INTERNAL MEDICINE

Exam Summary

Consolidated High-Yield Notes — 8 Systems

Compiled from past-paper question banks (2013–2025)

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Format conventions:

Green "Past answer:" = exam-key answer. *Orange italic "Note:" = correction or clarification.*
Red "Wrong:" + Green "Correction:" = distractor pairs. *N = times repeated across past exams.

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Each system contains:

- Topic-organized content with Past answer / Note / Wrong→Correction pairs.
- Reference tables and yellow info-boxes for quick recall.
- Repeated concepts marked with asterisks (e.g., *3) — these are highest-yield.
- A ★ Day-Before Quick-Hits section at the end of each system.

CARDIOLOGY

1. Arrhythmias

SVT *4

- **Tx:** IV Adenosine 1st-line. Cardioversion if unstable.

A-fib

- **Triggers:** HTN, sick sinus, OSA, WPW, HYPERthyroidism (not hypo).
- **CHA_2DS_2-VASc *3:** CHF, HTN, Age ≥75 (2), DM, Stroke (2), Vascular, Age 65-74, Sex (F). OAC if ≥2 M / ≥3 F.
- NOT components: smoking, dyslipidemia, BMI, prior DVT-PE, LDL.
- **Non-valvular:** Warfarin OR DOAC.
- **Valvular (MS) / mechanical:** Warfarin ONLY (RE-ALIGN).

A-fib + WPW

- **Tx:** Procainamide. AVOID adenosine/digoxin/verapamil/BB (accelerate pathway).

V-fib

- **Tx:** UNSYNCHRONIZED defibrillation FIRST. Amiodarone after 2 failed shocks.

Torsades

- **Tx:** IV Mg. AVOID procainamide.

AV Blocks

- Mobitz II → permanent PM. Acute 3rd-deg → temporary PM.

QT

- Digoxin SHORTENS QT.
- Prolonged QT: hypoCa, TCAs, macrolides, amiodarone, head injury.

Prominent R in V1

- Duchenne, WPW, posterior MI, RVH. NOT LAFB.

2. ACS

STEMI Localization

Location	Leads	Artery
Anterior *2	V1-V4	LAD
Inferior	II, III, aVF	RCA
Lateral	I, aVL, V5-6	LCX
Posterior	tall R V1	RCA/LCX

STEMI Tx

- PCI > thrombolytics (door-to-balloon <90 min).
- **MONA-BASH:** Morphine, O2 (<90%), Nitrate, ASA + P2Y12, BB, ACEi, Statin, Heparin.
- **Wrong:** Wait for biomarkers / colchicine for MI → **Correction:** Act on ECG. Colchicine = pericarditis.

NSTEMI / UA

- ASA + clopidogrel + UFH + nitrate. NO thrombolytics.

TIMI (7)

- Age ≥65; ≥3 CAD RFs; stenosis ≥50%; severe angina 24h; ST deviation; +biomarkers; ASA in 7 days.

Post-MI Complications

- Persistent ST↑ months later: LV aneurysm OR Dressler (2-10 wks).
- New holosystolic + thrill + pulm edema → VSD rupture → repair.
- New MR post-MI → papillary muscle dysfx.
- Kussmaul in inferior MI = RV involvement = POOR prognosis.

3. Cardiac Biomarkers

- Troponin: peak 24-48h, elevated 10-14 days. INSENSITIVE for re-MI <2 wks → use CK-MB.
- Troponin elevated in myocarditis. Normal in fibrinous pericarditis.
- BNP/NT-proBNP: BEST HF marker. INCREASES with age, female, renal failure, A-fib.

4. Heart Failure

HFrEF Survival Benefit

- YES: ACEi/ARB/ARNI, BB (carvedilol, metoprolol succinate, bisoprolol), MRA, SGLT2i, ICD, CRT.
- NO: furosemide *3 (symptom only), digoxin *2 (rate only).
- CRT requires QRS ≥150 (or ≥130 with LBBB).

HF Exacerbation

- **MCC:** NON-COMPLIANCE.
- **Wrong:** Venesection precipitates HF / HF causes T2DM **→ Correction:** Venesection IMPROVES HF.

Pulmonary Edema

- Tx: IV NTG, O2/NIV, IV furosemide. (Massive PE does NOT cause pulm edema.)

ARDS vs Cardiogenic

- PCWP ≤18 = ARDS. PCWP >18 = cardiogenic.

5. Cardiomyopathies

DCM

- Viral, chronic AR, peripartum, alcohol, doxorubicin, cocaine.
- **Wrong:** MS causes DCM **→ Correction:** MR can; MS → LA enlargement.

HCM / HOCM

- AD (MYH7, MYBPC3). Asymmetric septal hypertrophy + SAM. Jerky carotid.
- Murmur: ↑Valsalva, ↓squatting/handgrip.
- **Tx:** BB, verapamil, disopyramide. Septal myectomy.
- **Wrong:** HOCM is systolic / digoxin/diuretics/vasodilators help **→ Correction:** DIASTOLIC. All worsen gradient — AVOID.

Pulsus Paradoxus *2

- Severe COPD/asthma, PE, tamponade, tension pneumothorax. NOT HOCM.

6. Pericardial

Acute Pericarditis *4

- Sharp chest pain worse supine, better leaning forward. Diffuse concave ST↑ + PR↓.
- **Tx:** NSAIDs + COLCHICINE *4 (↓recurrence). NOT steroids/heparin/thrombolytics.

Cardiac Tamponade *3

- Beck: hypotension + distant sounds + ↑JVP. Pulsus paradoxus. Electrical alternans.
- IMMEDIATE pericardiocentesis. AVOID diuretics. ***3**

Constrictive Pericarditis

- TB (worldwide #1), post-radiation, post-cardiac surgery.

- Kussmaul sign + pericardial knock + prominent X/Y descents.
- **Wrong:** Pulsus alternans / pulm edema / embolism in constrictive → **Correction:** Alternans = severe LV systolic; constrictive = diastolic, right-sided, low-voltage QRS, no emboli.

7. Valvular

Aortic Stenosis

- Elderly: DEGENERATIVE MC (not rheumatic). <65: bicuspid.
- ASH: Angina, Syncope, HF. HF = WORST px.
- Severe: area <1 cm^2, gradient ≥40 mmHg.
- **Wrong:** Vasodilators help AS / asymptomatic severe needs immediate AVR → **Correction:** WORSEN. Medical mgmt if asymptomatic + normal EF.

Aortic Regurgitation

- Chronic → DCM. Acute (endocarditis, dissection) = emergency.

Mitral Stenosis

- Diastolic + opening snap. Rheumatic MC. A-fib + MS → WARFARIN ONLY.

Mitral Regurgitation

- Holosystolic apex → axilla. Post-MI = papillary muscle.

Tricuspid Regurgitation

- Pansystolic LLSB, ↑with inspiration (Carvallo). Giant V waves.

Prosthetic Valves

- Mechanical mitral: Warfarin INR 2.5-3.5.
- Mechanical aortic: Warfarin INR 2.0-3.0.
- Bioprosthetic: Warfarin 3-6 mo, then ASA alone. DOACs CI for mechanical valves.

Echo

- Evaluates: AS, MS, ASD, TR, EF, wall motion, effusion. NOT coronary calcification (CT angio).

8. Infective Endocarditis

Prophylaxis YES

- Prosthetic valves, prior IE, unrepaired cyanotic CHD, repaired CHD <6 mo, transplant + valve dz. Invasive dental + bronchoscopy with biopsy.

Prophylaxis NO

- Routine endoscopy/colonoscopy without biopsy. Isolated ASD, HCM, MVP, bicuspid AV (without prior IE).

Organisms

Scenario	Organism
Acute / IVDU *3	S. aureus
Subacute post-dental *2	S. viridans
Prosthetic <2 mo	S. epidermidis
GI/GU	Enterococcus
Colon cancer	S. bovis / C. septicum → colonoscopy
Culture-negative	HACEK, Coxiella, Bartonella

- IVDU: tricuspid + bilateral septic pulm emboli.
- **Wrong:** Anti-ASO for IE → **Correction:** Anti-ASO = rheumatic fever.

9. Hypertension

JNC 8 1st-line

- Thiazide, CCB, ACEi, ARB. Black: thiazide/CCB. CKD: ACEi/ARB. NOT BB.

Key Stages

- Stage 1 ≥130/80; Stage 2 ≥140/90 (ACC/AHA 2017).
- Tx beneficial >80 yo (HYVET). MCC death: CAD.
- SYSTOLIC more important than diastolic.

Chronic Uncontrolled HTN — Exam

- S4 + LV heave (LVH). (S3 = later systolic dysfx; RV heave = pulm HTN; papilledema = malignant.)

Resistant HTN

- MCC: non-compliance. ≥3 drugs incl. diuretic. 4th-line: SPIRONOLACTONE.

Secondary HTN

- Renovascular, primary aldo, pheo, Cushing, OCPs, OSA, coarctation, PAN. NOT RTA.

Renovascular HTN

- Resistant HTN + ↑Cr + bruits. 1st: renal Doppler US.

Coarctation

- HTN upper > lower, rib notching, "3 sign". Dx: thoracic CT angio.

Eclampsia

- IV labetalol + IV MgSO4 (anticonvulsant of choice). AVOID nitroprusside (cyanide in pregnancy).

10. Lipids & Atherosclerosis

Statin Starting

- LDL ≥190 (or with RFs) → start high-intensity statin immediately. NOT diet alone.

CAD RFs

- ↑LDL, ↓HDL, ↑homocysteine, ↑Lp(a), smoking, HTN, age, male, FHx.
- **Wrong:** Estrogen / low homocysteine are RFs → **Correction:** Premenopausal estrogen PROTECTIVE. HIGH homocysteine is the RF.

Metabolic Syndrome (≥3/5)

- Abdominal obesity, ↑TG, ↓HDL, BP ≥130/85, FBS ≥100. LDL NOT a component.

Plaque *3

- RUPTURE-PRONE: thin cap + large lipid core + inflammatory cells + LOW SMC.
- STABLE: thick cap + few lipids + abundant SMC.

Cholesterol Embolization

- Eosinophilia, ↑CRP, gradual eGFR decline over WEEKS, livedo reticularis. ANA usually NEG.

11. Anticoagulation

Rivaroxaban

- Direct factor Xa inhibitor. Dabigatran = direct thrombin.

Thrombolysis Absolute CI *3

- Prior ICH, ischemic stroke <3 mo, intracranial neoplasm/AVM, recent CNS surgery <2 mo, severe head trauma <3 mo, suspected dissection, active internal bleed, severe uncontrolled HTN.
- **Wrong:** Active menstrual bleeding is ABSOLUTE CI → **Correction:** RELATIVE only.

12. Vascular Emergencies

Aortic Dissection *2

- Sudden "tearing" pain → back. BP asymmetry. Widened mediastinum.
- **Dx:** CT angiography of aorta.
- **Tx:** IV labetalol — HR <60 BEFORE BP. Type A = surgical emergency.
- IV heparin CI.

Acute Limb Ischemia

- 6 Ps. Embolic sources: A-fib, sick sinus, anterior MI, IE. NOT constrictive pericarditis.

Acute Mesenteric Ischemia

- Pain out of proportion + A-fib → CT angiography.

13. PE Heart Exam

- Loud P2 (NOT loud A2), parasternal heave, right S3, WIDE split S2 (NOT reversed), tachycardia.

14. Cardiac Exam Findings

Pulmonic Stenosis *3

- Thrill at SUPRASTERNAL notch, ejection click after S1, SINGLE S2 (severe).

ASD *2

- FIXED splitting S2. Does NOT need IE prophylaxis.

Large 'a' Waves

- Junctional, complete HB (cannon), PVCs, pulm HTN, TS, PS. NOT TR (TR = giant V waves).

Pulsus Alternans

- Severe LV systolic dysfunction (or tamponade). NOT constrictive.

15. CHD

- Coarctation: HTN arms > legs. Assoc Turner, bicuspid AV.
- ASD: fixed split. VSD: holosystolic LLSB. PDA: continuous machinery.
- TOF: VSD + overriding aorta + PS + RVH.

16. ACLS

Adrenaline Dose

- 1 mg IV/IO every 3-5 min.

Anaphylaxis

- IM ADRENALINE 0.3-0.5 mg (1:1000) anterolateral thigh — FIRST. Antihistamines/steroids/intubation AFTER.

17. Pharm Pearls

Carvedilol

- Non-selective BB + α-1 block. HFrEF mortality benefit.

Sildenafil

- Safe with ASA/statins/ACEi/metformin. NITRATES = ABSOLUTE CI.

Thiazides

- Hyper-GLUC (Glycemia, Lipidemia, Uricemia, Calcemia) + hypoK/Na.

Digoxin Toxicity

- Yellow-green halos, N/V, arrhythmias.
- **Predisposing:** hypoK, hypoMg, hypoxia, hypothyroid, HYPERca, renal failure.
- **Tx:** DigiFab; correct K, Mg.
- CI in HOCM, WPW. Only rate-controls existing AF (does NOT prevent new AF).

★ Cardiology Day-Before Quick-Hits

- SVT → adenosine. A-fib + WPW → procainamide.
- V-fib → unsynchronized defib. Torsades → Mg.
- Mobitz II → permanent PM. Digoxin SHORTENS QT.
- Valvular AF / mechanical valves → warfarin only.
- Anterior MI = LAD; Inferior = RCA; Kussmaul in inferior = poor px.
- NSTEMI/UA: NO thrombolytics. BNP best HF marker.
- Troponin insensitive for re-MI <2 wks → CK-MB.
- HFrEF pillars: ARNI + BB + MRA + SGLT2i. Furosemide/digoxin = NO survival benefit.
- Acute pericarditis → NSAIDs + colchicine. Tamponade → pericardiocentesis NOW.
- Constrictive: Kussmaul + knock; no alternans/emboli/pulm edema.
- HOCM = DIASTOLIC; avoid digoxin/diuretics/vasodilators.
- Severe AS: area <1, gradient ≥40.
- IVDU IE: S. aureus tricuspid. JNC 8 NOT BB 1st-line.
- Eclampsia → labetalol + Mg. Dissection: HR <60 BEFORE BP.
- Rupture-prone plaque: thin cap, big lipid, few SMC.
- Sildenafil + nitrates = absolute CI.
- Thiazides → hyperCa; loops → hypoCa.
- Digoxin tox: hypoK/Mg, hypoxia, hypothyroid, HYPERca.
- Anaphylaxis: IM adrenaline FIRST.

GASTROENTEROLOGY

1. Esophageal

Achalasia

- Dysphagia to BOTH solids + liquids (NOT solids only). PROXIMAL dilation. Weight loss.
- **Tx:** pneumatic dilation, Heller myotomy, POEM.

Zenker

- Elderly M, intermittent dysphagia + halitosis + nocturnal cough. Dx: BARIUM SWALLOW (not blind endoscopy).

GERD

- Contributors: ↓LES tone (NOT ↑), impaired peristalsis, hiatal hernia, obesity, pregnancy.
- **No alarms:** 8-wk PPI trial.
- **Alarms → endoscopy:** dysphagia, odynophagia, weight loss, anemia, GI bleed, persistent vomiting, age >50 + new sx, FHx upper GI cancer.
- Chest pain alone is NOT an alarm.

