Curriculum Content Report - Coagulation Disorders
(Bleeding disorders, BL A3b, BL A3c, BL B3e5, BL B4, BL 4a1, BL B7)
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Year 1	
Course	**Content**
Cellular & Molecular Medicine	Blood Coagulation and Anti-Coagulation: enzymes cascades, zymogen, limited proteolysis, clotting, Intrinsic and Extrinsic Pathways, platelets, aspirin, endothelium, Vitamin K, von Willebrand factor, hemophilia, Warfarin, Anti-thrombin III, heparin, Protein C, thrombin, prothrombin, t-PA, fibrinogen. Clinical Presentation: Anticoagulation Therapy Small Groups: Warfarin Pharmacogenomics Objectives: -Describe the proteolysis and the blood clotting cascade. -Describe how the endothelium aids and prevents clotting. -Tell how the intrinsic and extrinsic pathways differ and where they converge. -Explain the role of platelets and how aspirin inhibits their function. -Describe the role of Vitamin K and how warfarin inhibits vitamin K function. -Explain how INR values are used to manage warfarin dosages. -Tell where heparin comes from and how it works as an anticoagulant. -Explain how Protein C slows clotting and why DVTs occur with factor V Leiden. -Describe how fibrinogen is converted to fibrin and cross-linked. -Describe the roles of Von Willebrand Factor and ADP in platelet aggregration. -Explain the genetics of Factor VIII and Factor IX deficiencies, which are x-linked. -Tell what TPA is, where it is made and how its recombinant form is used.
Year 2	
Immunology	Function of coagulation and fibrinolytic factors in session on Innate Immunity – pre-existing defenses. ITP Objectives: - Compare and contrast the anti-microbial mechanisms of action of lysozyme, anti-microbial peptides, coagulation proteins, and complement

Microbiology	Neiserria meningitidis as cause of DIC. Objectives: - Recommend lab tests to identify and differentiate between Neisseria species
Pathology	Endothelial cells, hemostasis, primary plug, secondary plug, platelet (adhesion, activation, aggregation), Coagulation cascade (PT/INR, PTT, TT, FDP protein C, protein S), clearing clots (ATIII, heparin, fibrinolytic system, plasmin) thrombus (Leiden mutation, HIT, anti-phospholipid syndrome). Platelet abnormalities: ITP, Gp IIb/IIIa, Gp IIb/IX, isoimmune thrombocytopenia, PLA1, HIT, HITT, heparin, LMW heparin, thrombin, Warfarin, von Willebrand disease, microangiopathic hemolytic anemias, TTP, ADAMTS13 (von Willebrand factor cleaving protease), HUS, verotoxin (Shiga-like toxin), E coli, DIC, Bernard-Soulier syndrome, Glanzmann's thrombasthenia, afibrinogenemia, gray platelet syndrome, thrombocytopenia with absent radii; Coagulation abnormalities: hemophilia A, hemophilia B, hemarthrosis, cryoprecipitate, DDAVP, vitamin K, circulating anticoagulants, DIC, FDP, d-dimers.
Pharmacology	Anticoagulants & Fibrinolytics: Platelet activation, thrombi, thrombin, fibrin, indirect thrombin inhibitors, heparin-induced thrombocytopenia, protamine, coumarin anticoagulants, international normalized ratio, vitamin K, Antiplatelet agents, produg, genetic variation, drug interactions, fibrinolysis, bleeding disorders.
Year 3	
Internal Medicine Clerkship	Coagulation disorders covered in hematology/oncology didactic session. Screening for bleeding disorders in ROS, Bleeding disorder as one of encouraged diagnosis types.
OB/GYN Clerkship	Abnormal uterine bleeding as manifestation of bleeding disorders.