



FREE STUDY COMPANION

Reference Lab Ranges for the **BCPS Exam**

172 high-yield lab ranges and decision thresholds across 18 topics, checked against current guidelines (2026).

Normal ranges

Decision thresholds

Drug levels

Renal cut-offs

Guideline targets

INSIDE THE RXBLUEPRINT QUESTION BANK

Case-based BCPS prep that thinks like the exam

This book gives you the numbers. The question bank teaches you what to do with them, case by case, the way the BCPS exam asks.

3,000+

case-based BCPS questions

18

organ systems & disease areas

85+

disease-state study guides

150

question mock exam, weighted like the real one



Case-based questions

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Learn why the answer is right and why each distractor is wrong: four lessons per question.



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See accuracy by organ system and the nine BCPS content domains, weakest first.



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A quick, clean review of each major condition on the BCPS exam, one click from every module quiz.



Written & reviewed by board-certified pharmacists

Authored and peer-reviewed by board-certified clinical pharmacists; updated as guidelines change.



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How to use this book

Study the decision, not just the number

- 1. Read the **range / threshold** column first.
- 2. Cover the **why it matters** column and say what you would do.
- 3. Check yourself, then practice the same decision in case questions.

Keep in mind

- 1. Reference ranges vary by laboratory; use your own lab's values in practice.
- 2. Thresholds follow current U.S. guidelines as of October 2026.
- 3. For study only, not a substitute for clinical judgement.

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18 topics · 172 values

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Core chemistry & hematology

Typical adult reference ranges. Always use your lab's own ranges.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Sodium	135–145 mEq/L	Hyponatremia symptoms usually appear at ≤ 120 ; correct glucose: +1.6 mEq/L per 100 mg/dL above 100
Potassium	3.5–5.0 mEq/L	< 3.0 symptomatic; ≥ 6.0 –6.5 or ECG changes = emergency
Chloride / bicarbonate	96–106 / 22–26 mEq/L	Used for the anion gap and acid–base work-up
BUN / serum creatinine	7–20 / 0.6–1.2 mg/dL	BUN:SCr > 20 suggests a prerenal cause
Fasting glucose	70–99 mg/dL	100–125 = impaired fasting glucose; ≥ 126 = diabetes
Calcium (total / ionized)	8.5–10.5 mg/dL / 1.1–1.3 mmol/L	Corrected Ca = measured Ca + $0.8 \times (4 - \text{albumin})$
Magnesium	1.7–2.3 mg/dL	Replete before potassium; keep ≥ 2 in arrhythmia risk
Phosphorus	2.5–4.5 mg/dL	Drops in refeeding syndrome
Albumin	3.5–5.0 g/dL	Low albumin raises free phenytoin and lowers measured Ca and anion gap
Plasma osmolality	275–295 mOsm/kg	Calc = $2 \text{ Na} + \text{glucose}/18 + \text{BUN}/2.8$; osmolal gap > 10 suggests a toxic alcohol
Hemoglobin	M 13.5–17.5 · F 12–16 g/dL	Anemia: < 13 (men), < 12 (women)
WBC / platelets	4,000–11,000 / 150,000–450,000 per mm ³	Thrombocytopenia $< 150,000$; bleeding risk rises $< 50,000$
AST / ALT	≈ 10 –40 U/L	Hepatotoxicity signal usually $> 3 \times \text{ULN}$ (with symptoms) or $> 5 \times \text{ULN}$
Total bilirubin	0.3–1.2 mg/dL	Child-Pugh points start at ≥ 2 mg/dL

Cardiology

Acute and chronic care: heart failure, arrhythmias, lipids, hypertension.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
BNP / NT-proBNP	< 100 / < 300 pg/mL	Below these, acute HF is unlikely; sacubitril raises BNP (use NT-proBNP)
Troponin	$> 99\text{th percentile URL}$	Rise and/or fall = myocardial injury; with ischemia = MI
Potassium in HF / arrhythmia	Keep K ≥ 4.0 mEq/L, Mg ≥ 2.0 mg/dL	Lowers arrhythmia and torsades risk
MRA start / stop	Start if K < 5.0 and eGFR > 30 ; reduce/hold if K > 5.5	Spirolactone and eplerenone in HFrEF
ACEI / ARB / ARNI	SCr rise $\leq 30\%$ acceptable	Caution if K > 5.0 , SCr > 3 mg/dL or SBP < 80 –90

