyte to follow in tumor lysis syndrome is :**
   a) Uric acid
   b) **+Potassium level**
   c) Calcium level
   d) Phosphorus level

122) **All of the following are true regarding Beta thalassemia EXCEPT:**
   a) **+Present within the first 6 months**
   b) Thalassemia trait HbA2 > 3.5 %
   c) Hemolysis is mainly extravascular
   d) Deposition of alpha tetramers is the cause of ineffective erythropoiesis

123) **A 2 year old child with pallor. He is exclusively breast fed. All of the following are possible lab findings EXCEPT:**
   a) RBCs: 2 x 10^6
   b) MCV 62 and MCHC 23
   c) Plt 550 x 10^3

d) **+HbF 60% by electrophoresis**
e) High RDW

124) **A known case of ALL, admitted with fever and was given piperacillin and tazobactam, on the 4th day a yellowish discharge was noticed around the IV line, Vancomycin should be given to cover for:**
a) **+Staph aureus**
b) E.coli

125) **A child upon typical examination: right nontender periumbilical mass was felt, purple discoloration of the left eyelid, What is your diagnosis:**
a) **+ Neuroblastoma**
b) Wilm's tumor

126) **A case of neonatal jaundice, blood group A, his mother O+, blood film showed 5% spherocytes, what is your next step :**
a) **+Direct coomb's test**

127) **The normal electrophoresis at 6 months is:**
a) HbA 25%, HbA2 1%, HbF 75%
b) Hb A 60%, HbA2 20%, HbF 20%
c) **+HbA 85%, HbA2 2%, HbF 10%**
d) HbA 96%, HbA2 3%, HbF 1%

128) **Which is not present in tumor lysis syndrome:**
a) Hyperphosphatemia
b) Hyperuricemia
c) Hyperkalemia
d) **+Hypercalcemia**

129) **A 10 month old boy presents with joint swelling and warmth, pain with passive movement. A synovial fluid aspirate reveals blood, which of the following is true?**
a) Thrombocytopenia
b) **+Prolonged aPT**
c) Prolonged PT
d) Prolonged bleeding time

130) **All of these are causes of ischemic stroke except**

a) Protein C deficiency
b) Factor V Leiden mutation
c) Protein S deficiency
d) **+Coagulation defect**
e) Dysfibrinogenemias

131) **Not correct about thalaseemia:**

a) **+Causes normocytic anemia**

132) **A child lives in a goats farm presents with fever , lethargy , anorexia. What is the most probable cause of his condition:**

a) **+Brucella melitnesis**
b) Brucella abortus
c) Brucella suis
d) Brucella canis

133) **Which of the following is false about neuroblastoma:**

a) Initial presentation often as metastasis
b) **+The least common pediatric malignancy**
c) Firm, palpable mass in flank

134) **Which of the following is false about Wilm's tumor:**

a) Clinical presentation is most often an asymptomatic abdominal mass
b) **+There's often a positive family history**

135) **A patient with ALL presented with fever, all of these drugs can be given except:**

a) Meropenem
b) **+Ceftriaxone**
c) Gentamicin
d) Ceftazidime
e) Piperacillin tazobactam

**Note**: Did you memorize them? Ok! take one more revision:

**1) Ureidopenicillins: Pipercillin, Carbenicillin, Ticarcillin.**
**2) One 3rd gen Cephalosporin: Ceftazidime.**
**2) One 4th gen Cephalosporin: Cefepime.**
**4) Carbapenems: Meropenem & her sisters. except: Ertapenem**

**5) Aminogycosides**
**6) Flouroguinolones: Ciprofloxacin**

136) **In Hodgkin lymphoma, all of the following are poor prognostic factors except:**
a) bulk tumor
b) extranodal involvement
c) B symptoms
d) **+skin itching**
e) lymphocyte depletion on histology

137) **In endemic Burkitt's lymphoma, which is wrong:**
a) more common in young children
b) 95% associated with EBV infection
c) treated as ALL
d) may be due to etoposide treatment
e) **+early CNS involvement**

138) **Patient having low Hb, abdominal distention, and splenomegaly. Which of the following is the least likely cause:**
a) sickle cell disease
b) **aplastic anemia**
c) Gaucher disease

139) **A child had fever then developed pinpoint rash. Normal PT & PTT, WBC 9500, platelets 10,000. What's your management:**
a) **+IVIG**
b) platelet transfusion
c) reassurance, it would resolve on its own