Eosinophilic Esophagitis

- Young atopic + dysphagia/food impaction. Biopsy: ≥15 eos/HPF. Tx: swallowed steroids + PPI.

Nutcracker

- Hypercontractile peristalsis. Manometry often NORMAL between attacks. Tx: CCBs, nitrates, PDE-5i, TCAs.

2. Stomach & PUD

Acid Physiology

- Stimulators: Histamine, ACh, Gastrin. Inhibitors: Somatostatin, Secretin, CCK, Peptide YY.

PUD

- MCC upper GI bleed. DU: H. pylori-related, NOT premalignant. GU: can be malignant → biopsy + repeat endoscopy.
- Post-eradication: urea breath test or stool antigen 8 wks later (off PPI 2 wks).

NSAID Ulcers

- RFs: age >60, prior PUD, steroids/anticoag/SSRIs/ASA. Female NOT a RF.
- **Prevention:** PPI co-therapy (most effective).

H. pylori

- Strong association: DU (strongest), GU, gastric adenocarcinoma, gastric MALT, atrophic gastritis.
- NOT associated: GERD, achalasia, esophageal cancer.
- **Eradication confirmation:** urea breath OR stool antigen (NOT serology).

Zollinger-Ellison

- Recurrent multiple ulcers, BEYOND bulb, refractory to PPI, ulcer + secretory diarrhea, H. pylori NEG.
- Assoc MEN1.
- **Workup:** fasting serum gastrin (off PPI) + secretin stim + CT/MRI.
- Hypergastrinemia + ↑pH → post-gastrectomy/pernicious anemia. ZES has LOW pH.

3. Small Bowel & Malabsorption

Absorption Sites

- Duodenum: iron, Ca, folate. Distal ileum: bile acids, B12.

Celiac

- Test BEFORE starting GFD (biopsy may normalize).
- **Serology:** anti-tTG IgA + total IgA. IgA deficient → IgG anti-tTG.
- **Biopsy:** intraepithelial LYMPHOCYTOSIS (not eos), villous atrophy, crypt hyperplasia.
- Complications: ulcerative jejunitis, EATL.
- **Past answer:** Anemia + target cells + Howell-Jolly → anti-tTG (celiac with functional asplenia).

Chronic Diarrhea — First Tests

- Lactoferrin/calprotectin (inflammatory vs not). Fecal elastase (pancreatic). Empiric cholestyramine (bile-acid).

Osmotic vs Secretory

- Osmotic: stops with fasting, gap >125. Secretory: continues day + night, gap <50.
- Dehydration tx = SECRETORY (not osmotic).

B12 Absorption

- Best oral B12 absorption: PARTIAL gastrectomy of body/fundus (some IF remains).

4. IBD

UC vs Crohn

Feature	UC	Crohn
Location	Colon only, continuous	Mouth-anus, skip, terminal ileum
Depth	Mucosa/submucosa	TRANSMURAL (fistula, abscess)
Granuloma	No (crypt abscesses)	YES non-caseating (40%)
Smoking	Protective	Worsens

- Best feature favoring Crohn: NON-CASEATING GRANULOMA.

Extra-Intestinal

- Track activity: erythema nodosum, episcleritis, peripheral arthritis, oral aphthae.
- Do NOT track: PSC, AS/sacroiliitis, uveitis, pyoderma gangrenosum.

Tx

- Acute flare: NOT azathioprine (slow-onset, maintenance only).
- UC maintenance: NOT methotrexate (weak in UC).

Surveillance

- UC + PSC: annual colonoscopy from PSC dx.

Post-Surgery

- Post-ileocecal resection diarrhea → bile-acid → CHOLESTYRAMINE.

5. C. difficile & Infectious Colitis

C. difficile

- Gram-POSITIVE spore-forming. MCC hospital-acquired diarrhea.
- **Triggers:** clindamycin, cephalosporins, FQs.
- **Dx *2:** stool TOXIN (PCR/EIA). NOT serum Ab.
- **1st-line:** Oral vanco or fidaxomicin (NOT metronidazole except mild).
- Hand hygiene: SOAP + WATER (spores resist alcohol).

Other

- Amebiasis: bloody diarrhea + right lobe liver abscess. Tx metronidazole + paromomycin.
- C. septicum bacteremia → COLONOSCOPY (colon cancer).

6. Viral Hepatitis

Hep A

- Fecal-oral. NO chronic. Shedding BEFORE symptoms.

Hep B Serology

Scenario	HBsAg	Anti-HBs	Anti-HBc
Acute	+	–	IgM +
Chronic	+ >6 mo	–	IgG +
Past resolved	–	+	IgG +
Vaccinated	–	+	–
Window	–	–	IgM + (only)

- HBeAg = high infectivity. HBcAg = intracellular, NOT in serum. NOT feco-oral route.

Hep C

- Anti-HCV stays + lifelong; ACTIVE = HCV PCR.
- **Past answer:** Anti-HBc+, HBsAg–, anti-HBs+, HCV Ab–, HCV PCR+ → acute hepatitis C.
- **Past answer:** RUQ mass + chronic hepatitis + NO cirrhosis + AFP 13,500 → hepatitis B (HBV → HCC without cirrhosis).

Severe Acute Hepatic Failure

- Best indicator: ↑PT/INR.

7. Cirrhosis & Liver Disease

Child-Pugh

- 5 components: Albumin, Bilirubin, PT/INR, Ascites, Encephalopathy. NOT varices.

Ascites — Paracentesis YES

- New, hospitalized, worsening, fever/pain/AMS/AKI (suspect SBP). NOT anemia alone.

SAAG

- ≥1.1 = portal HTN. <1.1 = non-portal (carcinomatosis, TB, pancreatic, nephrotic).
- SAAG ≥1.1 + high protein (>2.5) = cardiac/Budd-Chiari.

SBP

- **Dx:** ascitic PMN ≥250.
- **Tx:** 3rd-gen cephalosporin × 5-7d + albumin 1.5 g/kg D1, 1 g/kg D3 (if Cr >1 or bili >4).
- MCC: E. coli. Recurrence common (~70%/yr).

HE Precipitants

- GI bleed, infection, constipation, HYPOkalemia (NOT hyper), alkalosis, sedatives.
- TIPS can PRECIPITATE HE.

NAFLD/NASH

- Obesity, T2DM, dyslipidemia. ALT > AST (vs alcoholic AST>ALT >2:1).

Autoimmune Hepatitis

- Young-middle F + other autoimmune. AST/ALT in HUNDREDS-THOUSANDS. ↑IgG. ANA, ASMA, anti-LKM-1.
- Tx: steroids ± azathioprine.

PBC

- Middle-aged F + fatigue + pruritus + xanthelasma. AMA hallmark. Tx: UDCA.

PSC

- M > F; UC association. p-ANCA+; AMA NEGATIVE. MRCP: BEADING. Histology: ONION-SKIN periductal fibrosis.
- ↑risk cholangiocarcinoma + colorectal cancer.

Hemochromatosis

- HFE C282Y. Pentad: bronze skin, DM, CM, hypogonadism, arthropathy (2nd/3rd MCPs).
- ↑Ferritin + ↑TSAT (>45% M, >55% F). Tx: PHLEBOTOMY.
- Phlebotomy IMPROVES: skin, fatigue. Does NOT improve: cirrhosis, arthropathy, DM, hypogonadism.
- Hepcidin blocks ferroportin.

Wilson

- ATP7B; AR. <40 yrs + hepatitis/cirrhosis + neuro/psych. KF rings.
- LOW ceruloplasmin. HIGH urinary copper. Tx: penicillamine/trientine + zinc.

Budd-Chiari

- Tender hepatomegaly (most specific) + ascites + ↑Hb (polycythemia).
- Triggers: PV, OCPs, pregnancy, APS, JAK2.

Drug Hepatotoxicity

- Fibrosis: MTX. Fulminant: acetaminophen. Cholestasis: chlorpromazine, erythromycin, OCPs.

8. Pancreas & Biliary

Acute Pancreatitis

- **Causes (GET SMASHED):** Gallstones, Ethanol, Trauma, Steroids, Mumps, Autoimmune, Scorpion, HyperCa/TG, ERCP, Drugs.
- LIPASE more specific than amylase. Level does NOT predict severity.
- **Tx:** aggressive IV LR + pain control + early enteral nutrition. NO prophylactic Abx.

Chronic Pancreatitis

- Heavy alcohol + calcifications + steatorrhea. Best stool test: FECAL ELASTASE.

Cholangitis

- Charcot: fever + RUQ + jaundice. Reynolds: + hypotension + AMS. ERCP = dx + therapeutic.

DM & GI

- Gastroparesis, SIBO, alternating C/D, NAFLD, INCREASED gallstones (NOT decreased).

9. Lower GI & Colorectal

Lower GI Bleed Causes

- Elderly: diverticulosis (MC) > angiodysplasia > CRC > ischemic colitis.
- Young: hemorrhoids, IBD, Meckel.

Red Flags

- Age >40-50 + NEW rectal bleeding → COLONOSCOPY.

Mesenteric/Ischemic Colitis

- Pain out of proportion + acidosis + bloody stool. A-fib. CT angio = test of choice.

CRC RFs

- IBD (UC esp), red meat, low fiber, Lynch, FAP, >50, smoking, obesity, alcohol.
- PROTECTIVE: fiber, calcium, CAROTENE.

10. Upper GI Bleed

- **Transfuse:** Hb <7 (Hb <8 if cardiac/ischemia).
- IV PPI for suspected PUD bleed.

- **Variceal:** IV octreotide + IV ceftriaxone × 5-7d + EGD ≤12h.
- Over-transfusion worsens portal pressures.

11. Misc

Fat Malabsorption

- Chronic pancreatitis, CF, pancreatic cancer, ZES, celiac, Whipple, SIBO. NOT Plummer-Vinson.

Post-Ileal Resection

- Short (<100 cm): bile-acid → cholestyramine. Extensive (>100 cm): steatorrhea → low-fat + MCT.

★ GI Day-Before Quick-Hits

- Achalasia: solids + liquids, PROXIMAL dilation.
- Zenker: intermittent dysphagia + halitosis + night cough; BARIUM SWALLOW.
- GERD chest pain alone NOT alarm.
- Eosinophilic esophagitis → swallowed steroids.
- DU NOT premalignant; GU can be.
- MCC upper GI bleed: PUD. Variceal: octreotide + ceftriaxone + EGD ≤12h.
- Transfuse only Hb <7 in variceal bleed.
- H. pylori best confirmation: urea breath or stool antigen.
- H. pylori MALT regresses with eradication.
- ZES: recurrent ulcers + diarrhea → fasting gastrin + CT.
- B12 + bile acids: distal ileum.
- Celiac: anti-tTG IgA + total IgA; biopsy LYMPHOCYTES.
- Post-ileocecal diarrhea → cholestyramine.
- Crohn vs UC: granuloma = Crohn.
- EIMs not tracking activity: PSC, AS, uveitis.
- Azathioprine = MAINTENANCE only.
- UC + PSC → annual colonoscopy.
- C. septicum/S. bovis bacteremia → colonoscopy.
- C. difficile: oral vanco or fidaxomicin.
- Child-Pugh: NOT varices.
- SAAG ≥1.1 = portal HTN. + high protein = cardiac/Budd-Chiari.
- SBP: PMN ≥250. HE precipitant: HYPOkalemia + TIPS.
- PBC: AMA. PSC: p-ANCA, AMA−, MRCP beading.
- Hemochromatosis phlebotomy improves SKIN only.
- Wilson: LOW ceruloplasmin, HIGH urinary copper.
- Budd-Chiari: tender hepatomegaly + ↑Hb.
- Severe acute hepatic failure: ↑PT/INR.
- HBcAg NOT in serum. Hep A NEVER chronic.
- Acute HCV: anti-HCV may be NEG → PCR.
- Lipase > amylase; level doesn't predict severity.
- NO prophylactic Abx in acute pancreatitis.
- Chronic pancreatitis: fecal elastase.
- DM → INCREASED gallstones.
- Lower GI bleed elderly: diverticulosis.
- Rectal bleed >40 → colonoscopy. Carotene PROTECTIVE.

HEMATOLOGY & ONCOLOGY

1. IDA

- Microcytic + low ferritin + low Fe + HIGH TIBC + low TSAT + LOW retic. RDW high.
- Always treat + find cause. Elderly + new IDA → w/u occult GI malignancy.
- Post-bariatric → IV iron.

2. Megaloblastic

- MCV >100 + hypersegmented neutrophils + oval macrocytes + LOW retic. HYPERCELLULAR marrow. ↑LDH + indirect bili.

B12

- **Causes:** vegan, pernicious anemia, post-gastrectomy, ileal disease (Crohn), tapeworm.
- Neuro: SUBACUTE COMBINED DEGENERATION.
- 1st test: serum B12. Most definitive: MMA (↑in B12, normal in folate).

Folate

- Alcoholics, pregnancy, hemolysis, MTX, phenytoin. NO neuro features.

3. Hemolytic — General

- Hallmarks: HIGH retic + HIGH LDH + HIGH indirect bili + LOW haptoglobin.

4. G6PD

- X-linked RECESSIVE. Mediterranean variant: 563 C→T.
- **Triggers:** fava beans, infections, primaquine, sulfonamides, DAPSONE, nitrofurantoin, methylene blue.
- Smear: BITE CELLS + HEINZ BODIES.
- Severe attack: TRANSFUSION (NOT plasma exchange, NOT splenectomy).
- Levofloxacin does NOT trigger.

5. HS & Warm AIHA

HS

- AD; spectrin/ankyrin. ↑MCHC. DAT NEGATIVE.
- Aplastic crisis (sudden Hb drop + low retic) → PARVOVIRUS B19.

Warm AIHA

- DAT POSITIVE. Spherocytes.
- Elderly new AIHA → w/u LYMPHOID malignancy (CLL, Hodgkin, NHL).
- AIHA + ITP = Evans.

6. Thalassemia

- β-thal MINOR: HbA2 ELEVATED (~4.5%), HbF <1%, normal Fe.
- β-thal MAJOR: transfusion-dependent.
- **Cure:** allogeneic BMT (ONLY).
- **Chelation 1st-line:** ORAL DEFERASIROX (NOT parenteral deferoxamine).
- Cardiac damage CAN be partially reversed with chelation.

7. Sickle Cell

- **Complications:** VOC, acute chest, stroke, priapism, autosplenectomy, AVN (femoral), pulm HTN. NOT AML.

- **Transfusion:** acute chest, stroke, severe anemia, sequestration, aplastic crisis, pre-op.
- Pyelonephritis NOT a transfusion indication.

8. Aplastic Anemia

- Pancytopenia + HYPOCELLULAR marrow + no blasts. T-LYMPHOCYTE-mediated (NOT B cells).
- MC presenting sx: bleeding.
- **Severe + young + matched sibling:** allogeneic BMT (CURATIVE).
- **No match / older:** ATG + cyclosporine.

9. MDS

- **IPSS variables:** % blasts, karyotype, # cytopenias. NOT creatinine.
- **WHO:** cytopenia, blasts, karyotype, WHO category, transfusion need. NOT spleen size.

10. MPN

PV

- All 3 elevated (RBCs + WBCs + plts). JAK2 V617F+ >95%. Pruritus after HOT SHOWER.
- ~10% transform to AML (NOT 50%).
- Pruritus after hot shower: PV, RCC, dehydration, Hodgkin. NOT hemochromatosis.