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Digoxin (HF)	0.5–0.9 ng/mL	Higher levels add toxicity, not benefit; low K and Mg increase toxicity
QTc	Normal ≤ 450 (M) / ≤ 460 (F) ms	> 500 ms or $\uparrow > 60$ ms: torsades risk; dofetilide not started if > 440 ms
SGLT2 inhibitor in HF	Dapagliflozin eGFR ≥ 25 · empagliflozin ≥ 20	Start for HF benefit regardless of diabetes
LDL-C goals (2026 ACC/AHA)	Very-high-risk ASCVD < 55 · other ASCVD < 70 mg/dL	Matching non-HDL-C goals < 85 and < 100 mg/dL
LDL-C ≥ 190 mg/dL	Severe hypercholesterolemia	High-intensity statin without risk calculation; screen for FH
Triglycerides	Normal < 150 · ≥ 500 severe	≥ 1000 mg/dL = pancreatitis risk; consider TG-lowering therapy
Lp(a)	≥ 125 nmol/L (≈ 50 mg/dL)	Risk-enhancing factor; measure once in adults
Blood pressure (2025 AHA/ACC)	Goal $< 130/80$ mm Hg	$> 180/120$ = severe; with organ damage = emergency ($\downarrow$ MAP $\leq 25\%$ in first hour)
Hemodynamics	MAP 70–100 · CI 2.5–4 L/min/m ² · PCWP 8–12 mm Hg	Cold: CI < 2.2 ; wet: PCWP > 18 (15–18 optimal in HF)

03

Anticoagulation

Monitoring targets, renal cut-offs and reversal.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
INR (most indications)	2.0–3.0 (target 2.5)	AF, VTE, bioprosthetic valve
INR (mechanical valve)	Mitral or high-risk aortic: 2.5–3.5	Low-risk mechanical aortic (bileaflet): 2.0–3.0
UFH monitoring	aPTT 1.5–2.5 $\times$ control or anti-Xa 0.3–0.7 IU/mL	Check 6 h after start or any rate change
LMWH anti-Xa (peak, 4 h)	Treatment 0.6–1.0 (q12h) · 1.0–2.0 IU/mL (daily)	Check in renal impairment, obesity, pregnancy
Platelets on heparin	Fall $\geq 50\%$ at days 5–10	Suspect HIT: stop all heparin, use 4Ts score, start non-heparin anticoagulant
D-dimer	< 500 ng/mL FEU	Rules out VTE only when pretest probability is low; age-adjust > 50 y (age $\times 10$)
Enoxaparin & fondaparinux	CrCl < 30 mL/min	Enoxaparin 1 mg/kg once daily; fondaparinux contraindicated
Apixaban (AF) dose reduction	2.5 mg BID if ≥ 2 of: age ≥ 80 , weight ≤ 60 kg, SCr ≥ 1.5	Otherwise 5 mg BID
Rivaroxaban / edoxaban (AF)	CrCl 15–50: rivaroxaban 15 mg, edoxaban 30 mg daily	Avoid edoxaban for AF if CrCl > 95
Dabigatran (AF)	CrCl 15–30: 75 mg BID (US)	Avoid CrCl < 15 or on dialysis
Warfarin → DOAC switch	Start apixaban/dabigatran when INR < 2.0	Rivaroxaban < 3.0 ; edoxaban ≤ 2.5

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Supratherapeutic INR, no bleeding	INR 4.5–10: hold doses	INR > 10: also give oral vitamin K 2.5–5 mg
4F-PCC dosing by INR	2–< 4: 25 · 4–6: 35 · > 6: 50 units/kg	Plus IV vitamin K 10 mg for major warfarin bleeding