140) **Best indicates intravascular hemolysis:**
a) positive coomb's test
b) **+free hemoglobin in the blood**
c) Jaundice
d) high retics count

141) **Female patient has recurrent bloody diarrhea, finding on blood film would be:**
a) **+microcytic hypochromic anemia**

142) **Low hemoglobin, dark colored urine, splenomegaly, reticulocytes 5% … All are possible causes except:**
a) pyruvate kinase deficiency:
b) G6PD deficiency
c) hereditary spherocytosis
d) **+thalassemia major**
e) sickle cell disease

143) **What factor binds to tissue factor & initiates the extrinsic coagulation cascade:**
a) **+VII**
b) VI
c) V

144) **Wrong about AML**
a) **+t(8,21) is associated with unfavorable prognosis**
b) Down syndrome is a risk factor
c) t(15,17) responds to retinoic acid treatment
d) M7 presents in young children

145) **Not a cause of neonatal thrombocytopenia**
a) **+maternal IDA**
b) alloimmune
c) neonatal sepsis
d) Maternal SLE
e) maternal thiazide use

**Note:** Not well sure A & E, but IDA causes **thrombocytosis** and Thiazides cause **thrombocytopenia** to the mother. Usually hat causes thrombocytopenia especially immune mediated ones (IgG) crosses the placenta and play with the fetus as well.

146) **Not in tumor lysis syndrome**:
a) Low Ca+2
b) **Low Glu**

147) **Age 2 years with irritability, high RDW, mcv=68, HB=8, splenomegaly, most likely Dx?**
a) Thalassemia
b) **+Iron deficiency**

c) Sidroblastic anemia

**Note:** Splenomegaly can occur in severe IDA.

148) **2 days days neonate HgA 30%. , HbF 70%:**
a) Beta Thalasemia
b) Alpha Thalasemia
c) **+Normal**

149) A two year old girl presents for evaluation of fussiness low-grade fever and what her parents described as “growing pains”. On physical examination you palpate a non tender mass deep in the right periambilical area and note mild purple discoloration of the eyelids. Of the following the most likely diagnosis is:
a) **+Neuroblastoma**
b) Hepatoblastoma
c) Wilm’s tumor
d) Intussusception
e) Hirschsprung’s disease

150) **A patient with ALL on chemotherapy , which of the following vaccines is not allowed to be given his younger brother:**
a) IPV and OPV
b) **+OPV**
c) DTP

151) 2 year old boy present it to the clinic with pallor, irritability, poor feeding and poor sleep on examination he was slightly pale, with tip of spleen felt. his CBC showed a hemoglobin of 8 g/dL platelet count of 450,000, WBCs 8400, MCV of 65 and RDW of 18 the most likely diagnosis is:
a) **+Iron Deficiency Anemia**
b) sideroblastic anemia
c) sickle cell anemia
d) lead poisoning
e) thalassemia

152) **A patient with ALL and fever 39c , What to give**:
a) **+pipracillin/ tazobactam**

b) Vancomycin

**Note**: did you…..?.....**ok I trust you** ☺

153) **Which of the following is not true for the combination of chemotherapy and its side effects:**
a) cyclophosphamide and hemorrhagic cystitis
b) Vinblastine and peripheral neuropathy
c) Ifosfamide and hemorrhagic cystitis
d) Ifosfamide and neurotoxicity
e) **+Vincristine and bone marrow suppression**

154) Correct about lymphoma staging:
a) **+Bone marrow involvement is stage 4**

155) **2 days old newborn, normal physical examination. Found 5cm * 5cm abdominal mass at the right abdomen when the doctor wants to discharge. Most probably diagnosis:**
a) Neuroblastoma
b) musticystic dysplastic kidney
c) wilms tumor

156) **Q about sickle crisis , causative agent**:
a) +Parvovirus B19

157) **Patient with swelling on their palms and soles, hb = 7.5, mcv= 85, what to do?**
a) **+Hb electrophoresis**
b) Therapeutic trial of IVIG
c) Abdominal US

158) **gingival bleeding in a kid who also reported easy bruising ever since he started walking :**
a) **+a case of hemophilia you should give factor VIII**

159) **A case about a boy who had a g6pd crisis. what is wrong**:
a) Hyperbilirubinemia
b) Hemoglubinemia
c) Low haptoglubin

d) Hemosidrenurea

**Answer**: All are true.

***Note**: Urine hemosiderin may be seen **several days after** an episode of intravascular hemolysis, as renal tubular cells take up the heme, degrade it, store it as hemosiderin, and eventually are shed into the urine. Urine hemosiderin is detected using Prussian blue staining (iron stain) of the urine sediment.*

