CLINICALJUDGE™ · MASTER STUDY GUIDE

PHARMACOLOGY MASTER REFERENCE

Every high-yield drug class on the 2026 Next-Generation NCLEX-RN — organized by body system with mechanism, side effects, nursing priorities, antidotes, and the traps that cost points. Plus master tables for insulins, therapeutic levels, and reversal agents.

2026 NGN BLUEPRINT | PHARMACOLOGICAL & PARENTERAL THERAPIES | ~60 DRUG CLASSES | SUFFIX PATTERNS | ANTIDOTES & LEVELS | BLACK-BOX WARNINGS

RED	BLUE	GREEN	ORANGE	YELLOW	PURPLE	TEAL
CRITICAL SE / TOXICITY	MECHANISM / ACTION	NURSING CARE	INTERACTIONS	NCLEX TRAPS	DRUG CLASS	ANTIDOTE / PT. ED

℞ UNIVERSAL MED-SAFETY FRAME

Always: 6 Rights (right patient/drug/dose/route/time/documentation) · check 2 identifiers · assess for allergies · know therapeutic range & antidote · hold/recheck a parameter (HR, BP, K^+, level) before high-alert drugs.

01 CARDIOVASCULAR DRUGS

PERFUSION · RHYTHM · COAGULATION · LIPIDS

BETA-BLOCKERS

"-olol" · metoprolol, propranolol, carvedilol, atenolol

ACTION

Block beta-receptors → ↓HR, ↓BP, ↓contractility, ↓myocardial O_2 demand.

SIDE EFFECTS

Bradycardia, hypotension, fatigue, bronchospasm (nonselective), masks hypoglycemia signs, sexual dysfunction.

NURSING

Hold if HR <60 or SBP <90–100; taper—never stop abruptly (rebound HTN/angina); caution in asthma & diabetics.

TRAP

Masks hypoglycemia — tachycardia/tremor are blunted, so teach diabetics to monitor glucose. Never stop suddenly.

ACE INHIBITORS

"-pril" · lisinopril, enalapril, captopril

ACTION

Block angiotensin I→II → vasodilation, ↓BP, ↓afterload; renal & cardiac protection.

SIDE EFFECTS

Dry hacking cough | Angioedema | Hyperkalemia first-dose hypotension, ↑creatinine.

NURSING

Monitor K^+ & renal function; avoid K-sparing diuretics/salt substitutes; report facial/throat swelling immediately.

TRAP

Contraindicated in pregnancy (teratogenic). Angioedema = stop drug, never rechallenge. Cough → switch to ARB.

ARBS

"-sartan" · losartan, valsartan

ACTION

Block angiotensin II receptors → vasodilation, ↓BP. Used when ACE cough intolerable.

SIDE EFFECTS

Hyperkalemia, hypotension, dizziness, ↑creatinine — but **less cough** than ACE.

TRAP

Also teratogenic — avoid in pregnancy. Don't combine ACE + ARB (renal failure/hyperkalemia).

CALCIUM CHANNEL BLOCKERS

amlodipine, diltiazem, verapamil, nifedipine

ACTION

Block Ca influx → vasodilation, ↓BP; diltiazem/verapamil also ↓HR & rate-control AF.

SIDE EFFECTS

Peripheral edema, headache, flushing, **constipation** (verapamil), bradycardia, reflex tachycardia (dihydropyridines).

TRAP

Avoid grapefruit juice (↑levels/toxicity). Don't combine verapamil + beta-blocker → profound bradycardia/heart block.

LOOP DIURETICS

furosemide, bumetanide, torsemide

ACTION

Inhibit Na/K/Cl in loop of Henle → strong diuresis; for edema, HF, pulmonary edema.

SIDE EFFECTS

Hypokalemia | Hyponatremia | Ototoxicity dehydration, hypotension, ↑glucose/uric acid.

NURSING

Monitor K^+ (replace/eat K-rich foods), I&O, daily weight, BP; give early to avoid nocturia; push IV slowly (ototoxicity).