04 Infectious diseases

Severity markers, CSF and drug monitoring.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
CSF (normal)	Glucose 40–80 mg/dL ($\approx$ 2/3 serum) · protein < 50 · WBC < 5	Bacterial: glucose < 40, protein > 150–200, WBC 1,000–5,000 (neutrophils)
CURB-65	BUN $\geq$ 20, RR $\geq$ 30, SBP < 90 or DBP $\leq$ 60, age $\geq$ 65, confusion	0–1 outpatient · 2 consider admit · $\geq$ 3 severe
Severe CAP (minor criteria)	BUN $\geq$ 20, Plt < 100,000, WBC < 4,000, PaO ₂ /FiO ₂ $\leq$ 250	$\geq$ 3 minor criteria → ICU-level care
C. difficile severity	Severe: WBC $\geq$ 15,000 or SCr > 1.5 mg/dL	Fulminant: hypotension, shock, ileus or megacolon
Vancomycin	AUC ₂₄ 400–600 mg·h/L	AUC dosing replaces trough 15–20 targets for serious MRSA
Aminoglycosides	Gentamicin/tobramycin peak 5–10, trough < 1–2 mcg/mL	Extended-interval: trough undetectable; amikacin peak 20–30
Procalcitonin	< 0.25 ng/mL	Supports stopping antibiotics in lower respiratory infection
Urine culture	$\geq 10^5$ CFU/mL	Treat bacteriuria only with symptoms (or pregnancy / urologic procedure)

05 HIV & tuberculosis

CD4 counts drive opportunistic-infection prophylaxis.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
CD4 count	Normal 500–1,500 cells/mm ³	AIDS-defining < 200 cells/mm ³
PJP prophylaxis	Start CD4 < 200	Stop when > 200 for $\geq$ 3 months on ART
Toxoplasma prophylaxis	IgG+ and CD4 < 100	TMP-SMX DS daily covers both PJP and toxo
MAC prophylaxis	CD4 < 50 only if not starting ART right away	Not needed when ART starts immediately
Viral load	Suppressed < 50 copies/mL	Virologic failure > 200 copies/mL → resistance test
Severe PJP	PaO ₂ < 70 mm Hg or A–a gradient $\geq$ 35	Add prednisone within 72 h
Tenofovir	TDF: CrCl $\geq$ 60 (PrEP) · TAF: CrCl $\geq$ 30	Check renal function and urinalysis
HLA-B*5701	Must be negative	Before abacavir (hypersensitivity)

TEST	RANGE / THRESHOLD	WHY IT MATTERS
TST induration	≥ 5 mm (HIV, contacts) · ≥ 10 (healthcare, recent arrivals) · ≥ 15 (no risk)	IGRA preferred after BCG vaccine

06

Critical care

Shock, acid–base and ICU targets.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
MAP target (septic shock)	≥ 65 mm Hg	Norepinephrine first line; add vasopressin at 0.25–0.5 mcg/kg/min
Lactate	< 2 mmol/L	≥ 4 : give 30 mL/kg crystalloid; septic shock = vasopressors + lactate > 2
Arterial blood gas	pH 7.35–7.45 · PaCO ₂ 35–45 · PaO ₂ 80–100 · HCO ₃ 22–26	Winter's: expected PaCO ₂ = $1.5 \times \text{HCO}_3 + 8 (\pm 2)$
Anion gap	$\text{Na} - (\text{Cl} + \text{HCO}_3) = 6\text{--}12$ mEq/L	Add 2.5 for each 1 g/dL albumin below 4
ARDS (PaO₂/FiO₂)	≤ 300 mild · ≤ 200 moderate · ≤ 100 severe	Low tidal volume 6 mL/kg ideal body weight
ICU glucose	Target 140–180 mg/dL	Start insulin ≥ 180 ; avoid 80–110 (hypoglycemia, mortality)
Transfusion	Hgb < 7 g/dL (< 8 with active CV disease)	Restrictive strategy is standard
Stress ulcer prophylaxis	Plt $< 50,000$, INR > 1.5 or aPTT $> 2 \times$ control	Coagulopathy is a major risk factor (plus mechanical ventilation > 48 h)
Propofol	Triglycerides	Monitor at 48 h; reduce or stop if $> 400\text{--}500$ mg/dL
Lorazepam infusion	Osmolal gap $> 10\text{--}12$	Suggests propylene glycol toxicity
Intracranial pressure	Normal 5–15 mm Hg	Treat sustained ICP $\geq 20\text{--}22$ mm Hg