160) **All are good prognostic factors in ALL except:**
a) less than one year of age
b) WBC<10000
c) **translocation 9;22**
d) Pre-B cell lineage
e) No CNS involvement

161) The most common leukemia seen in with down syndrome:
a) **+M7**
b) M6
c) M5
d) M3
e) M1

**Note**: M7= ACTE Megakaryoblastic leukemia usually arises before age of 5 years.

162) **Secondary malignancy associated with retinoblastoma:**
a) **Osteosarcoma**
b) Soft tissue sarcomas
c) Lymphoma
d) Melanoma

163) Vegetarian mother who had a baby with macrocytic anemia and hypersegmented neutrophil. what is deficient:
a) **+vitamin b12**
b) folic acid

164) They gave us values for these things:
Hbs 70% Hbf %? Hba1 %? Hba2 %? Diagnosis?

a) **B + thalassemia sickle**
b) B 0 thalassemia sickle
c) Alpha thalassemia sickle

165) **Abdominal mass and aniridia:**
a) **+Wilms tumor (WAGER syndrome)**

166) **Most common extracranial solid tumor in infancy :**
a) **+Neuroblastoma**
b) Nephroblastoma
c) Leukemia
d) Bone tumor

167) **A case of prolonged PTT :**
a) **Factor 8 def. (hemophilia A (x-linked AR))**

168) **Child came with jaundice (pic of hemolytic anemia) , no fava bean nor drug intake ,with a history of common cold 2 weeks ago ,what is the diagnosis ?**
a) Aplastic anemia
b) G6PD deficiency
c) **+Pyruvate kinase deficiency**
d) Thalassemia
e) Sickle cell anemia

169) 1 year old boy come to your clinic with pallor , CBC shows decrease in hemoglobin (anemia) , he has a history of hand and foot swelling .what is the diagnosis?
a) **+Sickle cell anemia**

170) **False about chemotherap agents combination:**
a) methotrexate→ hepatotoxic
b) **+cyclophosphamide→ neuro toxic**
c) **+Bleomycin→ nephrotoxic**
d) Vinicristine→ neuropathy
e) **+Viniblastin→ hemorrhagic cystitis**

**Answer:** all these 3 choices are wrong. **Note:** Forget this drama and just review the commonly used chemotherapeutic agents.

**Table 154-2 Cancer Chemotherapy**

| DRUG* | ACTION | METABOLISM | EXCRETION | INDICATION | ACUTE TOXICITY |
|---|---|---|---|---|---|
| | | | **Antimetabolites** | | |
| Methotrexate | Folic acid antagonist; inhibits dihydrofolate reductase | Hepatic | Renal, 50%–90% excreted unchanged; biliary | ALL, lymphoma, medulloblastoma, osteosarcoma | Myelosuppression (nadir 7–10 days), mucositis, dermatitis, hepatitis, renal and CNS effects with high-dose administration; prevent with hydration and leucovorin, monitor levels |
| 6-Mercaptopurine | Purine analog | Hepatic | Renal | ALL | Myelosuppression; hepatitis; mucositis; allopurinol increases toxicity |
| Cytosine arabinoside (Ara-C) | Pyrimidine analog; inhibits DNA polymerase | Hepatic | Renal | ALL, AML, lymphoma | Myelosuppression, conjunctivitis, mucositis, neurotoxicity |
| | | | **Alkylating Agents** | | |
| Cyclophosphamide | Alkylates guanine; inhibits DNA synthesis | Hepatic | Renal | ALL, lymphoma, sarcoma, brain tumors | Myelosuppression; hemorrhagic cystitis |
| Ifosfamide | Similar to cyclophosphamide | Hepatic | Renal | Lymphoma, Wilms tumor, sarcoma, germ cell and testicular tumors | Similar to cyclophosphamide; neurotoxicity, cardiac toxicity |
| | | | **Antibiotics** | | |
| Doxorubicin and daunorubicin | Binds to DNA, intercalation | Hepatic | Biliary, renal | ALL, AML, osteosarcoma, Ewing sarcoma, lymphoma, neuroblastoma | Cardiomyopathy, red urine, tissue necrosis on extravasation, myelosuppression, conjunctivitis, radiation dermatitis, arrhythmia |
| Dactinomycin | Binds to DNA, inhibits transcription | — | Renal, stool, 30% excreted as unchanged drug | Wilms tumor, rhabdomyosarcoma, Ewing sarcoma | Tissue necrosis on extravasation, myelosuppression, hepatopathy with thrombocytopenia, stomatitis |
| Bleomycin | Binds to DNA, cuts DNA | Hepatic | Renal | Hodgkin disease, lymphoma, germ cell tumors | Pneumonitis, stomatitis, Raynaud phenomenon, pulmonary fibrosis, dermatitis |
| | | | **Vinca Alkaloids** | | |
| Vincristine | Inhibits microtubule formation | Hepatic | Biliary | ALL, lymphoma, Wilms tumor, Hodgkin disease, Ewing sarcoma, neuroblastoma, rhabdomyosarcoma, brain tumors | Local cellulitis, peripheral neuropathy, constipation, ileus, jaw pain, inappropriate ADH secretion, seizures, ptosis, minimal myelosuppression |
| Vinblastine | Inhibits microtubule formation | Hepatic | Biliary | Hodgkin disease, Langerhans cell histiocytosis | Local cellulitis, myelosuppression |
| | | | **Enzymes** | | |
| Asparaginase | Depletion of asparagine | — | Reticuloendothelial system | ALL, AML | Allergic reaction; pancreatitis, hyperglycemia, platelet dysfunction and coagulopathy, encephalopathy, stroke, thrombosis |