TRAP

Hypokalemia + digoxin = toxicity risk. Check K^+ before giving with digoxin.

THIAZIDE & K-SPARING DIURETICS

HCTZ · spironolactone, triamterene

ACTION

Thiazide: distal tubule Na loss (HTN). K-sparing: blocks aldosterone, retains K^+.

SIDE EFFECTS

Thiazide → **hypo**kalemia, ↑glucose/Ca/uric acid. Spironolactone → **hyper**kalemia, gynecomastia.

TRAP

Opposite K effects: thiazide/loop lower K; spironolactone raises it. Don't pair spironolactone with ACE/ARB/K supplements.

DIGOXIN (CARDIAC GLYCOSIDE)

narrow therapeutic index · HIGH ALERT

ACTION

↑Contractility (positive inotrope), ↓HR (negative chronotrope); HF & rate control.

TOXICITY

Anorexia, N/V, **visual halos/yellow-green vision**, dysrhythmias, confusion. Worsened by hypokalemia.

NURSING

Hold & recheck if apical HR <60 (adult); monitor K^+ & level (therapeutic 0.5–2 ng/mL).

ANTIDOTE

Digoxin immune Fab (DigiFab) for severe toxicity. Correct hypokalemia.

ANTIDYSRHYTHMIC — AMIODARONE

class III · VT/VF, AF

SIDE EFFECTS

Pulmonary fibrosis/toxicity, thyroid dysfunction, hepatotoxicity, blue-gray skin, photosensitivity, corneal deposits, bradycardia, prolonged QT.

NURSING

Baseline + ongoing PFTs, TFTs, LFTs, ECG; teach sun protection; long half-life (weeks).

TRAP

Lung toxicity is the dreaded effect — report new dyspnea/cough. Monitor QT.

NITRATES

nitroglycerin, isosorbide

ACTION

Vasodilation → ↓preload, ↓myocardial O_2 demand; angina relief.

SIDE EFFECTS

Throbbing headache, hypotension, dizziness, reflex tachycardia, flushing.

NURSING

SL: 1 tab q5 min ×3, call 911 if no relief after first (per current teaching); sit down; protect from light; rotate patch sites, nitrate-free interval.

TRAP

Never with PDE-5 inhibitors (sildenafil/tadalafil) → life-threatening hypotension.

STATINS

"-statin" · atorvastatin, simvastatin, rosuvastatin

ACTION

Inhibit HMG-CoA reductase → ↓LDL cholesterol.

SIDE EFFECTS

Myopathy → rhabdomyolysis (muscle pain + dark urine + ↑CK), hepatotoxicity.

NURSING

Take in evening; monitor LFTs/CK; report unexplained muscle pain; avoid grapefruit.

TRAP

Muscle pain + dark urine = rhabdo — hold & report. Teratogenic; avoid in pregnancy.

HEPARIN (ANTICOAGULANT)

IV/SubQ · LMWH = enoxaparin

ACTION

Potentiates antithrombin → inhibits thrombin/Xa; rapid, short-acting.

SIDE EFFECTS

Bleeding, **HIT** (heparin-induced thrombocytopenia), injection-site hematoma.

NURSING

Monitor **aPTT** (1.5–2.5× control) + platelets; SubQ in abdomen, don't aspirate/massage; bleeding precautions.

ANTIDOTE

Protamine sulfate. Lab = aPTT/anti-Xa.

WARFARIN (ANTICOAGULANT)

oral · vitamin K antagonist

ACTION

Inhibits vitamin-K clotting factors (II, VII, IX, X); slow onset (days).

NURSING

Monitor **PT/INR** (therapeutic 2–3); consistent vitamin-K intake (green leafy veg); many interactions; bleeding precautions.

ANTIDOTE

Vitamin K (phytonadione); FFP/PCC for severe bleed.