07

Fluids, electrolytes & nutrition

Safe correction rates and nutrition limits.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Hyponatremia correction	Limit 8–10 mEq/L in 24 h (≤ 8 if high ODS risk)	Severe symptoms: 3% saline to raise 4–6 mEq/L quickly
Hypernatremia correction	≤ 0.5 mEq/L/h ($\approx 10\text{--}12$ mEq/L/day) if chronic	Too fast → cerebral edema
Potassium replacement	≈ 10 mEq KCl raises K by 0.1 mEq/L	Peripheral IV ≤ 10 mEq/h; central with ECG up to 20 mEq/h
Hyperkalemia	> 5.0 · ECG changes usually $\geq 6.0\text{--}6.5$	IV calcium for ECG changes; insulin + dextrose lowers K 0.5–1.5 in 1 h
Magnesium	1.7–2.3 mg/dL	Low Mg makes hypokalemia refractory

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Phosphorus (refeeding)	< 2.5 mg/dL	Start feeds slowly and replete phosphorus, K and Mg
PN peripheral line	Osmolarity ≤ 900 mOsm/L	Higher needs a central line
Dextrose infusion	≤ 4–5 mg/kg/min	Higher rates → hyperglycemia, fatty liver, excess CO ₂
Glucose on PN / EN	140–180 mg/dL	Add insulin to the PN bag if persistently high
Triglycerides on IV lipid	Hold or reduce if > 400 mg/dL	Risk of pancreatitis
Albumin / prealbumin	3.5–5 g/dL / 16–40 mg/dL	Inflammation markers; not reliable nutrition markers

08 Endocrine & metabolic

Diabetes, DKA/HHS and thyroid.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Diabetes diagnosis	A1C ≥ 6.5% · FPG ≥ 126 · 2-h OGTT ≥ 200 · random ≥ 200 + symptoms	Prediabetes: A1C 5.7–6.4%, FPG 100–125, 2-h 140–199
A1C goal	< 7% for most · < 8% if older, frail or limited life expectancy	Check every 3 months if above goal, 6 months if at goal
Self-monitoring targets	Pre-meal 80–130 · peak post-meal < 180 mg/dL	CGM: time in range (70–180) > 70%, time below < 4%
Hypoglycemia	Level 1 < 70 · Level 2 < 54 mg/dL	Level 3 = needs assistance; rule of 15 g carbohydrate
DKA (2024 ADA consensus)	Glucose ≥ 200 · pH < 7.3 or HCO ₃ < 18 · β-OHB ≥ 3.0 mmol/L	Hold insulin if K < 3.5; add dextrose when glucose < 250
DKA resolution	β-OHB < 0.6 mmol/L + pH ≥ 7.3 or HCO ₃ ≥ 18	Overlap SC basal insulin 1–2 h before stopping the drip
HHS	Glucose ≥ 600 · osmolality > 300 · pH ≥ 7.3	Little or no ketosis
Metformin and eGFR	Don't start < 45 · stop < 30	eGFR 30–45: max 1,000 mg/day
Finerenone	Start eGFR ≥ 25 and K ≤ 4.8	10 mg if eGFR 25–59, 20 mg if ≥ 60; hold if K > 5.5
Albuminuria (UACR)	< 30 normal · 30–300 moderate · > 300 mg/g severe	Confirm with 2 of 3 samples over 3–6 months
TSH / free T4	0.5–4.5 mIU/L / 0.8–1.8 ng/dL	Recheck TSH 6–8 weeks after a levothyroxine change
Subclinical hypothyroidism	Treat if TSH ≥ 10 mIU/L	4.5–10: individualize (symptoms, pregnancy, older age)