171) **A case of skin rash , history of URTI 2 weeks ago , laps show thrombocytopenia :**

a) **+ITP**

172) **Which of the following is not going to increase the risk of having malignancy:**

a) Fanconi anemia
b) **+Fanconi syndrome**
c) Ataxia telangiectasia
d) Down syndrome

173) **Tumor lysis syndrome:**

a) **low Ca normal Na high phosphorous and uric acid**

174) **AML-M7 (Acute megakaryoblastic leukemia) associated with:**
   a) **+Down syndrome**
   b) Trisomy 18
   c) Trisomy 13

175) **Which is false about hereditary spherocytosis**?
   a) Positive osmotic fragility
   b) Can Occur gall stone
   c) On smear there is spherocytosis
   d) **+Spherocytosis is pathognomonic**
      **Note**: Immune hemolytic also has spherocytes in blood smear, they are not Pathognmonic.

176) **Which antibiotic isn't given for febrile neutropenia (pseudomonas):**
   a) Cefepime
   b) **+Cefotaxime**
   c) piperacillin-tazobactam
   d) Imipenem
   e) Carbapenem

**Note**: **Believe me!; you don't want to die before you memorize anti-pseudomonal antibiotics. Let's do it now one last time:**
**1) Ureidopenicillins: Pipercillin, Carbenicillin, Ticarcillin.**
**2) One 3rd gen Cephalosporin: Ceftazidime.**
**2) One 4th gen Cephalosporin: Cefepime.**
**4) Carbapenems: Meropenem, Imipenem. except: Ertapenem**
**5) Aminogycosides**
**6) Flouroguinolones: Ciprofloxacin**

177) **Most abundant in neonate blood:**
   a) HbA2
   b) HbH
   c) Hb barts
   d) **+HbF**

178) **false about iron deficiency anemia:**
   a) most common cause of anemia
   b) can be complicated by GERD

c) **+always the cause is nutritional**

179) **An ALL case what we are afraid of mostly. Findings; leukocytosis (150,000/uL), anemia and thrombocytopenia:**

a) Infection
b) Bleeding
c) **+Hyperkalemia**
d) thrombosis

180) **Not correct about congenital thrombocytopenia:**

a) Platelets less than 150,000
b) Normal platelet count in the mother doesn't exclude that the cause is immune thrombocytopenia

**Answer: both are correct.**

**Note: Neonatal autoimmune thrombocytopenia** — Neonatal autoimmune thrombocytopenia is mediated by maternal antibodies that react with both maternal and fetal platelets. This occurs in maternal autoimmune disorders, including immune ITP and SLE.

The diagnosis usually is apparent from the mother's medical history and maternal thrombocytopenia. However**, the platelet count of affected mothers may be normal** after a splenectomy or if there is sufficient compensatory thrombopoiesis. Mothers of infants with unexplained neonatal thrombocytopenia should be investigated for the presence of an autoimmune disorder, as neonatal thrombocytopenia can be the initial presenting sign**.**

181) **Not a cause of physiological anemia in neonate?**

a) decreases erythropoietin
b) short RBC life span
c) rapid growth
d) **+delayed clamping of umbilical cord**

**Done by:** *Tilmi Faradheere.*