ET

- Isolated ↑platelets. JAK2 30-50%.

Myelofibrosis

- TEARDROPS + leukoerythroblastic + splenomegaly + giant platelets.

CML

- Philadelphia t(9;22) → BCR-ABL.
- Leukocytosis (often >100k), BASOPHILIA, full myeloid maturation, blasts <10%.
- **Best dx:** cytogenetics/FISH for t(9;22).
- CML: LOW LAP; leukemoid: HIGH LAP.

11. Acute Leukemias

- >20% blasts. 15% plasma cells ≠ AML.

AML

- AUER RODS. Hypercellular. CD13, CD33, MPO+.

APL (M3)

- t(15;17) → PML-RARα. Multiple Auer rods. DIC = dominant early killer.
- **Tx:** ATRA + arsenic trioxide.

AML Prognosis

- **Favorable:** t(8;21), inv(16), t(15;17), NPM1.
- **Unfavorable:** CHROMOSOME 7 DELETION, -5/5q-, complex karyotype.

ALL

- TdT+, CD10 (CALLA)+. Down syndrome → ↑ALL risk.

12. CLL

- Elderly + mature lymphocytosis (≥5). CD19/20/5/23. SMUDGE CELLS. Hypogammaglobulinemia.
- NO lytic bone lesions (= MM).
- **Tx indications:** high Rai/Binet, B sx, progressive LAN, cytopenias, doubling <6 mo, autoimmune.

- 17p del → ibrutinib. Richter: CLL → DLBCL.

13. Hairy Cell Leukemia

- Middle-aged M + MASSIVE splenomegaly + pancytopenia + often NO LAN.
- CD19/20/11c/25/103. Tx: CLADRIBINE (2-CdA).

14. Multiple Myeloma

CRAB

- hyperCa, Renal (Cr >2), Anemia (Hb <10 normocytic), Bone lytic + recurrent infections.

Active vs Smoldering

- Active: BM plasma ≥10% + ≥1 CRAB.
- Smoldering: M-protein ≥3 OR BM 10-60% WITHOUT CRAB.
- CRAB distinguishes (NOT BM% — ≥10% in both).

ISS Staging

- Stage I: β2-M <3.5 + alb ≥3.5. Stage III: β2-M >5.5.

Tx

- Dex + bortezomib + lenalidomide. Fit: HD chemo + AUTOLOGOUS BMT.

15. Lymphomas

Hodgkin

- REED-STERNBERG. B sx: fever, drenching night sweats, weight loss >10%/6mo.
- **Ann Arbor:** I=1 region; II=≥2 same side; III=both sides; IV=diffuse extralymphatic. A/B = no/yes B sx.
- Cervical + inguinal LN + B sx → IIIB.

NHL

- Most B-cell. Staging: CT chest/abd/pelvis, BM biopsy, LDH.
- Brain CT NOT for routine staging. β2-M = PROGNOSTIC in NHL (NOT diagnostic).
- Most curable: Burkitt or DLBCL. Follicular best long-term survival but INCURABLE.
- Burkitt: t(8;14), c-myc, starry sky, EBV.
- Follicular: t(14;18), BCL-2. Mantle: t(11;14), cyclin D1.

EBV/Mono

- Transmitted by ORAL SECRETIONS (NOT feco-oral/aerosol/vector/transfusion).

16. Platelet Disorders

Reactive Thrombocytosis

- IDA, post-splenectomy, IBD, infection, malignancy. NOT pernicious anemia.

Qualitative Workup

- Used: BT, clot retraction, aggregation, flow, morphology.
- NOT used: BM cytogenetics. ***3**

Glanzmann

- GpIIb/IIIa defect. PROLONGED BT; ABSENT clot retraction; NO aggregation with ADP/collagen/epi/thrombin.

Bernard-Soulier

- GpIb-IX defect. LARGE platelets + thrombocytopenia.

Bleeding Patterns

- Platelet/vWD: mucocutaneous. Coag factor: DEEP (hemarthrosis).

17. ITP

- Isolated thrombocytopenia (normal everything else). Large young platelets. Post-URI.
- **Initial:** steroids; IVIG; anti-D (Rh+).
- Platelet transfusion ONLY for life-threatening bleed.

18. TTP & HUS

TTP

- PENTAD: fever + neuro + MAHA (schistocytes) + thrombocytopenia + renal.
- PT/PTT/fibrinogen NORMAL.
- Anti-ADAMTS13 → ultra-large vWF. ***3**
- **Tx:** PLASMA EXCHANGE daily.
- AVOID platelet transfusion (worsens microthrombosis).

HUS

- Triad: MAHA + thrombocytopenia + AKI. Best test: SCHISTOCYTES.

19. DIC

- Multi-site bleeding + thrombocytopenia + organ dysfx.
- Prolonged PT + PTT, LOW fibrinogen, LOW plts, ↑D-dimer, schistocytes.
- **Triggers:** sepsis, trauma, OB, malignancy (APL), massive transfusion.

20. Hemophilia & vWD

- Hemophilia A: X-linked, F8. Severe cause: INTRON 22 INVERSION (~45%).
- Lab: prolonged PTT, normal PT/plts/BT. PTT CORRECTS on mixing.
- A vs B: ONLY direct FACTOR ASSAY (NOT PTT/BT/sex/inheritance).
- vWD: MC inherited bleeding. ↑BT + normal plts + PTT can be prolonged.
- Mixing: CORRECTS → factor deficiency. DOES NOT → inhibitor/APS.

21. HIT

- Type 2 (immune, IgG vs heparin-PF4) 5-14d after heparin → THROMBOSIS.
- Key: platelet drop >50% from baseline.
- **Tx:** STOP all heparin (incl LMWH — cross-reacts). Start ARGATROBAN, bivalirudin, or fondaparinux.
- Don't start warfarin alone (skin necrosis).

22. Thrombophilias & VTE

- Factor V Leiden: MC inherited.
- Classic: long flight + calf pain + night dyspnea → Factor V Leiden.

APS

- Recurrent 2nd-tri losses + DVT/PE + arterial clots.
- PROLONGED PTT, does NOT correct on mixing. LA, ACL, anti-β2GPI+.
- PT unchanged.

Management

- Het FVL asymptomatic → no Tx (situational prophylaxis only).
- Cancer-VTE: LMWH long-term.

PE

- Sudden dyspnea, pleuritic pain, tachypnea, loud P2.
- ABG: respiratory ALKALOSIS (NOT acidosis).

23. Warfarin & Vit K

- Inhibits II, VII, IX, X + Protein C/S.
- **INR >4.5 no bleed:** hold ± oral vit K.
- **INR >7-10 no bleed:** hold + oral vit K.
- **Any bleed (melena + INR 7.9):** hold + vit K; PCC for major bleed.

24. Transfusion Complications

Acute (<24h)

- Acute hemolytic (ABO): BACK PAIN + RED URINE + headache.
- Febrile non-hemolytic, allergic, TRALI, TACO, bacterial.
- **Metabolic:** HYPOCALCEMIA (citrate), HYPERKALEMIA (NOT hypoK).

Delayed (>24h)

- Alloimmunization, delayed hemolytic, IRON OVERLOAD, GVHD, viral.
- Iron overload = DELAYED (NOT acute).

TRALI

- <6h. Non-cardiogenic pulm edema. MULTIPAROUS FEMALE donor anti-leukocyte Ab.

TACO vs TRALI

- TACO: ↑JVP + responds to diuretics. TRALI: hypotension + no JVP rise.

ABO Antibodies

- IgM → do NOT readily cross placenta (Rh-D IgG does).

25. BM Infiltration

- Older + pancytopenia + leukoerythroblastic + teardrops + known primary (prostate, ↑PSA) → marrow mets.

★ Heme/Onc Day-Before Quick-Hits

Smear

- Spherocytes → HS, warm AIHA.
- Bite cells + Heinz → G6PD.
- Schistocytes → MAHA.
- Teardrops → myelofibrosis, BM infiltration.
- Target → HALT (HbC, Asplenia, Liver, Thalassemia).
- Auer rods → AML (esp M3).
- Smudge → CLL. Rouleaux → MM.
- Hypersegmented neutrophils → B12/folate.

Cytogenetics

- t(9;22) → CML. t(15;17) → APL (ATRA).
- t(8;14) → Burkitt. t(14;18) → Follicular. t(11;14) → Mantle.
- inv(16), t(8;21) → AML favorable. Chr 7 deletion → UNFAVORABLE.
- F8 intron 22 inversion → severe hemophilia A.

Don't-Miss

- Macrocytic + hypersegmented → B12/folate.
- Pancytopenia + hypocellular → aplastic. + dysplastic → MDS. + teardrops → myelofibrosis or mets.
- Isolated low plts + large plts → ITP.
- Low plts + schistocytes + NORMAL PT/PTT → TTP (plasma exchange).
- Low plts + schistocytes + prolonged PT/PTT + low fibrinogen → DIC.

- PTT corrects → hemophilia. Doesn't → inhibitor/APS.
- Hemophilia A vs B: FACTOR ASSAY ONLY.
- HIT: stop heparin → ARGATROBAN.
- TTP: AVOID platelets.
- β-thal major cure: BMT; chelation = ORAL deferasirox.
- G6PD severe: TRANSFUSION.
- SCD: pyelonephritis NOT transfusion indication.
- PV → AML ~10%.
- MM Stage III: β2-M >5.5.
- Pruritus after hot shower: PV, RCC, dehydration, Hodgkin (NOT hemochromatosis).
- MC inherited thrombophilia: Factor V Leiden.
- Aplastic crisis in HS: parvovirus B19.
- Elderly AIHA → lymphoid malignancy w/u.
- APL t(15;17): DIC kills early; ATRA.
- EBV: oral secretions.

NEPHROLOGY

1. Sodium & Water

SIADH *4

- Euvolemic hypoNa + urine osm >100 + urine Na >20. Rule out cortisol/thyroid def.
- **Causes:** SSRIs, carbamazepine, cyclophosphamide; CNS (stroke, trauma, SAH); pulmonary (PNA, TB, PPV); SCLC.

Primary Polydipsia

- Dilute urine (<100). Low Na/osm.

Exercise-Associated HypoNa

- Hypotonic intake + non-osmotic ADH. Urine osm >250 (NOT <300).

Cirrhotic Ascites + High Urine Na

- Urine Na 102 = non-adherence with dietary Na.

Severe HypoNa Tx *2

- Symptomatic: 3% saline. Correct ≤8-10 mEq/L/24h.
- Asymptomatic SIADH: fluid restriction.

HypoNa & Drugs

- THIAZIDES (more than loops) cause hypoNa.
- Lithium causes nephrogenic DI → HYPERnatremia (NOT hypoNa).

Urine Concentration

- Concentrates BETTER when medullary blood flow DECREASES.

Aldosterone

- Acts on CD principal cells. ↑Na (ENaC) + ↑K secretion + ↑H secretion.

DI

- Polyuria + dilute urine + hyperNa. Dx: water deprivation test. Desmopressin → concentrates = CENTRAL; no response = NEPHROGENIC.

2. CKD & RRT

CKD Progression — Modifiable

- BP ≤130/80, proteinuria ≤0.5-1, protein 0.8-1 g/kg, lipids, HCO3 ≥22.
- HyperK is a CONSEQUENCE, NOT a driver.

ADPKD *3

- Bilateral cysts + hepatic cysts + cerebral berry aneurysms + MVP + diverticula + abdominal wall hernias.
- Infected cyst: CIPROFLOXACIN or TMP-SMX (penetrate cysts). β-lactams + vanco DON'T.
- ADPKD does NOT cause angiodysplasia.

VHL

- Microhematuria + HTN + cysts AND solid renal lesions + family hx "brain tumor".

Alport

- Type IV collagen, X-linked MC. Hematuria + sensorineural deafness + ANTERIOR LENTICONUS.

Dialysis Indications *2

AEIOU

- A — refractory acidosis.

- E — refractory hyperK.
- I — intoxications (methanol, EG, salicylates, lithium).
- O — refractory volume overload.
- U — uremia (pericarditis, encephalopathy).

- eGFR <15 ALONE is NOT absolute. MCC death on HD: cardiovascular.
- HD does NOT cause hypoglycemia.

CKD Anemia

- ~90% late-stage. CKD iron: TSAT <30% + ferritin <500 may need supplement. Hb target ~10-11.5.

CKD Big Kidneys

- Diabetic (early), HIV, amyloidosis, PCKD, lymphoma.

CKD HypoCa

- ↓1α-hydroxylation → ↓calcitriol → 2-deg hyperPTH.

Osteitis Fibrosa Cystica

- 2-deg hyperPTH + hyperPO4 + hypoCa + metabolic acidosis. NOT aluminum (= adynamic).

Metformin in CKD

- Stop at eGFR <30 (lactic acidosis).

3. Glomerular Diseases

Nephritic vs Nephrotic

- Nephritic: mild proteinuria, RBC casts, HTN.
- Nephrotic: ≥3.5 g/d proteinuria, hypoalbuminemia, hyperlipidemia. NOT HTN.

Complement *3

- **LOW:** PSGN, lupus, MPGN, cryo, SBE.
- **NORMAL:** IgA, membranous, MCD, FSGS, ANCA, anti-GBM.

IgA Nephropathy

- MC GN worldwide. Hematuria 1-5 DAYS after URI (synpharyngitic).
- HSP = IgA vasculitis (purpura + arthralgia + abdominal pain + nephritis).

PSGN *2

- Nephritic 1-3 wks after skin (impetigo) or 1-2 wks after pharyngitis. LOW C3, NORMAL C4.
- Starry sky IgG+C3 IF. Subepithelial humps EM.

RPGN

- Type 1 (anti-GBM): Goodpasture, LINEAR IF.
- Type 2 (immune complex): SLE, IgA, post-infectious, GRANULAR.
- Type 3 (pauci-immune): GPA (cANCA), MPA/EGPA (pANCA).

MCD *2

- MC nephrotic in CHILDREN. EM: foot process effacement. Hodgkin, NSAIDs. Steroid-responsive.
- **Past answer:** 19 yo DM1 ×4 yrs + heavy proteinuria → MCD (DM takes 10-20 yrs).

Membranous *3

- MC nephrotic in WHITE ADULTS. Anti-PLA2R+ (~70% primary).
- **Secondary:** SOLID tumors (lung, colon, breast), HBV, NSAIDs, gold, SLE (class V).
- Spike-and-dome EM. Subepithelial deposits. RVT risk.
- **Past answer:** Membranous + chest pain + flank pain + hematuria → V/Q scan (PE/RVT).

FSGS

- MC nephrotic in African-Americans. HIV, heroin, obesity, NSAIDs.

MPGN

- Mixed pattern. Low C3. Type I: HCV + cryo. Type II (DDD): C3 nephritic factor.

Diabetic Nephropathy *3

- KIMMELSTIEL-WILSON NODULES.
- **Strongest predictor:** proteinuria.
- T1DM: retinopathy coincides. T2DM: HTN often PRECEDES.

Lupus Nephritis

- Class IV: pulse methylpred + CYCLOPHOSPHAMIDE (or MMF).

Amyloidosis

- AL: light chains — MM. AA: chronic inflammation — RA.
- Nephrotic + enlarged kidneys. Congo red apple-green.