TRAP

Teratogenic (heparin/LMWH preferred in pregnancy). Don't yo-yo green-veggie intake — keep it steady, not zero.

DOACS & ANTIPLATELETS

apixaban/rivaroxaban · clopidogrel, aspirin

ACTION

DOACs: direct Xa/thrombin inhibitors (no routine monitoring). Antiplatelets: prevent platelet aggregation.

SIDE EFFECTS

Bleeding; aspirin → GI bleed/tinnitus (salicylism); clopidogrel → bleeding.

ANTIDOTE

Dabigatran → **idarucizumab**; Xa inhibitors → **andexanet alfa**.

TRAP

Hold antiplatelets/anticoagulants before invasive procedures per orders; combined therapy ↑bleed risk.

THROMBOLYTICS

"-ase" · alteplase (tPA)

ACTION

Dissolve existing clots; for ischemic stroke, STEMI, massive PE within time window.

SIDE EFFECTS

Major bleeding/hemorrhage — the dominant risk.

TRAP

Absolute contraindication = active bleeding / recent surgery / hemorrhagic stroke. CT to rule out bleed before stroke tPA.

VASOPRESSORS & INOTROPES

norepinephrine, dopamine, dobutamine, epinephrine

ACTION

↑BP/perfusion (vasopressors) or ↑contractility (inotropes) in shock.

SIDE EFFECTS

Tachycardia, dysrhythmias, ↑afterload, **extravasation → tissue necrosis**.

NURSING

Central line preferred; continuous BP/cardiac monitoring; titrate to MAP; watch IV site (antidote for extravasation = phentolamine).

02 RESPIRATORY DRUGS

BRONCHODILATION · INFLAMMATION · ALLERGY

BETA-2 AGONISTS (SABA/LABA)

albuterol · salmeterol

ACTION

Stimulate beta-2 → bronchodilation. Albuterol = rescue; salmeterol = long-term control.

SIDE EFFECTS

Tachycardia, tremor, nervousness, palpitations, ↑glucose.

TRAP

LABAs are NOT rescue meds — never for acute attack, never as monotherapy in asthma. Use albuterol first if both ordered.

INHALED CORTICOSTEROIDS & ANTICHOLINERGICS

fluticasone, budesonide · ipratropium, tiotropium

ACTION

ICS: ↓airway inflammation (controller). Anticholinergic: bronchodilation (COPD).

SIDE EFFECTS

ICS → **oral candidiasis (thrush)**, hoarseness; anticholinergic → dry mouth.

TRAP

Rinse mouth after ICS to prevent thrush. Bronchodilator before steroid inhaler (opens airway first).

LEUKOTRIENE MODIFIERS

montelukast, zafirlukast

ACTION

Block leukotrienes → ↓inflammation/bronchoconstriction; prophylaxis only.

SIDE EFFECTS

Headache; **neuropsychiatric effects** (mood changes, suicidal ideation — black box).

TRAP

Not for acute attacks — daily prevention. Report mood/behavior changes.

THEOPHYLLINE (METHYLXANTHINE)

narrow therapeutic index

TOXICITY

Tachycardia, dysrhythmias, N/V, restlessness, seizures. Therapeutic level **10–20 mcg/mL**.

TRAP

Caffeine ↑ toxicity; smoking ↓ levels. Monitor serum level closely.

03 ENDOCRINE DRUGS

GLUCOSE · THYROID · STEROIDS

INSULIN

HIGH ALERT · see profile table

ACTION

Drives glucose into cells; only treatment for type 1, used in type 2.

SIDE EFFECTS

Hypoglycemia (shaky, diaphoretic, confused), lipohypertrophy, **hypokalemia** (shifts K into cells).

NURSING

Two-RN verify; rotate sites; **clear before cloudy** when mixing; only regular insulin IV; recognize peak times.

TRAP

Risk of hypoglycemia greatest at peak. Don't hold meal after rapid-acting insulin. Glargine/detemir = no peak, never mix.

