



Scenario based SEQ  
blood coagulation  
Blood clotting TESTS tables

Original version dedicated to  
Avicenna Medical College

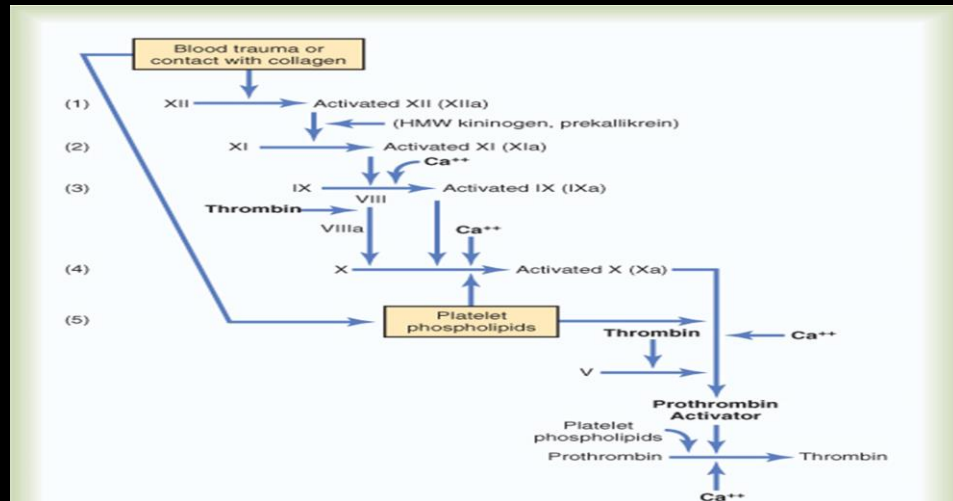
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**Q. A teenaged boy with numerous nosebleeds was referred to a physician for evaluation prior to a minor surgery. His prothrombin time (PT) was 11 sec (11–15 sec normal), partial thromboplastin time (PTT) was 58 sec (25–40 sec normal), and bleeding time was 6.5 min (2–7 min normal).**

- a) Which pathway of blood coagulation system is most likely abnormal in this young man?**
- b) Draw a flow chart to describe the stages of the affected pathway of blood coagulation system .**
- c) Name an anticoagulant that blocks this pathway of blood coagulation system .**

**1 + 3+ 1**

- Key**
- a) intrinsic pathway of blood coagulation system .**
  - b)**



- c) heparin**

**Q. A 56 years old lady travelled from Singapore to San Francisco on a non stop 14 hours flight. A few hours after her arrival she experienced sudden shortness of breath and severe central chest pain. She was rushed to the emergency department. On examination she was found to have rapid pulse and fast breathing rate. D dimer test was positive. D-dimer is a fibrin degradation product, a small protein fragment present in the blood after a blood clot is degraded by fibrinolysis. From the history of prolonged sitting in the plane and evidence of intravascular thrombosis from D dimer test, we can infer that intravascular clotting took place in the deep veins of the legs of this patient.**

- a) Enumerate the factors that prevent unwanted blood coagulation in the circulation.**
- b) Name any three drugs used as anticoagulants.**
- c) Which cell produces TPA Tissue Plasminogen Activator? What is the function of TPA?**

**2+1+2**

- a) smooth endothelium, streamline flow, anticoagulants (protein C, protein S, antithrombin)**
- b) Heparin, warfarin, aspirin, TPA**
- c) Endothelial cell. TPA cleaves Plasminogen to generate its active form Plasmin which breaks down Fibrin to fibrin degradation product.**

**Q. A clinician is investigating a case of unexplained bleeding episodes due to clotting system abnormality. He advises a number of laboratory tests in order to arrive at a definitive diagnosis.**

**a) Name one lab test that evaluates the extrinsic pathway of blood coagulation and one lab test that evaluates the intrinsic pathway of blood coagulation.**

**b) Name two lab tests that are increased in Haemophilia.**

**c) Name two conditions in which the Platelet count is decreased.**

**2+ 1.5 + 1.5**

**a) Prothrombin Time evaluates the extrinsic pathway of blood coagulation**

**Activated Partial Thromboplastin Time evaluates the intrinsic pathway of blood coagulation.**

**b) Activated Partial Thromboplastin Time and Clotting Time**

**c) Idiopathic Thrombocytopenic Purpura and Disseminated Intravascular Coagulation**

Clinical condition	Platelet Count PC	Bleeding Time BT	Clotting Time CT	Prothrombin Time PT	Activated Partial Thromboplastin Time APTT	Clotting factor deficient
Haemophilia	Normal	Normal	Increased	Normal	Increased	VIII (A) IX (B) XI (C)
Von willebrand Disease	Normal	Increased	Normal	Normal	Increased	vwf
Idiopathic Thrombocytope nic Purpura	Decreased	Increased	Normal	Normal	Normal	None
Disseminated Intravascular Coagulation	Decreased	Increased	Increased	Increased	Increased	Decreased

Test	Haemophilia	Von willebrand Disease	Idiopathic Thrombocytopenic Purpura	Disseminated Intravascular Coagulation
Platelet Count PC	Normal	Normal	Decreased	Decreased
Bleeding Time BT	Normal	Increased	Increased	Increased
Clotting Time CT	Increased	Normal	Normal	Increased
Prothrombin Time PT	Normal	Normal	Normal	Increased
Activated Partial Thromboplastin Time APTT	Increased	Increased	Normal	Increased
Clotting factor deficient	VIII (A) IX (B) XI (C)	vwf	Platelets	All