MM Kidney *3

- **Mechanisms:** cast nephropathy, hyperCa, AL amyloid, light-chain deposition, infections.
- NOT mechanism: tumor lysis hyperuricemia (= chemo).
- Dipstick MISSES light chains → use 24h urine.

PAN

- Medium-vessel. HBV. ANCA NEGATIVE. Renal INFARCTS (NOT GN).

GPA

- Upper airway + lung + kidney. cANCA / PR3.

Nephrotic Hypercoagulability

- Lose AT III, protein C/S. Hyperlipidemia NOT a mechanism.

Orthostatic Proteinuria

- Benign in young → REASSURANCE.

Gout in CKD

- Use PREDNISOLONE (avoid NSAIDs, allopurinol initiation, probenecid).

4. AKI

Classification

	Pre-renal	ATN	Post-renal
BUN/Cr	>20:1	<15:1	Var
Urine osm	>500	<350	Var
Urine Na	<20	>40	Var
FENa	<1%	>2%	Var

ATN *2

- MUDDY-BROWN granular casts.

AIN *2

- WBC casts + eosinophiluria. Triad (fever + rash + eosinophilia) only ~10-30%.
- **Drugs:** penicillins, cephalosporins, sulfa, NSAIDs, PPIs, ALLOPURINOL, rifampin.

Pyelonephritis *2

- WBC CASTS. Tx: FQ or 3rd-gen cephalosporin.
- Proteus → struvite (alkaline urine).

HUS

- MAHA + thrombocytopenia + AKI. Post-Shiga E. coli. SCHISTOCYTES.

Rhabdomyolysis *3

- Heme+ dipstick, NO RBCs on micro. CK >10k. HyperK, hyperPO4, HYPOcalcemia, hyperuricemia.
- **Tx:** aggressive IV fluids.

Cholesterol Emboli

- LIVEDO + eosinophilia + delayed AKI over WEEKS. ANA usually NEGATIVE.

5. Acid-Base

Formulas

- AG = Na − (Cl + HCO3). Normal 8-12.
- **Winters:** pCO2 = 1.5 × HCO3 + 8.

AGMA — MUDPILES

- Methanol, Uremia, DKA, Propylene glycol, INH/Iron, Lactic, Ethylene glycol, Salicylates.

Non-AGMA

- GI bicarb loss, RTA, acetazolamide. UAG neg → diarrhea; pos → RTA.

Classic Patterns

- Salicylate OD → HAGMA + respiratory alkalosis.
- Vomiting + AGMA → AGMA + met alkalosis.

6. Hypertension

Treatment

- 1st-line: thiazide, CCB, ACEi, ARB. NOT BB.
- **Wrong:** ACEi + ARB / same-class combos **→ Correction:** Avoid.

Resistant HTN *2

- Uncontrolled on 3 drugs incl. diuretic. 4th-line: SPIRONOLACTONE.

Pregnancy *2

- Safe: labetalol, nifedipine, methyldopa, hydralazine. AVOID ACEi/ARB.

Primary Hyperaldosteronism

- HTN + hypoK + alkalosis + HIGH aldo/renin ratio.

Liddle *3

- Gain-of-function ENaC. HTN + hypoK + alkalosis + LOW renin + LOW aldo. Tx: AMILORIDE.

Surreptitious Vomiting

- Urine Cl <10.

Bartter vs Gitelman

- Bartter: hypoK + alkalosis + HYPERcalciuria (loop-like).
- Gitelman: hypoK + alkalosis + HYPOcalciuria + HYPOMg (thiazide-like).

7. K & RTA

HypoK Mechanism in Vomiting

- Urinary K loss via 2-deg hyperaldosteronism (NOT gastric loss).
- Addison → HYPERkalemia (NOT hypoK).

HyperK Emergency

- (1) Ca gluconate → (2) Insulin/glucose, β-agonist → (3) Remove (loop, SPS, HD).

RTA *3

	I (distal)	II (proximal)	IV
Urine pH	>5.5	<5.5	<5.5
K	LOW	LOW	HIGH
Stones	YES (Ca-PO4)	No	No
Fanconi	No	Yes	No
Causes	Sjogren, ampho B, SLE	MM, heavy metals	DM, NSAIDs, ACEi

HypoK Periodic Paralysis

- Episodic weakness after carb meals. AD or thyrotoxicosis.

8. Diuretics, Stones & Misc

Sites

- Acetazolamide: PCT (CA). Loop: TAL (NKCC2). Thiazide: DCT (NCC). Amiloride: CD (ENaC). Spirono: CD (MR).

Thiazide AEs

- Hyper-GLUC: hyperGlycemia, hyperLipidemia, hyperUricemia, hyperCalcemia + hypoK/Na/Mg.

ACEi/ARB

- Dilate EFFERENT → renoprotective. AEs: hyperK, cough (ACEi), angioedema, AKI in bilateral RAS, teratogenic.

Scleroderma Renal Crisis

- ACE INHIBITOR (CAPTOPRIL) — life-saving even with high Cr.

Kidney Stones

- Ca oxalate MC (envelope). Ca-PO4 in distal RTA. Uric acid radiolucent + acidic urine.
- Struvite: coffin-lid + UREASE+ (Proteus) + staghorn.
- Cystine: hexagonal.
- **RFs:** hypercalciuria, hyperoxaluria, hyperuricemia, HYPOcitraturia (citrate protective).

Renal Glycosuria

- Causes: Fanconi, pregnancy, SGLT2i, isolated. Addison does NOT cause it.

NSAIDs

- Constrict AFFERENT → pre-renal AKI.

Catheter UTI Prevention

- NO prophylactic antibiotics.

SIADH & Uric Acid

- SIADH → HYPOuricemia.

Angiotensin II

- INCREASES ADH (NOT decreases). Constricts efferent.

★ Nephrology Day-Before Quick-Hits

- SIADH: euvolemic + urine osm >100 + urine Na >20.
- Severe symptomatic hypoNa → 3% saline; ≤8-10/24h.
- Thiazide → hypoNa. Lithium → hyperNa.
- DI: water deprivation test.
- Aldosterone: CD; ↑Na, ↑K secretion.
- Urine concentrates better when medullary flow LOW.
- ADPKD: cyst infection → ciprofloxacin.
- Alport: anterior lenticonus + deafness + hematuria.
- Dialysis AEIOU; eGFR <15 alone NOT absolute.
- Stop metformin at eGFR <30.
- Low complement: PSGN, SLE, MPGN, cryo.
- IgA: synpharyngitic. PSGN: low C3, post-strep.
- MCD: kids, Hodgkin, NSAIDs.
- Membranous: solid tumors, HBV, gold, SLE; anti-PLA2R; RVT.
- FSGS: HIV, heroin, obesity.
- Diabetic nephropathy: KW nodules; proteinuria strongest.
- Lupus class IV → pulse steroids + cyclophosphamide.
- AA → RA. AL → MM. MM proteinuria: dipstick MISSES.
- PAN: medium-vessel, HBV, ANCA-NEG, renal INFARCTS.
- GPA: cANCA/PR3.
- Nephrotic hypercoag: lose AT III, protein C/S; hyperlipidemia NOT.
- Membranous + chest/flank pain → V/Q scan.
- Gout in CKD → prednisolone.
- ATN: muddy-brown casts. AIN: WBC casts + eosinophiluria.
- Rhabdo: heme+ no RBCs; CK>10k; hyperK/PO4, HYPOCa, hyperuricemia.
- Cholesterol emboli: livedo + weeks; +ANA NOT a feature.
- Salicylate OD → HAGMA + respiratory alkalosis.
- Vomiting → met alkalosis (urine K loss via hyperaldo).
- Resistant HTN: add spironolactone 4th.
- Liddle: HTN + hypoK + alkalosis + LOW aldo + LOW renin → amiloride.
- Vomiting urine Cl <10.
- Bartter: hyperCa urine. Gitelman: hypoCa urine + hypoMg.
- Scleroderma renal crisis → ACEi.
- Addison → hyperK (NOT hypoK, NOT renal glycosuria).
- Distal RTA: urine pH >5.5, hypoK, stones.
- Type IV RTA: DM + hyperK + urine pH <5.5.
- HyperK emergency: Ca gluconate FIRST.
- Thiazides → hyperCa. Loops → hypoCa.
- ACEi/ARB dilate efferent. NSAIDs constrict AFFERENT.
- Struvite: Proteus + alkaline + staghorn. Hypocitraturia = RF.
- Catheter UTI: NO prophylactic Abx.
- SIADH → hypouricemia.
- Angiotensin II INCREASES ADH.

RESPIRATORY MEDICINE

1. Asthma

Diagnosis *3

- **Best:** spirometry + reversibility (post-BD).
- **Most specific:** reversibility (NOT methacholine — most sensitive).
- FEV1/FVC <70%, reversibility ≥12% (and ≥200 mL).
- **Cytokine:** IL-5 (eosinophilic).

Severity *3

- **Best test for acute severity:** PEF.
- **Severe signs:** PEF <40%, SaO2 <92%, RR ≥30, sitting forward, can't complete sentences, NORMALIZING PaCO2 (fatigue), SILENT CHEST (most ominous).
- NOT a severe sign: expiratory wheezes alone.
- **Most severe ABG:** PaO2 40, PaCO2 43 (hypoxia + loss of compensatory hypocapnia).
- Dyspnea mechanism: INCREASED work of breathing.
- MCC death: mucous plugging.

GINA Steps

- PRN low-dose ICS-formoterol → maintenance → medium → high-dose + add-ons.
- Uncontrolled despite max Tx in obese + GERD → OBESITY most likely cause.
- Dry cough + wheezes + normal FEV1/FVC → repeat flow-volume loop (vocal cord dysfunction).

2. COPD

Diagnosis

- Post-BD FEV1/FVC <70%.

Emphysema vs Chronic Bronchitis

- Emphysema: thin, scanty sputum, HIGH compliance, ↓DLCO.
- Chronic bronchitis: obese, copious sputum, wheezes/crackles, normal DLCO.
- 30 yo non-smoker with emphysema → α1-AT deficiency.

GOLD A/B/E Initial

- A = LABA or LAMA. B = LABA+LAMA. E = LABA+LAMA ± ICS (add ICS if eos ≥300).

Best Interventions

- Best prognosis *3: SMOKING CESSATION.
- Best dyspnea/QoL: PULMONARY REHAB.

LTOT

- PaO2 ≤55 OR SaO2 ≤88%. OR PaO2 56-59 + cor pulmonale/polycythemia/edema.

Exacerbation

- Awake + pH 7.26 + PCO2 78 → BiPAP. GCS <8 → intubate.
- NOT a RF: normal BMI.

3. Pneumonia

CURB-65 *3

- C confusion, U urea >20, R RR ≥30, B SBP <90, 65 age ≥65.
- 0-1 outpatient; 2 ward; ≥3 admit (ICU).

Pathogen Clues

- Green sputum + lobar → S. pneumoniae (MC CAP).
- N/V/D + EN + yellow-brown sputum + Coombs + jaundice → Mycoplasma.
- Alcoholic + RUL + currant jelly → Klebsiella.
- Post-H1N1 secondary → S. pneumoniae (MC).
- Mycoplasma dx: serology/PCR (NOT blood culture).
- Pneumococcus + Legionella: urinary antigen.

Biomarker

- Procalcitonin: most specific for bacterial.

Complicated Effusion

- pH <7.2, glucose <40, +culture, LDH >1000 → needs drainage.
- Loculated empyema → chest tube + intrapleural fibrinolytic.

4. ILD

IPF

- 6th-7th decade (NOT 5th — trap). Dry cough + VELCRO crackles + clubbing.
- **Next step:** HRCT.
- **DLCO:** DECREASED.
- **Only Tx improving survival:** lung transplant.

UIP HRCT

- SEEN: peripheral/basal, honeycombing, traction bronchiectasis, reticular.
- NOT seen: mosaic + nodules (= HP), ground-glass dominant (= NSIP), upper-lobe nodules.

Hypersensitivity Pneumonitis

- Pigeon/parrot/farmer/mold. HRCT: upper/mid lobes + mosaic + centrilobular nodules.

Sarcoidosis

- Young + bilateral hilar LAD + EN + non-caseating granulomas + hyperCa.
- Lofgren: bilateral hilar + EN + arthralgia + fever → excellent px.
- **Tx indications:** cardiac, neuro, ocular, hyperCa, progressive pulmonary, LUPUS PERNIO.
- EN alone (Lofgren) NOT a Tx indication.
- **BAL:** ↑lymphocytes + CD4/CD8 >4.
- **Bilateral hilar + hyperCa w/u:** bronchoscopy with TBNA.

5. PE & PH

VTE RFs

- Strong: hip/knee replacement, major surgery, trauma, hospitalization.
- Moderate: , OCPs, cancer, prior VTE.
- Low : pregnancy, dm, htn, obesity, varicose veins, increasing age, bed rest > 3days, Immob due to travel, laparoscopy

Diagnostic Approach

- Low/intermediate + neg D-dimer → excluded.
- High prob → CTPA directly.

Massive PE — Heart Signs

- Loud P2 (NOT loud A2), parasternal heave, right S3, WIDE split S2 (NOT reversed).

Mortality Risk

- Massive: vasopressors needed. Intermediate-high: +troponin.

Management

- Massive + instability → thrombolysis (tPA).

- Cancer-VTE: LMWH or DOAC (NOT warfarin).
- **Hypoxia mechanism:** V/Q mismatch (NOT hypoventilation).

PH

- Pre-cap (PAH): PAWP ≤15, PVR >3 WU.
- Post-cap: PAWP >15.

6. Pleural

Light's Criteria (exudate if ANY)

- PF/serum protein >0.5. PF/serum LDH >0.6. PF LDH > 2/3 ULN.

Low Glucose Exudate

- Rheumatoid (very low), empyema, TB, malignancy, esophageal rupture.

Mechanism in PNA Effusion

- INCREASED capillary permeability (not hydrostatic/oncotic).

Chylothorax

- PF TG >110 (NOT cholesterol >220 — that's pseudochylothorax).
- Tx: HIGH-protein LOW-FAT diet + MCT.

TB Pleural

- High ADA. AFB stain + in MINORITY only.

Pneumothorax

- DECREASED tactile fremitus (NOT increased).

7. Lung Cancer

Subtypes

- SCLC: central; SIADH (MCC malignancy), Cushing, SVC, Lambert-Eaton.
- Squamous: central + CAVITATING; HYPERCA (PTHrP), hoarseness, Pancoast.
- Adenocarcinoma: peripheral; MC in non-smokers; HPOA.
- Large cell: peripheral.

Vignettes

- Smoker + hemoptysis + hoarseness + upper cavitating + hyperCa → squamous.
- SVC syndrome → SCLC.
- Pancoast: NSCLC (NOT SCLC).

Workup Pearl

- 70 yo smoker + hemoptysis on warfarin → CBC + INR FIRST.
- Asbestos: plumbers, thermal insulation, construction. NOT painters.

8. Bronchiectasis / CF / PCD

Bronchiectasis

- Long-term AZITHROMYCIN reduces exacerbations.

CF vs PCD

- CF: ABSENT vas deferens (CBAVD) + pancreatic insufficiency + sweat Cl >60.
- PCD: dextrocardia + sperm motility problems (NOT absent vas).

9. Sleep-Disordered

OSA

- **Dx:** polysomnography.
- Associations: male, hypogonadism, RETROGNATHIA (NOT macrognathia), resistant HTN.
- **Tx:** CPAP 1st-line.