METFORMIN (BIGUANIDE)

first-line type 2

ACTION

↓Hepatic glucose production, ↑insulin sensitivity; doesn't cause hypoglycemia alone.

SIDE EFFECTS

GI upset, metallic taste, B12 deficiency; rare **lactic acidosis**.

TRAP

Hold before/after IV contrast (48 h) → renal/lactic acidosis risk. Hold with renal impairment.

SULFONYLUREAS & OTHER ORAL AGENTS

glipizide, glyburide · "-gliptin", "-flozin", "-glitazone"

SIDE EFFECTS

Sulfonylureas → **hypoglycemia**, weight gain. SGLT2 ("-flozin") → GU infections, DKA risk. Thiazolidinediones → fluid retention/HF.

TRAP

Sulfonylureas + alcohol → disulfiram-like reaction; can cause hypoglycemia (unlike metformin).

LEVOTHYROXINE (THYROID)

Synthroid · hypothyroidism

SIDE EFFECTS

Over-replacement → hyperthyroid signs (tachycardia, palpitations, weight loss, insomnia).

NURSING

Take **same time daily, empty stomach, AM**; lifelong; monitor TSH; separate from calcium/iron/antacids.

TRAP

Don't stop when feeling better — lifelong. Report chest pain/palpitations (dose too high).

ANTITHYROID (PTU / METHIMAZOLE)

hyperthyroidism

SIDE EFFECTS

Agranulocytosis (report sore throat/fever), hepatotoxicity.

TRAP

PTU preferred in 1st-trimester pregnancy. Sore throat + fever = report immediately (infection/low WBC).

CORTICOSTEROIDS (SYSTEMIC)

prednisone, methylprednisolone, hydrocortisone

SIDE EFFECTS

Cushingoid: hyperglycemia, ↑infection risk, osteoporosis, weight gain/moon face, mood changes, ↑BP, fluid retention, hypokalemia, delayed healing, peptic ulcer.

NURSING

Take with food; monitor glucose/weight/BP; **taper—never abrupt stop** (adrenal crisis); watch for masked infection.

TRAP

Abrupt withdrawal → adrenal crisis. Steroids mask infection signs (fever may be absent).

04 NEUROLOGIC & PSYCHIATRIC DRUGS

MOOD · PSYCHOSIS · SEIZURES · COGNITION

SSRIS

"-tine/-pram" · fluoxetine, sertraline, citalopram, escitalopram

SIDE EFFECTS

GI upset, insomnia, sexual dysfunction, weight change; **serotonin syndrome** (agitation, hyperthermia, clonus, ↑HR).

NURSING

Takes **2–6 weeks** for effect; monitor for suicidal ideation early (black box, esp. young adults); taper to stop.

TRAP

SSRI + MAOI = serotonin syndrome — separate by ≥2 weeks. Effect is delayed; don't expect immediate relief.

SNRIS & TCAS & MAOIS

venlafaxine/duloxetine · amitriptyline · phenelzine

SIDE EFFECTS

TCA → anticholinergic effects + **lethal in overdose (cardiotoxic)**. MAOI → **hypertensive crisis with tyramine**.

TRAP

MAOI + tyramine (aged cheese, cured meats, wine) → hypertensive crisis. Avoid TCA in suicidal patients (OD lethality).

LITHIUM (MOOD STABILIZER)

narrow index · level 0.6–1.2 mEq/L

TOXICITY

Early: N/V, fine tremor, thirst. Toxic: coarse tremor, ataxia, confusion, seizures, dysrhythmia.

NURSING

Maintain consistent **sodium + fluid intake**; monitor levels; dehydration/low Na → toxicity.

TRAP

Low sodium / dehydration / NSAIDs / thiazides → lithium toxicity. Don't restrict salt or fluids.