TEST	RANGE / THRESHOLD	WHY IT MATTERS
AKI (KDIGO)	SCr $\uparrow \geq 0.3$ mg/dL in 48 h or $\geq 1.5\times$ baseline in 7 days	Or urine output < 0.5 mL/kg/h for 6 h
Prerenal vs ATN	FENa $< 1\%$ / $> 2\%$ · urine Na < 20 / > 40 mEq/L	FENa unreliable on diuretics → use FEUrea $< 35\%$
CKD GFR stages	G1 ≥ 90 · G2 60–89 · G3a 45–59 · G3b 30–44 · G4 15–29 · G5 < 15	CKD = abnormality for > 3 months
CKD albuminuria stages	A1 < 30 · A2 30–300 · A3 > 300 mg/g	Stage by GFR and albuminuria together
Blood pressure (KDIGO 2024)	SBP < 120 mm Hg if tolerated	ACEI or ARB first line with albuminuria
SGLT2 inhibitor in CKD	Start if eGFR ≥ 20	Continue below 20 until dialysis
Metabolic acidosis	Treat if $\text{HCO}_3^- < 18$ mmol/L	Oral sodium bicarbonate or diet change
CKD anemia	Start ESA if Hgb < 10 g/dL	Avoid targeting > 11.5 (stroke and CV risk)
Iron (CKD)	Give iron if TSAT $\leq 30\%$ and ferritin ≤ 500 ng/mL	Replete iron before or alongside an ESA
CKD-MBD	Phosphorus toward 2.5–4.5 · avoid hypercalcemia	Dialysis PTH 2–9 $\times$ ULN; 25-OH vitamin D > 30 ng/mL
Dialysis adequacy	URR $\geq 65\%$ · Kt/V ≥ 1.2	PD peritonitis: effluent WBC $> 100/\mu\text{L}$ with $> 50\%$ neutrophils

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Phenytoin	Total 10–20 · free 1–2 mcg/mL	Low albumin: $\text{C}_{\text{adj}} = \text{C}_{\text{obs}} \div (0.2 \times \text{albumin} + 0.1)$; free level preferred
Carbamazepine	4–12 mcg/mL	Autoinduction over 3–5 weeks; HLA-B*1502 before use in at-risk Asian ancestry
Valproate	50–100 mcg/mL (up to 125 for mania)	Monitor LFTs, platelets, ammonia
Phenobarbital	15–40 mcg/mL	Long half-life; strong enzyme inducer
Status epilepticus glucose	< 60 mg/dL	Give thiamine 100 mg IV, then dextrose
Thrombolysis BP	$< 185/110$ before · $< 180/105$ for 24 h after	Alteplase or tenecteplase
Thrombolysis exclusions	Plt $< 100,000$ · INR > 1.7 · aPTT > 40 s · PT > 15 s	Glucose < 50 mg/dL: correct first
Teriflunomide washout	< 0.02 mcg/mL on 2 tests 14 days apart	Use cholestyramine or charcoal before pregnancy

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Lithium	Acute mania 0.8–1.2 · maintenance 0.6–1.0 mEq/L	Draw 12 h after dose; toxicity > 1.5, severe > 2.5
Lithium monitoring	SCr, TSH, calcium, sodium	NSAIDs, ACEI/ARB, thiazides and dehydration raise levels
Valproate (bipolar)	50–125 mcg/mL	Check LFTs, platelets and amylase/lipase if abdominal pain
Clozapine ANC	Start if $\geq 1,500/\mu\text{L}$ ($\geq 1,000$ for BEN)	1,000–1,499: monitor 3× weekly · 500–999: interrupt · < 500: stop
Antipsychotic metabolic monitoring	Weight, waist, BP, A1C/FPG, lipids	Baseline, 12 weeks, then yearly (weight monthly early on)
Citalopram	QTc > 500 ms	Max 40 mg/day (20 mg if > 60 y or CYP2C19 poor metabolizer)
Methadone	QTc > 450 discuss · > 500 ms reduce or stop	ECG at baseline, 30 days and yearly
Alcohol withdrawal (CIWA-Ar)	< 8–10 mild · 10–15 moderate · > 15 severe	Symptom-triggered benzodiazepine dosing