OHS

- Exertional dyspnea. HYPERCAPNIA AND HYPOXIA (not just hypercapnia).
- Acute decompensation → BiPAP (CPAP only oxygenates; BiPAP ventilates CO2).

PSG

- Obstructive apnea: NO airflow but EFFORT PRESENT.
- Central apnea: NO airflow + NO EFFORT.
- Hypopnea: ≥30% reduction (NOT <10%).

Narcolepsy Confirmation

- MSLT.

10. ARDS

- Berlin: acute, bilateral infiltrates, PCWP ≤18, P/F <300.
- **Hypoxia mechanism:** intrapulmonary SHUNT — REFRACTORY to 100% O2.
- Vs cardiogenic edema: PCWP ≤18 = ARDS.
- **Ventilation:** 6 mL/kg IBW. PEEP. Prone for moderate-severe.
- Swan-Ganz does NOT improve mortality.

TRALI vs TACO

- TRALI: hypotension, no JVP rise, BNP normal, NO diuretic response.
- TACO: HTN, ↑JVP, ↑BNP, responds to diuretics.

11. PFT & Flow-Volume

- Restrictive: ↓FVC + ↓TLC. Intra-pulm: ↓DLCO. Extra-pulm: normal DLCO.
- DLCO reduced in BOTH emphysema and IPF — use HRCT to distinguish.

Flow-Volume Loop

- Flat INSPIRATORY only: extrathoracic (VCD).
- Flat EXPIRATORY only: intrathoracic obstruction.
- Flat BOTH (box): fixed upper airway.

DLCO

- ↑/normal: asthma, obesity, chronic bronchitis, MG, alveolar hemorrhage.
- ↓: emphysema, IPF/ILD, pulm HTN, anemia.

12. Hypoxia / ABG

Cause	A-a gradient	Responds to O2
Hypoventilation	NORMAL	Yes
High altitude	NORMAL	Yes
V/Q mismatch	↑	Yes
Diffusion defect	↑	Yes
Shunt	↑	NO

- Ventilated on 100% O2 still hypoxic → SHUNT.
- Compensatory to hypoxia: ↑EPO, HYPERventilation.
- Dead space = ventilated NOT perfused (PE).

13. Misc

- TB pt + AFB neg ×3 + HIV neg + RUL cavity → bronchoscopy.
- HIV + HAART + TB Rx + loss of color vision → ETHAMBUTOL.
- Farmer + bradycardia + hypersecretions + bilateral infiltrates → organophosphate.
- Chronic cough + normal spirometry → methacholine challenge (cough-variant asthma).
- Uncontrolled asthma + eosinophilia + mononeuritis multiplex → EGPA.
- Dextrocardia + recurrent PNA → Kartagener (PCD).
- NIV NOT in: GCS <8, hemodynamic instability, facial trauma.
- SVC obstruction: MC malignant cause SCLC.

★ Respiratory Day-Before Quick-Hits

- Asthma dx: spirometry + reversibility. Most specific: reversibility.
- Acute severity: PEF. Silent chest + rising PaCO2 = ominous.
- Asthma cytokine: IL-5.
- COPD: post-BD FEV1/FVC <70%.
- Best prognosis: smoking cessation. Best QoL: pulm rehab.
- LTOT: PaO2 ≤55 OR 56-59 + cor pulm/polycythemia.
- COPD awake hypercapnic → BiPAP. GCS <8 → intubate.
- Emphysema: HIGH compliance; scanty sputum.
- CURB-65: 0-1 OP; 2 ward; ≥3 admit.
- Atypical PNA: Mycoplasma serology/PCR.
- Pneumococcus + Legionella: urinary antigen.
- Procalcitonin most specific bacterial.
- Loculated empyema → tube + fibrinolytic.
- IPF: 6th-7th decade, Velcro crackles, UIP, transplant only.
- Sarcoid: bilateral hilar + non-caseating granulomas + BAL CD4/CD8 >4.
- Lofgren self-limiting (no steroids).
- Massive PE: loud P2 + WIDE split (NOT reversed).
- Cancer-VTE: LMWH/DOAC.
- PE hypoxia: V/Q mismatch.
- Light: protein >0.5, LDH >0.6.
- Rheumatoid effusion: very low glucose.
- Chylothorax: TG >110.
- TB pleural: high ADA; AFB+ MINORITY.
- Pneumothorax: DECREASED fremitus.
- Squamous: central + cavitating + hyperCa + Pancoast.
- SCLC: SIADH/Cushing/SVC.
- Adenocarcinoma: peripheral + non-smokers + HPOA.
- Bronchiectasis: azithromycin long-term.
- CF: CBAVD + sweat Cl >60.
- PCD: dextrocardia + sperm motility.
- OSA: CPAP. RFs: male, hypogonadism, retrognathia.
- OHS: hypercapnia + hypoxia. Decompensation → BiPAP.
- Central apnea = NO effort. Hypopnea ≥30%.
- Narcolepsy: MSLT.
- ARDS: SHUNT (refractory). PCWP ≤18.
- TACO: ↑JVP. TRALI: no JVP rise.
- Hypoventilation: NORMAL A-a.

- Shunt: refractory to 100% O2.
- DLCO ↑: asthma, hemorrhage, obesity, bronchitis.
- Cough-variant: methacholine.
- Painters NOT typical asbestos.

RHEUMATOLOGY

1. Rheumatoid Arthritis

- Symmetric small joints (MCP, PIP, wrists, MTP). AM stiffness >1 hr, improves with activity.
- SPARES DIP joints.

Investigations *2

- Earliest X-ray: juxta-articular osteopenia.
- Synovial fluid: INFLAMMATORY (high WBC + high PMNs). WBC 1,400 with 20% PMNs ≠ RA.
- Anti-CCP: HIGHLY SPECIFIC (NOT common in other CTDs).
- RF not specific (also Sjogren, SLE, chronic liver, HCV/HBV, SBE, cryo, sarcoid).
- RF-negative: Adult Still, AS.

Poor Prognosis

- Shared epitope, high anti-CCP/RF, erosions, extra-articular, smoking.
- NOT poor px: male gender, seronegativity.

Extra-articular *2

- MC eye in active RA: SCLERITIS (NOT uveitis — that's spondyloarthropathies).
- Felty: RA + neutropenia + splenomegaly.
- AA amyloidosis from chronic inflammation.

Mgmt *2

- RA on DMARDs + new monoarthritis → ASPIRATE FIRST (rule out septic).
- MTX: stop ≥3 mo before pregnancy. Liver disease → hydroxychloroquine over MTX.

2. SLE

Criteria

- Includes: malar, discoid, photosensitivity, oral ulcers, serositis (pleuritis/pericarditis), arthritis, renal, neuro, heme (incl. THROMBOCYTOPENIA), immuno, ANA.
- NOT criteria: thrombocytosis, peritonitis.

Antibodies

- Most SPECIFIC: anti-Smith. Most SENSITIVE: ANA.
- Anti-dsDNA: tracks ACTIVITY / lupus nephritis.
- Anti-Ro/SSA: neonatal lupus + congenital complete heart block.
- Anti-RNP: MCTD.

Scenarios

- Neonate complete heart block → mother anti-Ro/SSA.
- Low IgA → screen for SLE.
- SLE on steroids + hip pain → AVN.

Cutaneous

- SCARRING alopecia → discoid (acute/subacute don't scar).
- Lupus pernio = SARCOID (NOT SLE despite the name).

Lupus Nephritis *2

- Class IV: pulse methylpred + CYCLOPHOSPHAMIDE (or MMF).

Drug-Induced *2

- Classic: HYDRALAZINE. Also: procainamide, INH, methyldopa, quinidine.

SLE Seizures

- LEAST useful w/u: CBC blood film. Useful: CT/MRI, LP, EEG, antiphospholipid.

3. APS

- Triad: recurrent pregnancy loss + thromboses + thrombocytopenia + persistent aPL.
- Paradox: PROLONGED aPTT in vitro but HYPERCOAGULABLE.
- aPTT DOES NOT correct with mixing study (KEY).
- PT unchanged in 2nd-tri loss workup.

Pregnancy Mgmt

- Criteria met → LMWH + low-dose ASA. Warfarin teratogenic.

Catastrophic APS

- Multi-organ microthrombosis + schistocytes. Tx: anticoag + steroids + plasmapheresis/IVIG.

4. Systemic Sclerosis

Limited (CREST)

- Calcinosis, Raynaud, Esophageal dysmotility, Sclerodactyly, Telangiectasia.
- Skin DISTAL to elbows/knees + face. SPARES anterior trunk.
- Ab *2: anti-CENTROMERE.
- Loud P2 = pulm HTN (late).

Diffuse

- Skin proximal to elbows/knees + trunk.
- Ab (ILD): anti-Scl-70. Anti-RNA pol III: renal crisis risk.

Scleroderma Renal Crisis *2

- Malignant HTN + MAHA + AKI. Tx: ACE INHIBITOR (CAPTOPRIL) — life-saving even with high Cr.

5. Polymyositis / Dermatomyositis

- PROXIMAL symmetric weakness.
- **DM skin:** heliotrope, Gottron papules, V-sign/shawl, mechanic hands, nail-fold telangiectasia.
- **Wrong:** EN is DM feature *2 / Thrombocytopenia in PM → **Correction:** EN NOT in DM. Thrombocytopenia = SLE.

Antibodies *2

- Anti-Mi-2: classic DM (rash + weakness).
- Anti-Jo-1: antisynthetase (myositis + ILD + mechanic hands).
- Anti-SRP *2: necrotizing myopathy + CARDIAC.

CK Elevation DDx

- MI, hypothyroidism, Duchenne, myositis, statins, trauma. NOT fibromyalgia.

Pearl

- Elderly + classic DM → CT chest/abd/pelvis (paraneoplastic screen).

6. Spondyloarthropathies

AS

- Young M, inflammatory back pain (AM stiffness >1h, IMPROVES with exercise, awakens 2nd half of night).
- HLA-B27. Limited spine, ↓chest expansion, SI tenderness.
- **X-ray:** SYNDESMOPHYTES (bamboo spine) — NOT osteophytes.
- Classic + normal X-ray *2 → MRI SI joints.
- Refractory to NSAIDs *2 → TNF-α inhibitor (etanercept).
- **Wrong:** MTX/SSZ for axial AS → **Correction:** Only for peripheral joints.

Reactive Arthritis

- Triad: arthritis + conjunctivitis + urethritis. Post-GI (Campylobacter, Salmonella, Shigella, Yersinia) or GU (Chlamydia).
- Tenosynovitis *2 = DISSEMINATED GONOCOCCAL (NOT reactive arthritis).

Psoriatic

- DIP, pencil-in-cup, nail pitting, dactylitis.

Enthesitis

- Spondyloarthropathy hallmark (Achilles, plantar).

HLA-B27 *2

- Young (<40) M with inflammatory back pain improving with exercise.
- NOT B27: OA, RA, SLE, Behcet, Sjogren.
- SC nodules → RA (NOT spondyloarthropathy).

7. Crystal Arthropathies

Gout

- Monoarticular. 1st MTP (podagra). Post-op Day 3-5 → GOUT.
- Serum urate can be NORMAL during acute attack.
- Crystals: NEEDLE, NEGATIVELY birefringent MSU.
- ~90% under-EXCRETORS (NOT overproducers). Premenopausal F have LOWER urate (estrogen uricosuric).

Gout Tx

- Acute: NSAID, colchicine, or steroid.
- CKD or PUD: COLCHICINE.
- NEVER start allopurinol during acute attack *2 (prolongs flare).

Pseudogout (CPPD) *2

- Elderly + acute knee + chondrocalcinosis. Crystals: RHOMBOID, POSITIVELY birefringent.

8. Osteoarthritis

- MC feature *2: prevalence INCREASES with age.
- Heberden DIP + Bouchard PIP. No synovitis. Normal ESR/RF.
- Synovial WBC 15,000 ≠ OA (OA <2,000).
- Raynaud → CTD (NOT OA).
- Hemochromatosis arthropathy: 2nd/3rd MCPs (OA doesn't target MCPs).

9. Septic Arthritis

- MCC: S. aureus. WBC >50k concerning. Can coexist with gout — always ASPIRATE.

10. Vasculitides

PAN *2

- Medium-vessel. HBV. ANCA NEGATIVE.
- Renal INFARCTS (NOT GN *2).
- Best w/u: mesenteric/renal angiogram + biopsy + HBV serology.

GPA

- Upper airway + lungs (cavitating) + GN. c-ANCA / PR3+.

MPA *2

- Pulmonary-renal + mononeuritis + purpura. p-ANCA / MPO+.
- Severe induction: RITUXIMAB (or cyclophosphamide).

EGPA

- Asthma + eosinophilia + vasculitis. p-ANCA in ~40%.
- MIGRATORY pulm infiltrates (NOT fixed).

IgA Vasculitis (HSP) *2

- Palpable purpura (buttocks/legs) + arthritis + abdominal pain + IgA nephropathy.

GCA

- Elderly + new headache + temporal tenderness + JAW CLAUDICATION + visual + ↑ESR.
- Don't delay high-dose steroids while awaiting biopsy.

Behcet

- Oral ulcers (mandatory) + genital + UVEITIS (hypopyon) + EN + pathergy. HLA-B51.
- MCC death *2: pulmonary artery aneurysm rupture.
- Ocular = UVEITIS (NOT scleritis *2).
- More SEVERE in males (not more common in F).

Mononeuritis Multiplex

- Vasculitides (PAN, EGPA, MPA, GPA), DM, leprosy, sarcoid, HIV. NOT uremia (= symmetric polyneuropathy).

11. Sarcoidosis

- Bilateral hilar LAD + EN + hyperCa + non-caseating granulomas.
- Lofgren = bilateral hilar + EN + arthritis (good px).
- Lupus pernio = SARCOID skin (NOT SLE).
- Tx indications: cardiac, neuro, ocular, hyperCa, progressive, LUPUS PERNIO.
- EN alone NOT a Tx indication.

12. PMR

- Age ≥50, proximal stiffness, no weakness, no synovitis.
- Very high ESR/CRP, RF NEGATIVE. Strong overlap with GCA.
- Dramatic response to low-dose steroids.

13. Sjogren

- Dry eyes + dry mouth. Anti-Ro/SSA, anti-La/SSB.
- Anti-Ro/SSA titres do NOT track activity.
- Most important complication *2: NHL (MALT).

14. Raynaud

- **PRIMARY:** young F, symmetric, NO damage, NORMAL nail-fold capillaries, NEG Ab.
- **SECONDARY:** older, asymmetric, digital ulcers, pitting scars, telangiectasia, ABNORMAL nail-fold, +Ab.
- Nail-fold changes / telangiectasia / pitting scars → SECONDARY (NOT primary).

15. Misc

Adult-Onset Still

- Quotidian spiking fevers + salmon rash + sore throat + arthritis. Very high ferritin. RF + ANA NEGATIVE.

+ANA Conditions

- SLE, drug-induced lupus, scleroderma, Sjogren, PM/DM, MCTD, AIH, JIA, RA (low-titer).
- PAN classically ANA-NEG (and ANCA-NEG).

+RF Besides RA

- Sjogren, scleroderma, chronic liver, HCV/HBV, SBE, cryo, sarcoid.