ANTIPSYCHOTICS

typical: haloperidol · atypical: risperidone, olanzapine, clozapine

SIDE EFFECTS

EPS (dystonia, akathisia, parkinsonism, tardive dyskinesia), **NMS** (fever, rigidity, ↑CK, AMS), anticholinergic; atypicals → metabolic syndrome; **clozapine → agranulocytosis**.

NURSING

Monitor for EPS/NMS; clozapine requires WBC monitoring; metabolic labs for atypicals.

ANTIDOTE/RX

NMS = stop drug + dantrolene/bromocriptine + cooling (medical emergency). Acute dystonia → benztropine/diphenhydramine.

BENZODIAZEPINES

"-pam/-lam" · lorazepam, diazepam, alprazolam

SIDE EFFECTS

Sedation, **respiratory depression** (esp. with opioids/alcohol), dependence, falls in elderly.

ANTIDOTE

Flumazenil (use cautiously — can precipitate seizures).

TRAP

Don't stop abruptly (withdrawal seizures); avoid with CNS depressants/alcohol.

ANTIEPILEPTICS

phenytoin, valproate, carbamazepine, levetiracetam, lamotrigine

SIDE EFFECTS

Phenytoin → **gingival hyperplasia**, ataxia, level 10–20. Valproate/carbamazepine → hepatotoxicity, blood dyscrasias. Lamotrigine/carbamazepine → **Stevens-Johnson**.

TRAP

Many are teratogenic. Report rash (SJS). Don't stop abruptly (status epilepticus). Phenytoin: meticulous oral care.

ANTIPARKINSON

levodopa-carbidopa, ropinirole

SIDE EFFECTS

Orthostatic hypotension, dyskinesias, "wearing off," **darkened urine/sweat** (harmless), impulse-control issues.

TRAP

High-protein meals reduce levodopa absorption. Don't stop abruptly. Effects may take weeks.

CHOLINESTERASE INHIBITORS & STIMULANTS

donepezil, rivastigmine · methylphenidate

SIDE EFFECTS

Cholinergic → bradycardia, GI upset, ↑secretions. Stimulants → ↓appetite/growth, insomnia, ↑HR/BP.

TRAP

Stimulants: give early to avoid insomnia; monitor weight/growth in children. Slow Alzheimer progression, not cure.

05 GASTROINTESTINAL DRUGS

ACID · MOTILITY · NAUSEA

PROTON PUMP INHIBITORS

"-prazole" · omeprazole, pantoprazole

ACTION

Block gastric acid pump; GERD, ulcers, prophylaxis.

SIDE EFFECTS

Long-term → ↓Ca/Mg, B12 deficiency, **fracture risk**, C. difficile, pneumonia risk.

NURSING

Take before meals; short-term use preferred; don't crush enteric-coated.

H2 BLOCKERS & ANTACIDS

famotidine · calcium carbonate, aluminum/magnesium

SIDE EFFECTS

Aluminum → constipation; magnesium → diarrhea; calcium → rebound acid; antacids alter absorption of many drugs.

TRAP

Separate antacids from other meds by 1–2 h (binds/↓absorption — e.g., levothyroxine, fluoroquinolones, iron).

ANTIEMETICS

ondansetron, promethazine, metoclopramide

SIDE EFFECTS

Ondansetron → **QT prolongation**, headache, constipation. Metoclopramide → **EPS/tardive dyskinesia**. Promethazine → sedation, tissue injury if extravasated.

TRAP

Monitor QT with ondansetron; metoclopramide can cause movement disorders—limit duration.

LAXATIVES & ANTIDIARRHEALS

docusate, psyllium, senna, PEG · loperamide

SIDE EFFECTS

Fluid/electrolyte loss, dependence (stimulant), cramping; loperamide → constipation/ileus.

TRAP

Bulk-forming needs **adequate water** (obstruction risk otherwise). Avoid antidiarrheals in infectious diarrhea (C. diff).