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Preeclampsia	BP $\geq 140/90$ after 20 weeks + proteinuria ≥ 300 mg/24 h or UPCR ≥ 0.3	Severe: $\geq 160/110$, Plt < 100,000, SCr > 1.1, LFTs $2\times$ ULN
Severe BP in pregnancy	$\geq 160/110$ mm Hg	Treat within 30–60 min: IV labetalol, IV hydralazine or oral nifedipine
Magnesium sulfate	4.8–8.4 mg/dL therapeutic	Reflexes lost ≈ 9 –12; respiratory depression ≈ 12 –16 mg/dL; antidote: calcium gluconate
GDM one-step (75 g)	Fasting ≥ 92 · 1 h ≥ 180 · 2 h ≥ 153 mg/dL	One value meets the diagnosis
Pregnancy glucose targets	Fasting < 95 · 1 h < 140 · 2 h < 120 mg/dL	A1C < 6% if achievable without hypoglycemia
Combined hormonal contraception	BP $\geq 160/100$ = unacceptable risk	BP 140–159/90–99: risks usually outweigh benefits
Bone density T-score	≤ -2.5 osteoporosis · -1 to -2.5 low bone mass	Treat low bone mass if FRAX hip $\geq 3\%$ or major $\geq 20\%$
Vitamin D (25-OH)	Goal ≥ 30 ng/mL (≥ 20 adequate for most)	Check before starting antiresorptive therapy
Bisphosphonates	Avoid if CrCl < 30–35 mL/min	Alendronate/zoledronic acid < 35; risedronate/ibandronate < 30

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Testosterone deficiency	< 300 ng/dL on 2 morning samples	With symptoms; check hematocrit (hold if > 54%) and PSA

13 Oncology supportive care

Neutropenia, transfusion and oncologic emergencies.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
ANC	WBC × (% neutrophils + % bands)	Neutropenia < 1,500 · severe < 500 · profound < 100
Febrile neutropenia	T ≥ 38.3 °C once or ≥ 38.0 °C for 1 h + ANC < 500	Or expected to fall below 500 in 48 h → empiric antipseudomonal β-lactam within 1 h
Fit for chemotherapy	ANC ≥ 1,000–1,500 · Plt ≥ 75,000–100,000	Regimen-specific; delay or dose-reduce below
Platelet transfusion	Prophylactic at ≤ 10,000/mm ³	Higher thresholds for bleeding or procedures
Chemotherapy-induced anemia	Consider ESA when Hgb < 10 g/dL	Use the lowest dose to avoid transfusion; check iron (TSAT < 20%)
Hypercalcemia of malignancy	Corrected Ca < 12 mild · 12–14 moderate · > 14 severe	Fluids + calcitonin + zoledronic acid or denosumab
Tumor lysis (lab)	Uric acid ≥ 8 · K ≥ 6 · phos ≥ 4.5 mg/dL · Ca ≤ 7	Clinical TLS: SCr ≥ 1.5× ULN, arrhythmia or seizure
Rasburicase	Check G6PD first	Uric acid samples must go on ice
High-dose methotrexate	Leucovorin until level < 0.05–0.1 μmol/L	Glucarpidase if levels stay high with kidney injury

14 Pharmacokinetics & drug levels

Therapeutic ranges and hepatic scoring.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Digoxin	0.5–0.9 ng/mL (HF)	Draw ≥ 6 h after dose (distribution)
Theophylline	5–15 mcg/mL	Smoking, carbamazepine and rifampin lower levels; ciprofloxacin raises them
Tacrolimus / cyclosporine	≈ 5–15 ng/mL / 100–250 ng/mL troughs	Depends on organ and time after transplant
Infliximab / adalimumab troughs	≥ 5 / ≥ 7.5 mcg/mL	Check if response is lost; test for anti-drug antibodies
Cockcroft-Gault	CrCl = (140 – age) × wt ÷ (72 × SCr) × 0.85 if female	Most renal dosing labels use CrCl
Child-Pugh	Bilirubin < 2 / 2–3 / > 3 · albumin > 3.5 / 2.8–3.5 / < 2.8 · INR < 1.7 / 1.7–2.3 / > 2.3	Plus ascites and encephalopathy; class A 5–6, B 7–9, C 10–15