- PMR is RF-NEGATIVE.

Fluoroquinolone

- Tendinopathy/rupture.

HCV Rheumatologic

- HCV = CRYOGLOBULINEMIA → MPGN (NOT PAN — that's HBV).

TNFi CI

- Chronic HepB.
- Adequately INH-treated latent TB is NOT a CI.

★ Rheumatology Day-Before Quick-Hits

Antibody Recall

- Anti-Sm: most SPECIFIC SLE. ANA: most SENSITIVE.
- Anti-dsDNA: SLE activity. Anti-Ro/SSA: neonatal lupus + CCHB.
- Anti-centromere: CREST. Anti-Scl-70: diffuse SSc + ILD.
- Anti-RNA pol III: SSc renal crisis.
- Anti-Jo-1: antisynthetase. Anti-Mi-2: classic DM. Anti-SRP: necrotizing + cardiac.
- Anti-RNP: MCTD. Anti-CCP: specific RA.
- c-ANCA/PR3: GPA. p-ANCA/MPO: MPA, EGPA. ANCA NEG: PAN.
- HLA-B27: AS, reactive, IBD, PsA. HLA-B51: Behcet. HLA-DR4: RA.

Rapid

- Scarring alopecia in SLE: discoid. Lupus pernio = sarcoid (not SLE).
- MC eye in active RA: SCLERITIS.
- RA: spares DIP. Inflammatory back pain + normal X-ray: MRI SI.
- AS refractory: TNFi. Class IV lupus: pulse steroids + cyclophosphamide.
- Scleroderma renal crisis: ACEi.
- Acute gout + CKD/PUD: colchicine. NEVER start allopurinol during attack.
- RA + new monoarthritis: ASPIRATE.
- Post-op Day 3-5 hot joint: GOUT.
- Pseudogout: chondrocalcinosis + rhomboid + positively birefringent.
- Behcet death: pulm artery aneurysm. Ocular = UVEITIS.
- PAN: HBV, ANCA-NEG, renal INFARCTS.
- GPA: cANCA/PR3, upper airway + lung + GN.
- Severe MPA: rituximab.
- Sjogren long-term: NHL (MALT).
- Drug-induced lupus: HYDRALAZINE.
- Primary Raynaud: young F, NORMAL nail-fold, neg Ab.
- Catastrophic APS: aPTT doesn't correct.
- PMR: ≥50, high ESR/CRP, RF NEG, steroid response.
- Uremia: symmetric polyneuropathy (NOT mononeuritis multiplex).
- Sarcoid: EN alone NOT a Tx indication; lupus pernio IS.
- HCV: cryo + MPGN. HBV: PAN.
- Adult Still: high ferritin, RF NEG.

ENDOCRINOLOGY

1. Diabetes

Diagnosis

- FPG ≥126 / OGTT ≥200 / HbA1c ≥6.5% / random ≥200 + sx. Confirm if asymptomatic.
- IDA falsely RAISES HbA1c. Hemolysis falsely LOWERS.
- **Past answer:** Random 220-260 + classic sx → diagnose T2DM and treat *3. ***Note:*** *Metformin + lifestyle.*
- **Past answer:** Asymp + FPG 127 + HbA1c 6.6% → meets criteria.
- Prediabetes: FPG 100-125; A1c 5.7-6.4%.

Newly Diagnosed — Not Routine

- CT pancreas, neuro referral, exercise stress, C-peptide/islet Ab.

First-Line

- Lifestyle + metformin. Insulin if A1c ≥10%, glucose ≥300, or catabolic.

Drug Side Effects

- Metformin: GI, B12 def, lactic acidosis (eGFR <30). NOT nephrotoxic.
- SU: hypoglycemia, weight gain.
- SGLT2i: UTI/genital infection, euglycemic DKA.
- GLP-1: nausea.
- Pioglitazone: weight gain, edema, CHF, fractures.
- Long-term metformin → B12 def → macrocytic anemia + neuropathy.
- **Past answer:** Metformin + glipizide + statin + new anemia → metformin (B12 def) *2.
- **Past answer:** 29 yo new ED → MCC: psychological *3.
- Sildenafil + nitrates = ABSOLUTE CI.

Inpatient

- Check K BEFORE insulin (K <3.3: replace K first).
- Hospitalized T2DM: BASAL-BOLUS (NOT sliding scale alone).
- DKA: regular IV insulin + fluids + K.

Dawn vs Somogyi

- Somogyi: nocturnal hypoglycemia → REDUCE evening insulin.
- Dawn: cortisol/GH rise → INCREASE basal insulin.
- Distinguish: 3 AM glucose. LOW = Somogyi. NORMAL/HIGH = Dawn.

Hypoglycemia Workup

- 72h fast + glucose + insulin + C-peptide + proinsulin + βOHB + SU screen.
- HIGH insulin + HIGH C-peptide → insulinoma OR SU.
- HIGH insulin + LOW C-peptide → EXOGENOUS insulin.
- LOW insulin + LOW C-peptide → non-insulin (alcohol, sepsis, AI, non-islet tumor).
- **Past answer:** On metformin + glimepiride + glucose 25 → LEAST likely: pheochromocytoma (→ HYPERglycemia).

Subtypes

- T1DM: lean, autoimmune, low C-peptide, DKA.
- T2DM: obese, ↑C-peptide, Ab-NEG, acanthosis.
- LADA: adult, slim, Ab+.
- MODY: young (<25), AD FHx, Ab-NEG, no acanthosis.
- CFRD *2: NOT insulin resistance — β-cell destruction in CF.

DM & GI

- Gastroparesis, SIBO, INCREASED gallstones (NOT decreased).

2. Thyroid

Thyrotoxicosis Workup

- After ↓TSH + ↑FT4: 24h RAIU.
- **HIGH RAIU:** Graves, MNG, toxic adenoma, TSH-secreting.
- **LOW RAIU:** thyroiditis (subacute/postpartum), exogenous, struma ovarii, iodine load.

Graves *2

- TSI. Exophthalmos, lid lag, PRETIBIAL MYXEDEMA (pathognomonic), acropachy.
- HYPER-reflexia (NOT absent DTRs).

Pregnancy *2

- 1st trimester: PTU. Then switch to methimazole.
- Major antithyroid SE: AGRANULOCYTOSIS. PTU also hepatotoxicity + ANCA-vasculitis.
- Radioactive iodine: ABSOLUTELY CI in pregnancy.

Thyroiditis

- Subacute (de Quervain): post-viral, PAINFUL, HIGH ESR.
- Postpartum: PAINLESS, normal ESR, low RAIU.
- All thyroiditis: antithyroid drugs don't help. Tx: BB ± NSAIDs.
- ~20% postpartum → persistent hypothyroidism.

Central Hyperthyroidism

- ↑FT4 + inappropriately normal/high TSH → MRI pituitary.

Hypothyroidism

- Sx: cold intolerance, weight gain, constipation, bradycardia, hyporeflexia (DELAYED relaxation), hypoNa, hyperlipidemia, macrocytosis, ↑CK, MENORRHAGIA.
- K NORMAL — does NOT cause hypoK.
- Elderly/cardiac: START levothyroxine 25 mcg.

Hypothyroid + Hyperprolactinemia

- Levothyroxine alone normalizes BOTH (TRH stimulates both).

TBG

- ↑TBG (estrogen, OCPs, pregnancy): ↑total T4, normal FT4.
- ↓TBG (nephrotic, severe illness, androgens): ↓total T4.

Thyroid Nodule

- 1st: TSH + US. Low TSH → scan (HOT = no FNA). Normal/high → FNA by size/features.

Thyroid Cancer

- Papillary MC, lymphatic, excellent px.
- Medullary: C-cells, CALCITONIN (NOT thyroglobulin), MEN 2.

Post-Pituitary Surgery

- TSH unreliable → use FREE T4.

3. Parathyroid & Calcium

First Step in Abnormal Ca

- Corrected Ca = Ca + 0.8 × (4 − albumin).

HyperCa Causes by PTH

- **PTH-dependent:** 1° HPT, FHH, tertiary, lithium.
- **PTH-independent:** malignancy (PTHrP), granulomatous, vit D tox, immobilization, thiazides, hyperthyroid.
- Drugs: thiazides RAISE Ca. Loops LOWER Ca.

- **Past answer:** Sarcoid hyperCa → NOT present: high PTH. ***Note:*** *PTH SUPPRESSED in sarcoid hyperCa.*
- **Past answer:** Asymp Ca 11.2 + PTH 55 + FHx Ca problem → urine Ca/Cr *3 (rule out FHH).

Lab Patterns

Disorder	Ca	PTH	PO4	Urine Ca	AlkP
1° HPT	↑	↑	↓	↑	nl/↑
FHH	↑	nl/↑	nl	↓	nl
Malignancy	↑	↓	var	↑	var
Sarcoid	↑	↓	nl	↑	nl
MM	↑	↓	nl	↑	NORMAL (lytic)
Bone mets	↑	↓	var	↑	↑ (osteoblastic)
Vit D def	↓	↑	↓	↓	↑

Acute HyperCa

- IV NS → calcitonin (rapid) → zoledronate (slow, AVOID severe CKD). Denosumab in renal failure. Steroids for granulomatous/lymphoma.

Parathyroidectomy in 1° HPT

- Sx, Ca >1 above ULN, age <50, T <-2.5, eGFR <60, urine Ca >400, stones.

Vit D Def

- ↓Ca, ↓PO4, ↑PTH (2-deg HPT), ↑AlkP. PTH NEVER normal in true vit D def.

4. Adrenal

Cushing Approach

- **Confirm *3 (need 2):** 24h urine cortisol, late-night salivary, overnight 1mg dex.
- 8 AM serum cortisol is a POOR screen.
- **Then ACTH:** LOW = adrenal CT. HIGH/normal = pituitary MRI + high-dose dex.

Cushing vs Pseudo-Cushing

- Favor TRUE: PURPLE STRIAE >1 cm, proximal myopathy, easy bruising, osteoporotic fx in young, hypoK alkalosis.

Adrenal Insufficiency

- Primary (Addison): ↓cortisol + ↓aldo + ↑ACTH + hyperpigmentation + HYPONA + HYPERK.
- Secondary: chronic exogenous steroids MCC; no hyperpigmentation; aldo NORMAL.
- **Dx *3:** 8 AM cortisol + ACTH; confirm cosyntropin stim.

Maintenance Addison

- GLUCOCORTICOID + MINERALOCORTICOID BOTH (hydrocortisone + FLUDROCORTISONE).
- Dex alone INADEQUATE (no MC activity).

Adrenal Crisis

- IV hydrocortisone 100 mg + IV NS.

Pheochromocytoma

- **Best initial:** 24h urinary fractionated metanephrines OR plasma free.
- **Tx principle:** ALPHA-BLOCK FIRST (phenoxybenzamine) × 7-14 days, THEN β-block. NEVER β-block alone.

Primary Hyperaldo (Conn)

- Resistant HTN + hypoK + alkalosis. Screen: PAC:PRA ratio.

Adrenal Incidentaloma

- Workup: metanephrines (rule out pheo FIRST) + overnight dex + PAC:PRA if HTN/hypoK.

- NEVER biopsy without ruling out pheo.

5. Pituitary

Acromegaly *2

- Macroadenoma. Bitemporal hemianopia. Enlarging hands/feet/jaw, OSA, DM, CM, colon polyps.
- **Screen:** IGF-1.
- **Confirm:** OGTT with GH (failure to suppress).
- **Tx:** transsphenoidal surgery.
- Random GH NOT useful.

GH Deficiency *2

- Gold std: insulin tolerance test.

Prolactinoma

- >200 ng/mL: almost certainly prolactinoma. Mild (25-100): drugs/hypothyroid/stalk effect.
- **Tx:** CABERGOLINE (even for macroprolactinoma).

Male Hypogonadism

- PRIMARY: ↑LH/FSH, ↓T (Klinefelter, mumps, chemo).
- SECONDARY: ↓LH/FSH, ↓T (Kallmann, pituitary adenoma, hemochromatosis, hyperprolactinemia).

Klinefelter (47,XXY) *4

- Tall, eunuchoid, SMALL FIRM testes, gynecomastia, azoospermia. ↑LH/FSH, ↓T.
- **Confirm:** KARYOTYPE.

Kallmann

- Hypogonadotropic + ANOSMIA.

Hemochromatosis

- Young M + ED + dark skin + joint pain + new DM + CM. Ferritin + TIBC + TSAT.

Turner (45,XO)

- Short + amenorrhea + webbed neck + coarctation. HIGH LH/FSH (primary ovarian failure).

Post-Pituitary Surgery

- Monitor FT4 (NOT TSH). Replace glucocorticoid FIRST, then thyroid.

6. Other Endocrine

CAH

- 21-hydroxylase (~95% MC): ↓cortisol/aldo (salt-wasting) + ↑androgens. ↑17-OHP.
- 11β-hydroxylase: HTN + ↑androgens.
- 17α-hydroxylase: HTN + hypoK + ↓sex steroids.

MEN

- MEN 1 (3 Ps): Pituitary + Parathyroid + Pancreas (gastrinoma).
- MEN 2A: Medullary thyroid + Pheo + Parathyroid.
- MEN 2B: Medullary thyroid + Pheo + Mucosal neuromas + Marfanoid.
- MC gastrinoma site: DUODENUM.

Vitamin Deficiencies

- B1: beriberi, Wernicke-Korsakoff.
- B6: sideroblastic anemia, peripheral neuropathy (INH).
- B12: macrocytic + SCD (pernicious, ileal, METFORMIN, vegan).
- C: scurvy.

Osteoporosis

- Obesity PROTECTIVE.

Nephrotoxic Drugs

- AMG, NSAIDs, lithium, cisplatin, contrast, vancomycin. Metformin NOT directly nephrotoxic.

★ Endocrinology Day-Before Quick-Hits

Diabetes

- Dx: FPG ≥126 ×2 / OGTT ≥200 / HbA1c ≥6.5% ×2 / random ≥200 + sx.
- IDA falsely RAISES HbA1c.
- 1st-line new T2DM: metformin + lifestyle.
- Severe hyperglycemia → insulin.
- Hospitalized: BASAL-BOLUS.
- Check K BEFORE insulin.
- Metformin → B12 def → macrocytic + neuropathy.
- Sildenafil + nitrates = absolute CI.
- MCC ED in young: psychogenic.
- Hypoglycemia: high insulin + high C-peptide → insulinoma/SU; high insulin + low C-peptide → exogenous.
- MODY: AD FHx, Ab-NEG. CFRD: DM WITHOUT insulin resistance.
- DM → INCREASED gallstones.

Thyroid

- Always start with TSH (except post-pituitary → FT4).
- Graves: TSI, exophthalmos, pretibial myxedema.
- Subacute (de Quervain): post-viral, PAINFUL.
- Postpartum: PAINLESS, low RAIU.
- Pregnancy: 1st tri PTU → switch methimazole.
- Antithyroid major AE: agranulocytosis.
- Central hyperthyroid: ↑T4 + nl/high TSH → MRI.
- Elderly/cardiac: start levothyroxine 25 mcg.
- Hypothyroidism does NOT cause hypoK.
- Hypothyroidism + hyperprolactinemia: levothyroxine alone.
- Medullary CA: CALCITONIN; MEN 2.