06 PAIN, INFLAMMATION & MUSCULOSKELETAL

OPIOIDS · NSAIDS · GOUT

OPIOIDS
morphine, hydromorphone, fentanyl, oxycodone · HIGH ALERT

SIDE EFFECTS

Respiratory depression (the killer), sedation, **constipation** (no tolerance develops), N/V, urinary retention, pinpoint pupils, dependence.

NURSING

Assess RR & sedation before/after; hold if RR <12; bowel regimen; have naloxone available.

ANTIDOTE

Naloxone (Narcan) — may need repeat dosing (shorter-acting than opioid).

NSAIDS
ibuprofen, naproxen, ketorolac, aspirin

SIDE EFFECTS

GI bleed/ulcers, renal impairment, ↑BP/fluid retention, ↑CV risk, platelet inhibition. Aspirin → tinnitus (salicylism), Reye's in children.

NURSING

Take with food; monitor renal/GI; ketorolac short-term only (≤5 days).

TRAP

No aspirin for children/teens with viral illness (Reye's syndrome). Caution in renal disease, ulcers, anticoagulation.

ACETAMINOPHEN
analgesic/antipyretic · NOT anti-inflammatory

SIDE EFFECTS

Hepatotoxicity — max 4 g/day (less with liver disease/alcohol); hidden in combination products.

ANTIDOTE

N-acetylcysteine (NAC) — most effective early.

TRAP

Watch cumulative dose across combo meds (e.g., Percocet). No GI/platelet effects (unlike NSAIDs).

GOUT AGENTS
allopurinol, colchicine, probenecid

SIDE EFFECTS

Allopurinol → rash (SJS risk). Colchicine → severe GI/diarrhea.

TRAP

Allopurinol prevents, doesn't treat acute attacks; push fluids (prevent stones). Limit purine-rich foods.

07 ANTI-INFECTIVES
ANTIBIOTICS · ANTIFUNGAL · ANTIVIRAL · TB

PENICILLINS & CEPHALOSPORINS
"-cillin" · "cef-/ceph-"

SIDE EFFECTS

Allergy → rash to **anaphylaxis**; GI upset, C. diff. Cross-sensitivity penicillin↔cephalosporin.

TRAP

Always assess penicillin allergy. Some cephalosporins + alcohol → disulfiram reaction. Take full course.

MACROLIDES & FLUOROQUINOLONES
"-mycin" (azithro) · "-floxacin"

SIDE EFFECTS

Both → **QT prolongation**. Fluoroquinolones → **tendon rupture**, photosensitivity, CNS effects (black box).

TRAP

Fluoroquinolones: report tendon pain; avoid in children/pregnancy; separate from antacids/dairy/iron.

AMINOGLYCOSIDES & VANCOMYCIN
gentamicin · vancomycin

SIDE EFFECTS

Nephrotoxicity + ototoxicity. Vancomycin → **"Red Man" syndrome** if infused too fast.

NURSING

Monitor **peak & trough** levels + renal function/hearing; infuse vancomycin slowly (≥60 min).

TRAP

Trough drawn just before next dose guides dosing/toxicity. Red Man = slow the rate, not a true allergy.

TETRACYCLINES & SULFONAMIDES
doxycycline · TMP-SMX (Bactrim)

SIDE EFFECTS

Tetracycline → **tooth staining** (avoid <8 yo & pregnancy), photosensitivity. Sulfa → rash/SJS, crystalluria, ↑warfarin effect.

TRAP

Tetracyclines: avoid dairy/antacids/iron (chelation); push fluids with sulfa (prevent crystalluria).

ANTITUBERCULAR (RIPE)
rifampin, isoniazid, pyrazinamide, ethambutol

SIDE EFFECTS

Rifampin → orange body fluids (harmless). **Isoniazid → hepatotoxicity + peripheral neuropathy** (give B6). Ethambutol → optic neuritis (vision changes).

TRAP

INH neuropathy prevented by vitamin B6 (pyridoxine). Rifampin ↓ effectiveness of oral contraceptives. Adherence is critical (resistance).