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Spontaneous bacterial peritonitis	Ascitic PMN ≥ 250 cells/mm ³	Treat; add IV albumin if SCr > 1, BUN > 30 or bilirubin > 4
SBP prophylaxis	Ascitic protein < 1.5 g/dL + renal or liver dysfunction	Or any prior SBP or GI bleed with cirrhosis
Alcohol-associated hepatitis	Maddrey discriminant function ≥ 32	Consider prednisolone 40 mg/day $\times$ 28 days
Upper GI bleed	Transfuse Hgb < 7 g/dL	Target 7–9 g/dL; avoid over-transfusion in varices
Acute pancreatitis	Lipase > 3 $\times$ ULN	TG > 1,000 mg/dL and alcohol are classic causes
Hepatitis B treatment	ALT > 2 $\times$ ULN + HBV DNA > 20,000 (HBeAg+) or > 2,000 IU/mL (HBeAg–)	Entecavir or tenofovir (TAF if bone/renal risk)
Hepatitis C cure	Undetectable HCV RNA 12 weeks after therapy (SVR12)	Check HBsAg before DAA (HBV reactivation)
Thiopurines	TPMT and NUDT15 genotype first	6-TGN 230–450 pmol/8 $\times$ 10 ⁸ RBC
JAK inhibitors (IBD)	Hold: ALC < 500, ANC < 1,000, Hgb < 8 g/dL	Check lipids at 4–8 weeks

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Serum urate	Hyperuricemia > 6.8 mg/dL	Treat-to-target < 6 (< 5 with tophi)
Start urate-lowering therapy	≥ 2 flares/year, tophi or joint damage	Consider: CKD ≥ 3 , urate > 9 or kidney stones
Allopurinol	HLA-B*5801 in Southeast Asian and African American patients	Start ≤ 100 mg/day (lower in CKD) and titrate
Colchicine and renal function	CrCl < 30: reduce dose	Avoid with strong CYP3A4/P-gp inhibitors
BPH and PSA	PSA > 1.5 ng/mL or prostate > 30 g	Predicts benefit from a 5-ARI; 5-ARIs halve PSA
Vitamin B12	< 200 deficient · 200–300 borderline (pg/mL)	Borderline: check methylmalonic acid
A1C in older adults	< 7.0–7.5% healthy · < 8.0% complex	Avoid hypoglycemia; deintensify sulfonylureas and insulin
Nitrofurantoin	Avoid if CrCl < 30 mL/min	Beers Criteria; low efficacy and toxicity

17 Pulmonology

COPD, asthma and oxygen.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
COPD diagnosis	Post-bronchodilator FEV ₁ /FVC < 0.70	GOLD 1 ≥ 80% · 2: 50–79% · 3: 30–49% · 4 < 30%
Blood eosinophils (COPD)	≥ 300 favor ICS · 100–299 consider · < 100 little benefit	Dupilumab is an option for COPD with eosinophils ≥ 300
Long-term oxygen	PaO ₂ ≤ 55 mm Hg or SaO ₂ ≤ 88%	56–59 mm Hg with cor pulmonale or Hct > 55%
Asthma biologics	Eosinophils ≥ 150–300/μL (anti-IL-5/5R)	Omalizumab: IgE 30–700 IU/mL; FeNO ≥ 25 ppb supports dupilumab
FeNO	> 50 ppb in adults	Likely response to inhaled corticosteroids
Exacerbation severity	PEF or FEV ₁ < 40% predicted = severe	SaO ₂ < 90% suggests a life-threatening attack
Roflumilast	Severe COPD (FEV ₁ < 50%) with chronic bronchitis	Exacerbations despite inhaled therapy

18 Pediatrics

Fever and neonatal infection thresholds.

TEST	RANGE / THRESHOLD	WHY IT MATTERS
Fever in infants	≥ 38.0 °C (100.4 °F)	Ages 8–60 days: follow a febrile-infant pathway (UA, blood culture, inflammatory markers)
Neonatal CSF (normal)	Glucose 32–121 mg/dL · protein 19–149 mg/dL	Higher protein and WBC than older children
Ceftriaxone in neonates	Avoid with hyperbilirubinemia or IV calcium	Use cefotaxime or cefepime instead
Blood lead	≥ 3.5 mcg/dL (CDC reference)	Find the source; chelate at ≥ 45 mcg/dL

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