Ca/PTH

- First step: corrected Ca.
- MM hyperCa: NORMAL AlkP.
- Asymp hyperCa + FHx → urine Ca/Cr (FHH).
- Acute hyperCa: NS → calcitonin → zoledronate.
- Loops LOWER Ca; thiazides RAISE Ca.
- Sarcoid hyperCa: PTH SUPPRESSED.
- Vit D def: PTH NEVER normal.

Adrenal

- Cushing screen: urine cortisol/salivary/overnight 1mg dex (2 abnormal).
- Then ACTH. Low → adrenal CT; high/normal → pituitary.
- Pseudo-Cushing distinguishers: purple striae, proximal myopathy.
- Primary AI: ↓cortisol + ↓aldo + hyperpigmentation + hyperK + hypoNa.
- Chronic exogenous steroids = #1 cause secondary AI.
- AI confirmation: cosyntropin test.
- Crisis: IV hydrocortisone 100 mg + NS.
- Maintenance Addison: hydrocortisone + FLUDROCORTISONE.

- Pheo: ALWAYS α-block FIRST.
- Primary aldo: PAC:PRA.
- Incidentaloma: metanephrines + dex; NEVER biopsy without ruling out pheo.

Pituitary

- Acromegaly: IGF-1 → OGTT → MRI → transsphenoidal.
- GH def: insulin tolerance test.
- Prolactinoma: cabergoline.
- Klinefelter: small FIRM testes → KARYOTYPE.
- Kallmann: hypogonadotropic + anosmia.
- Turner: HIGH LH/FSH.
- Post-pituitary surgery: monitor FT4.
- Hypopituitarism: glucocorticoid FIRST, then thyroid.

Misc

- 21-hydroxylase: ↑17-OHP. MEN 1: 3 Ps. Gastrinoma: duodenum.
- Obesity PROTECTIVE for osteoporosis.
- Metformin NOT nephrotoxic. Beriberi = B1.

INFECTIOUS DISEASES

1. Brucellosis

- Gram-NEG facultative intracellular bacillus. Animal contact + unpasteurized dairy. NOT human-to-human *3.
- B. melitensis (goats/sheep) MOST virulent (NOT B. abortus *3).
- Sacroiliitis is COMMON (NOT rare).
- MCC death: ENDOCARDITIS.
- Neurobrucellosis: chronic meningitis CSF pattern.

Treatment

- Adults: Doxy + Rif × 6 wks.
- Severe/endocarditis: + Gent (or Strep) IM first 2 wks.
- Neurobrucellosis: + Ceftriaxone.
- Children <8 / Pregnancy *2: Rif + TMP-SMX.

Not from Unpasteurized Milk

- B. anthracis. Brucella, M. bovis, Listeria CAN.

2. TB

Micro

- ACID-FAST intracellular (NOT gram-positive). Min Tx 6 mo (RIPE 2 + INH/RIF 4).

Most Infectious

- Cavitary pulmonary + laryngeal. NOT peritoneal/spinal/CNS/renal/cutaneous.

Diagnosis

- Active: 3 sputum AFB + culture.
- AFB neg ×3 + high suspicion *2 → BRONCHOSCOPY (BAL).
- PPD/IGRA: screens latent only.

PPD Cutoffs

- ≥5 mm: HIV, immunosuppressed, recent contact, fibrotic CXR, transplant.
- ≥10 mm: immigrants, IVDU, congregate, children <4, DM/CKD.
- ≥15 mm: no RFs.

Drug Pearls

- INH: DRUG-INDUCED LUPUS (HIPP), neuropathy (give B6), hepatotoxicity.
- Ethambutol: optic neuritis (loss of color vision).
- Pyrazinamide: hepatotoxicity, hyperuricemia. Rifampin: orange secretions, CYP inducer.

3. HIV / AIDS

Diagnosis

- ELISA → Western blot. Acute (<3 wks) or immunocompromised: HIV RNA PCR.

When to Start ART *5

- Treat ALL HIV+ AT DIAGNOSIS regardless of CD4/VL/sx/pregnancy.

Transmission

- Needle-stick from known HIV+ source ~0.3%.
- MTCT without intervention ~25%.

PCP Prophylaxis

- TMP-SMX at CD4 <200.

AIDS-Defining

- CD4 <200: PCP, Histo, PML, HIV dementia.
- CD4 <100: esophageal Candida, Crypto meningitis, CMV, Toxo, MAC (<50).
- Esophageal candidiasis IS AIDS-defining. Oral thrush is NOT.
- Herpes zoster is NOT AIDS-defining by itself.

4. Vaccines

- **Live-attenuated (CI in pregnancy + severe immunocomp):** MMR, Varicella, Oral polio, Yellow fever, Rotavirus, BCG, Live nasal flu.
- **Safe in pregnancy:** INJECTABLE flu, Tdap, HepB, HepA.
- Injectable flu safe in pregnancy AND immunocompromised. ONLY live nasal CI.
- Hep B vaccine: protects against HDV; NOT CI in immunocompromised.

5. Antibiotics — Key SEs

FQ

- Tendinopathy/rupture, arthropathy, QT prolongation, hypoglycemia. CI in pregnancy + children.
- Levofloxacin does NOT trigger G6PD.
- Ciprofloxacin: best for infected ADPKD cyst (penetrates cysts).

Vancomycin

- Red man, nephro, oto. NOT neuropathy/seizures.
- Worst nephrotoxic combo *2: vanco + AMG.

Metronidazole

- Metallic taste, peripheral neuropathy, disulfiram-like with alcohol.
- NOT red man (= vancomycin).

Ceftriaxone

- NOT antipseudomonal *2. ESBL = resistant to ceftriaxone.

Antipseudomonal

- Ceftazidime, Cefepime, Pip-tazo, Cipro/Levo, AMG, Carbapenems, Aztreonam, Colistin.
- NOT: CEFTRIAXONE.

G6PD Triggers

- Dapsone, primaquine, TMP-SMX, nitrofurantoin, sulfa, fava. NOT levofloxacin.

Pregnancy CI

- Doxycycline, FQs, AMG, TMP-SMX (1st + 3rd tri).

6. C. difficile

- Gram-POSITIVE spore-forming. MCC hospital-acquired diarrhea.
- **Triggers:** clindamycin, cephs, FQs, carbapenems.
- **Dx *2:** stool TOXIN (PCR/EIA). NOT serum Ab.
- TOXIN-mediated (NOT immune-complex).
- **Tx:** oral vancomycin or fidaxomicin (NOT metronidazole except mild).
- Soap + water (alcohol does NOT kill spores).

7. Parasites

Ascaris *2

- MC helminth worldwide. 20-40 cm worm. Loeffler. Eggs in stool.
- Does NOT cause periorbital edema (= TRICHINELLOSIS).

Enterobius

- Night perianal itch. Scotch-tape (not stool eggs). Does NOT cause anemia *2 (= hookworm, trichuris).

Taenia

- T. solium: PORK. Cysticercosis / neurocysticercosis.
- T. saginata: BEEF. Mild intestinal only.
- Cysticercosis = T. solium (NOT T. saginata).

Schistosoma *2

- S. haematobium: bladder SCC.
- S. mansoni / japonicum: intestinal + hepatic.

Malaria

- Most severe: P. falciparum.

Entamoeba

- Bloody diarrhea + liver abscess. Tx METRONIDAZOLE + paromomycin.

Defense

- Susceptibility to parasites = T-CELL deficiency.

8. Sepsis & SIRS

SIRS (≥2/4)

- T >38/<36; HR >90; RR >20 (or PaCO2 <32); WBC >12k/<4k OR >10% bands.
- WBC 10,000 alone NOT SIRS *3.

Key Facts

- Tachypnea = 1st sign. Hypothermia = POOR PROGNOSTIC.
- Sepsis → metabolic ACIDOSIS (lactic), NOT alkalosis.
- Procalcitonin: best biomarker.
- Blood culture + in only 30-40% (NOT 80%).

9. Influenza

- Oseltamivir useful within 48h only.
- Household contacts: prophylactic oseltamivir.
- Nasopharyngeal swab PCR. Droplet precautions.
- NO prophylactic Abx for uncomplicated influenza. ***2**
- MC bacterial superinfection post-H1N1 *2: S. pneumoniae.

10. Hepatitis

Hep A

- Fecal-oral. NO chronic. Shedding BEFORE symptoms. Vaccine safe in pregnancy.

Hep B

- Needle-stick from HBeAg+ ~30%.
- Post-exposure unvaccinated: HBIG + vaccine series.
- HBV killed by alcohol rub. Vaccine protects against HDV.
- **Antiviral indications:** cirrhosis, ALF, ALT ≥2× + ↑DNA, reactivation, immunosuppression, HCV/HIV coinfection.
- **1st-line:** Entecavir or Tenofovir.

Hep C *2

- Needle-stick ~3%. HCV Ab+ → HCV RNA PCR next.

11. Other Viral

Meningitis / Encephalitis *2

- MCC viral meningitis: ENTEROVIRUSES.
- MCC viral encephalitis: HSV (temporal lobe).
- **CSF low glucose + high protein + lymphocytes:** TB, crypto, brucella, sarcoid, carcinomatous meningitis. NOT HSV encephalitis.

VZV / Shingles *2

- Tx: SYSTEMIC oral antivirals (NOT topical, NOT antibiotics).
- Hutchinson sign → ophthalmology.
- Multiple/bilateral dermatomes → HIV test.
- Ramsay Hunt: facial palsy + ear/taste.

Rubella *3

- 90% congenital rubella if 1st trimester.
- Contagious ~4 days BEFORE to ~4 days AFTER rash.
- MMR CI in pregnancy. Tx supportive (no acyclovir).

HPV

- Causes: cervical, anal, penile, oropharyngeal, vulvar, vaginal cancers. NOT LIVER (= HBV/HCV).

COVID-19

- Best sample: nasopharyngeal PCR. ***3**

12. Immunodeficiency

By Defect

- Phagocytosis: CGD (catalase+ infections).
- Chemotaxis *2: Hyper-IgE (Job) — abscesses + eczema + high IgE + retained primary teeth.
- Humoral: CVID, Bruton (XLA), Selective IgA.
- Cellular: SCID, DiGeorge → parasitic, fungal, viral, intracellular.

CVID *2

- LOW IgA + IgG. NORMAL B-cell numbers. Adolescence/adulthood.

MC Congenital *2

- Selective IgA deficiency.

13. IE

- Acute / IVDU *3: S. aureus.
- Subacute post-dental *2: S. viridans.
- Prosthetic <2 mo: S. epidermidis.
- GI/GU: Enterococcus.
- Culture-negative: HACEK, Coxiella, Bartonella.
- C. septicum / S. gallolyticus (bovis) endocarditis → COLONOSCOPY (colorectal cancer).

14. Skin/SST/ENT

- Follicular tonsillitis *2: GAS.
- Erysipelas *2: GAS.
- Severe otitis externa (swimmer's) *2: PSEUDOMONAS.
- Common cold: NO antibiotics. ***2**

15. GI Infections

Pre-Formed Toxin (1-6h)

- S. aureus: N/V, cramps, NO FEVER (pre-formed enterotoxin — custard/cream). ***3**
- B. cereus: emetic (reheated rice).

Bloody Diarrhea

- Shigella, Salmonella, Campylobacter, EHEC, E. histolytica.
- NOT bloody: Vibrio cholerae (rice-water).

EHEC

- NO antibiotics (↑HUS risk). ***2**

Viral

- Adults: Norovirus *2 MC. Children: Rotavirus MC.

Typhoid

- Most sensitive: BONE MARROW CULTURE.

16. Syphilis

- Non-treponemal (screen/monitor): RPR, VDRL.
- Treponemal (confirm, lifelong+): FTA-ABS, TPHA.
- Direct: darkfield microscopy of chancre.

17. Zoonoses

- Salmonella enteritidis: chickens/eggs.
- Pasteurella multocida: cat/dog bites.
- Cryptococcus: pigeon droppings.
- Chlamydia psittaci: BIRDS (NOT bats).
- Not from unpasteurized milk: B. anthracis.

18. Infection Control

Rule of 3

- HIV 0.3%, HCV 3%, HBV 30%.

Post-Needle-Stick

- Soap + water. HBV unvaccinated → HBIG + vaccine. HIV → PEP within hours.

Isolation

- Airborne: TB, Measles, Varicella.
- Droplet: Flu, Pertussis, Meningococcus.
- Contact: MRSA, C. diff (soap+water), VRE, RSV.

Hand Hygiene

- Alcohol effective vs enveloped viruses (HBV, HCV, HIV, flu).
- NOT effective vs C. diff spores → SOAP + WATER.
- Gloves NOT a substitute.

★ ID Day-Before Quick-Hits

Memorize Cold

- Rule of 3: HIV 0.3%, HCV 3%, HBV 30%.
- HIV ART: treat ALL at diagnosis.

- PCP prophylaxis: TMP-SMX at CD4 <200.
- PPD ≥5/≥10/≥15 mm.
- SIRS ≥2/4.

Brucellosis

- Gram-neg intracellular, dairy, NOT human-human; B. melitensis most virulent; Doxy+Rif ×6 wk (children/preg: Rif+TMP-SMX); endocarditis = MCC death.

TB

- AFB- ×3 + suspicion → bronchoscopy. INH = drug-induced lupus.

Antibiotic SEs

- FQ: tendinopathy, arthropathy, QT.
- Vanco: red man, nephro, oto (NOT seizures/neuropathy).
- Metronidazole: metallic, disulfiram, neuropathy.
- Worst nephrotoxic combo: vanco + AMG.
- Ceftriaxone NOT antipseudomonal.
- Levofloxacin does NOT trigger G6PD.
- Doxy + FQ CI in pregnancy.
- INH: drug-induced lupus, neuropathy, hepatotoxicity.

Vaccines

- Safe in pregnancy: IM flu, Tdap, HepB, HepA.
- CI: MMR, Varicella, Oral polio, Intranasal flu, Yellow fever.
- Hep B vaccine NOT CI in immunocompromised.

C. diff

- GPC spore-forming; stool TOXIN; alcohol NOT effective; oral vanco or fidaxomicin.

IE

- IVDU/acute: S. aureus. Subacute dental: S. viridans. Prosthetic early: S. epidermidis.
- C. septicum/S. bovis → COLONOSCOPY.

Parasites

- Ascaris: 20-40 cm, Loeffler (NO periorbital edema).
- Enterobius: night perianal itch (NO anemia).
- T. solium: PORK + cysticercosis. T. saginata: BEEF.
- S. haematobium: bladder SCC.
- T-cell deficiency → parasites.

Food Poisoning Timing

- 1-6h: S. aureus, B. cereus emetic — NO fever.
- >16h: Salmonella, Shigella, Campylobacter, EHEC, Vibrio.

Cancer

- HPV: cervical, anal, penile, oropharyngeal SCC. NOT liver.
- S. haematobium: bladder SCC. EBV: nasopharyngeal CA, Burkitt.

Immunodef

- Phagocytosis: CGD. Chemotaxis: Hyper-IgE (Job).
- Humoral: CVID. MC congenital: Selective IgA def.

Final

- MCC viral meningitis: Enteroviruses.
- MCC viral encephalitis: HSV.
- MCC diarrhea adults: Norovirus.

- Otitis externa: Pseudomonas.
- Tonsillitis/erysipelas: GAS.
- Post-H1N1 bacterial: S. pneumoniae.
- NO Abx in EHEC or viral cold.
- Typhoid: bone marrow culture.
- COVID: nasopharyngeal PCR.

