Pancytopenia	
Marrow	Decreased cellularity (aplastic, myelofibrosis, chemo), normal cellularity (MDS, PNH), increased cellularity (leukemia, lymphoma, MM, mets)
Systemic	Spleen (cirrhosis, myelofibrosis), toxin (EtOH, cocaine), nutrition (B12/folate def), rheum (SLE, RA), sepsis
Meds	NSAIDs, PPIs, sulfas, antihistamine, chemo, anticonvulsants, antiprotozoals, heavy metals
Infectious	Virus (HIV, HB/CV, CMV/EBV, Parvo), bacteria (Brucella, TB), fungi (Histo), parasites (Leishmania, Malaria, Schisto)

Thrombocytopenia				
Definition	Platelets <150,000 → increased risk of hemorrhage, mucosal bleeding, petechiae, purpura, ecchymoses			
Pathogenesis	• **Decreased platelet production**: virus (EBV, Hep C, HIV, parvo), meds (chemo, thiazode, linezolid, chloramphenicol), leukemia, myelodysplasia, EtOH, BMF syndromes/aplastic anemia, Vit B12/Folate deficiency,congenital thrombocytopenias (WAS, TAR, MYH9) • **Increased platelet destruction**: virus (HIV, HSV/VZV, EBV), meds (heparin), ITP, DIC, TTP, HUS, HIT, HELLP, anti-phospholipid syndrome, vasculitis, vascular malformation(Kasabach-Merritt). • **Hypersplenism**: splenomegaly (cirrhosis, portal HTN) • **Dilutional/pooling**: massive transfusion, hypothermia/neonatal cooling			
Labs	Plts <150,000, normal PT/PTT Blood smear: poor production (typically normal/small plts), increased destruction (large/giant platelets)			
Causes		**Path**	**Clinical/Diagnosis**	**Treatment**
	ITP	Autoimmune: primary or secondary (Evans, immunodeficiency (ALPs, others), infectious (HIV, Hep), Rheum (, SLE), Transplant, medications/ vaccines)	Plt <100,000 Antecedent viral infection Diagnosis of exclusion ***ITP EBG***	Self-limited, Close Observation, Steroids, IVIG TPO-RA, immunosuppressants
	HIT	Heparin (>days of treatment) → complet w/ Plt F4 → complex formation→ Plt activation/aggreg → thrombosis/thrombocytopenia	Decision to screen based on 4T Score: Thrombocytopenia (>50% fall but >20), timing of plt fall, thrombosis or skin necrosis, other causes If >4 points: send ELISA/SRA	Stop heparin Lifelong avoidance Use argatroban, fondaparinux
	TTP	Dec. ADAMTS 13 (uncleaved vWF multimers) → plt agg. → thrombosis → plt consumption + microang. Hemolysis (schistocytes) Primary or Secondary (pregnancy, HIV, rheumatologic dx, transplant); congenital TTP can present late	Hemolytic Anemia and Thrombocytopenia, +/- Renal failure, and Neuro	Plasmapheresis, +/- Glucocorticoids, +/- Rituximab
	Classic HUS	E. coli O157:H7 → plt agg. → thrombosis → plt consumption + microang. Hemolysis (schistocytes)	Hemolysis, uremia, dec. plts, inc, fever, bloody diarrhea	Supportive, IVF, dialysis
	Bernard-Soulier	Dec. GpIb → dec. plt adhesion	Large/dec plt count	Supportive, perisurgical planning
	Glanzmann	Dec. GpIIb/IIIa → dec. plt agg	Normal plt countT	Supportive, perisurgical planning
	Anti-phospho-lipid syndrome	Persistent Antiphospholipid Abs w/ thrombosis or pregnancy complications → arterial/venous thrombosis	+Antiphos. Abs (anticardiolipin ab, B2glycoprotein ab, lupus Anticoag), thrombocytopenia; primary or secondary (underlying rheumatologic dx)	Anticoag: Hep/Warf Hydroxychloroquine
	HELLP syn	Preeclampsia + Hemolysis, Elevated Liver enzymes, Low Plts, HTN	Schistocytes on smear	Induce labor Deliver