

# SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES



## UNIT 3

### COURSE NAME: HUMAN ANATOMY AND PHYSIOLOGY

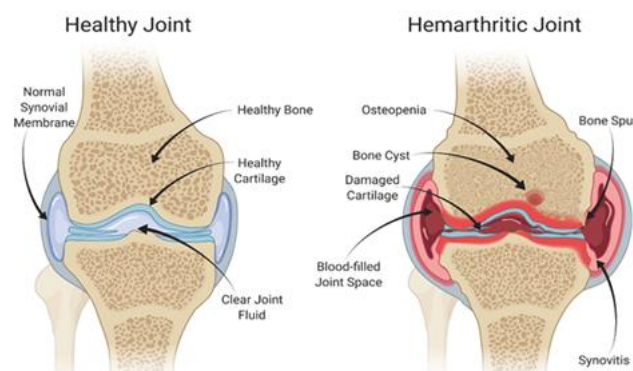
### TOPIC: BLOOD CLOTTING

#### Case Study Puzzle 1: The Bruised Boy

A 10-year-old boy presents with recurrent joint swelling and pain after minor bumps. He has a family history of similar issues in male relatives. Lab tests show prolonged activated partial thromboplastin time (aPTT) but normal prothrombin time (PT). He experiences prolonged bleeding from cuts.

**Puzzle:** What X-linked recessive disorder impairs blood clotting due to a deficiency in factor VIII, leading to spontaneous hemorrhages into joints and muscles? Hint: It's often called the "royal disease" due to its history in European monarchies.

(Solution: Hemophilia A, where the intrinsic pathway of coagulation is disrupted.)



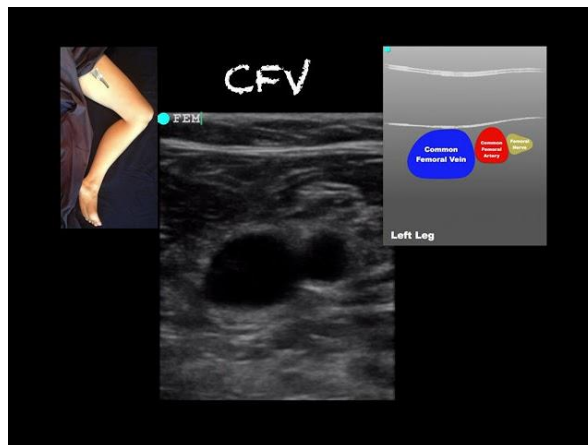
#### Case Study Puzzle 2: The Traveler's Trouble

A 45-year-old woman returns from a long-haul flight and complains of unilateral leg pain, redness, and swelling in her calf. She has a history of oral contraceptive use. Ultrasound reveals a non-compressible vein.

**Puzzle:** What venous thromboembolic condition forms clots in the deep veins of the legs, often triggered by stasis, hypercoagulability, or endothelial injury (Virchow's triad)? Hint: It's a common risk after prolonged immobility, like air travel.

(Solution: Deep Vein Thrombosis (DVT), which can lead to post-thrombotic syndrome if untreated.)

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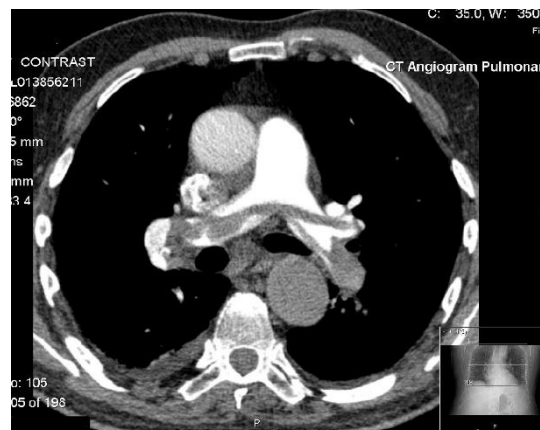


## Case Study Puzzle 3: The Breathless Emergency

A 60-year-old man suddenly develops sharp chest pain, shortness of breath, and hemoptysis. He recently had surgery and was bedridden. CT angiography shows a filling defect in the pulmonary arteries. Vital signs indicate tachycardia and hypoxia.

**Puzzle:** What acute condition occurs when a blood clot dislodges and blocks pulmonary arteries, potentially causing right heart strain? Hint: It often originates from leg veins and can be fatal if massive.

(Solution: Pulmonary Embolism (PE), disrupting gas exchange and leading to ventilation-perfusion mismatch.)



## Case Study Puzzle 4: The Persistent Bleeder

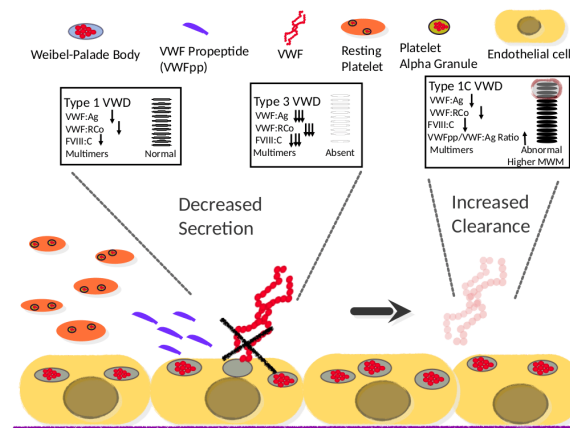
A 30-year-old woman reports frequent nosebleeds, easy bruising, and heavy menstrual bleeding. Her platelet count is normal, but ristocetin cofactor activity is reduced. Family members have similar symptoms.

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**Puzzle:** What inherited disorder affects the von Willebrand factor, impairing platelet adhesion to vessel walls and stabilizing factor VIII? Hint: It's the most common hereditary bleeding disorder, with types varying in severity.

(Solution: Von Willebrand Disease, leading to defects in primary hemostasis.)



## Case Study Puzzle 5: The Systemic Storm

A critically ill patient with sepsis develops widespread petechiae, ecchymoses, and oozing from IV sites, alongside thrombosis in organs. Labs show low fibrinogen, elevated D-dimer, prolonged PT and aPTT, and thrombocytopenia.

**Puzzle:** What consumptive coagulopathy triggers excessive activation of clotting cascades, depleting factors and platelets, resulting in both thrombosis and bleeding? Hint: It's often secondary to infections, trauma, or malignancy.

(Solution: Disseminated Intravascular Coagulation (DIC), a paradoxical state of hypercoagulation followed by hemorrhage.)