FINAL REVISION TABLES

Cross-system high-yield tables — last 10 minutes before exam

Table 1. First-Line Treatments (Memorize Cold)

Condition	First-line Treatment
Stable SVT	IV Adenosine
V-fib / pulseless VT	Unsynchronized defibrillation
Torsades de Pointes	IV Magnesium
A-fib + WPW	Procainamide (NOT adenosine/digoxin/CCB/BB)
Acute pericarditis	NSAIDs + Colchicine
Cardiac tamponade	Immediate pericardiocentesis
Aortic dissection	IV labetalol (HR <60 FIRST, then BP) + CT aorta
Eclampsia	IV Labetalol + IV Magnesium sulfate
Anaphylaxis	IM Adrenaline (NOT antihistamines)
Variceal bleeding	IV octreotide + IV ceftriaxone + EGD ≤12h
SBP	Ceftriaxone/cefotaxime ×5-7d + albumin
Hepatic encephalopathy	Lactulose + treat precipitant
C. difficile	Oral vancomycin or fidaxomicin
Severe asthma exacerbation	O2 + neb albuterol + IV/PO steroids ± Mg
COPD exacerbation (awake + hypercapnic)	BiPAP (NIV)
Massive PE with instability	Thrombolysis (tPA)
IPF	Lung transplant (only therapy improving survival)
HTN urgency / emergency in scleroderma	ACEi (captopril)
Acute gout in CKD/PUD	Colchicine
Class IV lupus nephritis	Pulse methylpred + cyclophosphamide
AS refractory to NSAIDs	TNF-alpha inhibitor (etanercept)
Severe MPA induction	Rituximab
Acute hyperkalemia	IV Ca gluconate → insulin/glucose → remove K
Acute hypercalcemia (severe)	IV NS → calcitonin → zoledronate
Severe symptomatic hyponatremia	3% hypertonic saline
DKA	IV regular insulin + fluids + K replacement
Severe hyperglycemia (HbA1c≥10%)	Insulin (not metformin)
Newly diagnosed T2DM	Metformin + lifestyle
Pregnancy hyperthyroidism (1st trimester)	PTU (switch to methimazole after)
Adrenal crisis	IV hydrocortisone 100 mg + IV NS
Pheochromocytoma pre-op	Alpha-block FIRST, then beta-block
Prolactinoma	Cabergoline (even for macroprolactinomas)
Acromegaly	Transsphenoidal surgery
HIV	Start ART immediately at diagnosis
PCP prophylaxis	TMP-SMX (CD4 <200)
Brucellosis (adult)	Doxycycline + Rifampin ×6 wks
EHEC (E. coli O157:H7)	Supportive ONLY (NO antibiotics)

Condition	First-line Treatment
Shingles	Systemic oral acyclovir/valacyclovir/famciclovir

Table 2. Classic "EXCEPT" Traps

Category	The Exception
Prolonged QT causes	Digoxin (SHORTENS QT)
Pulsus paradoxus causes	HOCM (NOT a cause)
HF precipitants	Venesection (improves HF)
HF survival drugs	Furosemide, Digoxin
HF complications	Type 2 DM
Constrictive pericarditis features	Pulsus alternans, pulmonary edema, emboli
Dilated CM causes	Mitral STENOSIS
A-fib risk factors	Hyperkalemia, hypothyroidism
Secondary HTN causes	Renal tubular acidosis
CAD risk factors	Low homocysteine, increased estrogen
Rupture-prone plaque features	Abundant smooth muscle cells
Thrombolysis ABSOLUTE CI	Active menstrual bleeding (relative only)
Cause of HE	Hyperkalemia (HYPOkalemia is the cause)
IBD EIM tracking activity	PSC, AS, uveitis
UC maintenance	Methotrexate (weak in UC)
Indication for paracentesis	Anemia alone
Risk factor for stones	Hypercitraturia (citrate is protective)
Acute transfusion complications	Iron overload (delayed)
CKD progression factors	Hyperkalemia (consequence, not driver)
Renal glycosuria causes	Addison disease
Cholesterol embolism features	+ANA (NOT a feature)
Severe asthma sign	Expiratory wheezes alone
COPD exacerbation RFs	Normal BMI
Asbestos exposure occupations	Painters
Behcet features	Scleritis (it's UVEITIS)
HLA-B27 conditions	OA, RA, SLE, Sjogren
IPF features	Mosaic attenuation with nodules
ARDS hypoxia mechanism	Hypoventilation (it's shunt)
Sjogren disease activity	Anti-Ro/SSA titres (don't track)
Dermatomyositis features	Erythema nodosum, thrombocytopenia
RA features	DIP joint involvement, uveitis (it's scleritis)
Cushing screen	8 AM cortisol alone
Hypothyroidism associations	Hypokalemia
MM nephropathy mechanism	Tumor lysis hyperuricemia (chemo-related)
Hypogonadism + small testes (Klinefelter)	Soft normal testes (Klinefelter = small FIRM)
Causes of high alk phos in hyperCa	Multiple myeloma (purely lytic, normal AlkP)
Sepsis features	Metabolic alkalosis (it's lactic acidosis)
HPV-associated cancers	Liver cancer (HBV/HCV)
AIDS-defining illnesses	Oral thrush (only esophageal candidiasis is)
Vancomycin SEs	Neuropathy, seizures

Category	The Exception
G6PD hemolysis triggers	Levofloxacin, erythromycin

Table 3. Antibody / Marker → Disease

Marker / Antibody	Disease
Anti-Smith (anti-Sm)	Most specific for SLE
ANA	Most sensitive for SLE (screening)
Anti-dsDNA	SLE activity (lupus nephritis flares)
Anti-Ro/SSA	Sjogren; neonatal lupus + congenital complete heart block
Anti-La/SSB	Sjogren
Anti-centromere	Limited scleroderma (CREST)
Anti-Scl-70 (topoisomerase I)	Diffuse scleroderma + ILD
Anti-RNA polymerase III	Diffuse SSc + scleroderma renal crisis
Anti-Jo-1	Antisynthetase syndrome (myositis + ILD + mechanic hands)
Anti-Mi-2	Classic dermatomyositis (rash + proximal weakness)
Anti-SRP	Necrotizing myopathy with cardiac involvement
Anti-RNP	Mixed connective tissue disease
Anti-CCP	RA (highly specific; predicts severity)
Anti-mitochondrial Ab (AMA)	Primary biliary cholangitis (PBC)
p-ANCA / MPO	MPA, EGPA; PSC
c-ANCA / PR3	GPA (Wegener)
ANCA NEGATIVE	PAN (despite vasculitis)
Anti-PLA2R	Primary membranous nephropathy
Anti-tTG IgA + total IgA	Celiac disease (first-line)
Anti-GBM (linear IF)	Goodpasture (anti-GBM disease)
Lupus anticoagulant / anticardiolipin / anti-beta2GPI	APS
+RF in non-RA pts	Sjogren, scleroderma, chronic liver, HCV/HBV, SBE, cryoglobulinemia, sarcoid
HLA-B27	AS, reactive arthritis, IBD-associated, psoriatic
HLA-B51	Behcet
HLA-DR4	RA
BNP / NT-proBNP	Heart failure (most accurate)
Troponin	MI, myocarditis, PE (RV strain)
CK-MB	Re-infarction (troponin insensitive within 2 wks)
Calcitonin	Medullary thyroid carcinoma
Thyroglobulin	Papillary/follicular thyroid (post-thyroidectomy monitoring)
TSI	Graves disease
TPO antibodies	Hashimoto
IGF-1 (screening) + OGTT GH (confirm)	Acromegaly
β2-microglobulin	Myeloma staging; NHL prognostic
CA-125	Ovarian carcinoma
AFP	HCC (esp HBV/HCV cirrhotics), germ cell tumors
Procalcitonin	Bacterial infection severity / antibiotic guidance

Table 4. Smear / Blood Film Patterns

Smear Finding	Diagnosis / Association
Spherocytes	Hereditary spherocytosis, warm AIHA
Bite cells + Heinz bodies	G6PD deficiency
Schistocytes	MAHA (TTP, HUS, DIC, mechanical valves)
Teardrop cells (dacrocytes)	Myelofibrosis, BM infiltration
Target cells	"HALT": HbC, Asplenia, Liver disease, Thalassemia
Sickle cells	Sickle cell disease
Auer rods	AML (esp M3/APL — multiple Auer rods)
Smudge cells	CLL
Rouleaux formation	Multiple myeloma
Hypersegmented neutrophils + oval macrocytes	B12 / folate deficiency
Howell-Jolly bodies	Functional asplenia
Bands >10% on differential	SIRS / sepsis
Atypical lymphocytes	EBV mononucleosis

Table 5. ECG / Imaging / Procedural One-Liners

Pattern / Finding	Diagnosis
Diffuse concave ST elevation + PR depression	Acute pericarditis
Fixed split S2	ASD
Wide split S2 with loud P2	Massive PE / RV strain
Reversed split S2	LBBB, severe AS, malignant HTN (NOT PE)
Prominent R in V1	Posterior MI, WPW, RVH, Duchenne
Irregularly irregular, no P waves	Atrial fibrillation
Chaotic wide QRS, no P, pulseless	V-fib → defibrillate
S1Q3T3	Classic PE pattern (insensitive)
Electrical alternans	Pericardial effusion / tamponade
Peaked T waves → wide QRS → sine wave	Hyperkalemia progression
Beading on MRCP (intra + extrahepatic ducts)	Primary sclerosing cholangitis
Honeycombing + traction bronchiectasis on HRCT	UIP / IPF
Mosaic attenuation + centrilobular nodules	Hypersensitivity pneumonitis
Bilateral hilar lymphadenopathy	Sarcoidosis (Lofgren = + EN + arthritis)
"Currant jelly" sputum + bulging fissure	Klebsiella pneumonia
Cavitary upper lobe lesion	TB, squamous cell lung CA, GPA
Spike-and-dome on EM (renal biopsy)	Membranous nephropathy
Kimmelstiel-Wilson nodules	Diabetic nephropathy
Onion-skin periductal fibrosis	Primary sclerosing cholangitis
"Pencil-in-cup" deformity	Psoriatic arthritis (unique)
Chondrocalcinosis on X-ray	Pseudogout (CPPD)
Bamboo spine / syndesmophytes	Ankylosing spondylitis
Saddle-nose deformity + septal perforation	GPA (Wegener)
Livedo reticularis + delayed AKI post-cath	Cholesterol embolism
Muddy-brown granular casts	ATN
WBC casts	Pyelonephritis or AIN
RBC casts + dysmorphic RBCs	Glomerular hematuria
Heme-positive dipstick, NO RBCs on microscopy	Rhabdomyolysis / hemoglobinuria

Table 6. Cytogenetic Translocations

Translocation / Mutation	Disease
t(9;22) — Philadelphia, BCR-ABL	CML (+ poor-prognosis ALL)
t(15;17) — PML-RARα	APL / AML-M3 → ATRA
inv(16)	AML-M4 (favorable)
t(8;21)	AML (favorable)
Chromosome 7 deletion (-7/7q-)	AML — UNFAVORABLE
t(8;14) — c-myc	Burkitt lymphoma ("starry sky")
t(14;18) — BCL-2	Follicular lymphoma
t(11;14) — cyclin D1	Mantle cell lymphoma
Intron 22 inversion of F8	Severe hemophilia A (~45%)
Factor V Leiden mutation	MC inherited thrombophilia
JAK2 V617F	Polycythemia vera (>95%); ET, myelofibrosis (variable)
HFE C282Y	Hereditary hemochromatosis
ATP7B mutation	Wilson disease
COL4A5 (X-linked)	Alport syndrome
MYH7, MYBPC3 (sarcomere genes)	HCM (AD in 50%)
G6PD Mediterranean variant	563 C→T mutation
47,XXY	Klinefelter
45,XO	Turner syndrome

Table 7. "Best Next Step" Pearls

Clinical Scenario	Best Next Step
Suspected aortic dissection	IV labetalol (HR control) + CT aorta with contrast
Suspected tamponade	Pericardiocentesis (echo confirms)
Acute mesenteric ischemia	CT angiography
Renovascular HTN suspected	Renal Doppler US (NOT empirical ACEi)
Coarctation suspected	Thoracic CT angiography
New rectal bleeding age >40-50	Colonoscopy
Variceal bleed (cirrhotic)	Octreotide + ceftriaxone + EGD ≤12h
Melena + hemodynamically stable	Upper endoscopy
Clostridium septicum bacteremia / endocarditis	Colonoscopy (occult colon cancer)
UC + new obstructive jaundice	MRCP (suspect PSC)
Recurrent DU + diarrhea	Fasting serum gastrin + CT (Zollinger-Ellison)
Suspected celiac disease (first test)	Anti-tTG IgA + total IgA
H. pylori eradication confirmation	Urea breath test or stool antigen (NOT serology)
SBP suspicion	Diagnostic paracentesis (PMN ≥250)
Atypical CSF (low glucose, high protein, lymphocytes)	TB / fungal / brucellosis workup
Suspected DI	Water deprivation test → desmopressin
Suspected SIADH	Plasma + urine osm + Na; rule out cortisol/thyroid first
Hypoglycemia workup	72h fast + insulin/C-peptide/proinsulin/SU screen/βOHB
Suspected pheochromocytoma	24h urinary fractionated metanephrines (or plasma free)
Adrenal incidentaloma	Metanephrines FIRST (rule out pheo before biopsy)
Suspected Cushing	24h urine cortisol / late-night salivary cortisol / overnight 1mg dex
After confirming Cushing	Measure ACTH
Suspected primary hyperaldosteronism	Plasma aldosterone-to-renin ratio (PAC:PRA)
Confirmed acromegaly	OGTT with GH measurement → pituitary MRI
Klinefelter suspected	KARYOTYPE
Suspected hemochromatosis	Iron studies (ferritin, TSAT, TIBC) → HFE genetics
Suspected myeloma	SPEP + serum free light chains; SPEP/UPEP
Suspected APS	Lupus anticoagulant + anticardiolipin + anti-β2GPI (mixing study)
Cancer suspected in older dermatomyositis pt	CT chest/abdomen/pelvis (paraneoplastic)
Suspected GCA + visual symptoms	Start high-dose steroids IMMEDIATELY (then biopsy)
Suspected AS + normal X-ray	MRI sacroiliac joints
Sputum AFB neg ×3 with high TB suspicion	Bronchoscopy with BAL
Acute HIV exposure (<3 weeks)	HIV RNA PCR (antibody still negative)
Needle-stick HCV Ab+	HCV RNA PCR (viral load)
Suspected acute HCV (window period)	HCV RNA PCR (antibody may be negative)
Pancreatic insufficiency suspected	Fecal elastase
Inflammatory vs non-inflammatory diarrhea	Stool lactoferrin / calprotectin
Post-ileocecal resection diarrhea	Empiric cholestyramine (bile-acid diarrhea)
Hyperprolactinemia work-up	Check TSH + drug history before imaging

Clinical Scenario	Best Next Step
Hypercalcemia + family history	Urine Ca/Cr ratio (rule out FHH first)
Suspected typhoid	Bone marrow culture (most sensitive)
COVID-19 diagnostic sample	Nasopharyngeal swab PCR