ANTIVIRALS & ANTIFUNGALS
acyclovir, oseltamivir · fluconazole, amphotericin B

SIDE EFFECTS

Acyclovir → nephrotoxicity (hydrate). Amphotericin B → **"shake and bake"** fevers/chills, nephrotoxicity, hypokalemia. Azoles → hepatotoxicity, many interactions.

TRAP

Amphotericin B = highly toxic ("amphoterrible"); premedicate; monitor renal/K^+. Start antivirals early.

08 MATERNAL/OB, HEMATOLOGIC & ELECTROLYTE AGENTS

UTEROTONICS · TOCOLYTICS · REPLACEMENT

OXYTOCIN (UTEROTONIC)
labor induction · postpartum

SIDE EFFECTS

Uterine tachysystole/hyperstimulation, fetal distress, water intoxication (antidiuretic effect), hypotension.

NURSING

Continuous fetal monitoring; **stop infusion** if contractions >5/10 min or late decels; titrate.

TRAP

Tachysystole + nonreassuring FHR → stop oxytocin, reposition, O_2, IV fluids.

MAGNESIUM SULFATE
tocolytic · preeclampsia/eclampsia

TOXICITY

Loss of DTRs → respiratory depression → cardiac arrest. Flushing, ↓BP, lethargy.

NURSING

Monitor DTRs, RR (≥12), urine output (≥30 mL/h), level (therapeutic 4–7 mEq/L).

ANTIDOTE

Calcium gluconate.

OTHER OB AGENTS
methylergonovine, carboprost, terbutaline, betamethasone, Rho(D) Ig

KEY POINTS

Methylergonovine → **hold if hypertensive**. Carboprost → **avoid in asthma** (bronchospasm). Terbutaline (tocolytic) → maternal tachycardia. Betamethasone → fetal lung maturity. RhoGAM → Rh-negative mothers.

TRAP

Methylergonovine + HTN = no; carboprost + asthma = no. RhoGAM given at 28 wks & within 72 h postpartum if baby Rh+.

POTASSIUM CHLORIDE (KCL)
HIGH ALERT replacement

SIDE EFFECTS

GI irritation (oral); IV → pain, phlebitis; rapid IV → fatal dysrhythmia.

TRAP

NEVER IV push KCl — always diluted & infused slowly via pump; ensure urine output first; oral with food/full glass.

IRON & B12 / FOLATE
ferrous sulfate, cyanocobalamin

SIDE EFFECTS

Iron → constipation, **dark/black stools** (expected), GI upset, teeth staining (liquid).

NURSING

Iron with vitamin C/empty stomach (↑absorption); use straw for liquid; **Z-track** IM. B12 IM for pernicious anemia (lifelong).

TRAP

Dark stools from iron are normal — distinguish from melena (GI bleed). Keep iron away from children (overdose lethal).

ANTIHISTAMINES & DECONGESTANTS
diphenhydramine, loratadine · pseudoephedrine

SIDE EFFECTS

1st-gen → sedation, anticholinergic (dry mouth, urinary retention, confusion in elderly). Decongestants → ↑BP/HR, insomnia.

TRAP

Avoid 1st-gen antihistamines in elderly (falls/confusion); decongestants caution with HTN/cardiac disease.

09 INSULIN ONSET · PEAK · DURATION
KNOW THE PEAK = KNOW HYPOGLYCEMIA RISK

INSULIN	TYPE	ONSET	PEAK	DURATION	NCLEX PEARL
Lispro / Aspart / Glulisine	Rapid	10–30 min	30 min–3 h	3–5 h	Give with food on tray — meal must follow immediately
Regular (R)	Short	30 min–1 h	2–4 h	5–8 h	Only insulin given IV; use for sliding scale/DKA drip
NPH (N)	Intermediate	1–2 h	4–12 h	12–18 h	Cloudy; highest hypoglycemia risk mid-afternoon/overnight
Glargine / Detemir / Degludec	Long	1–2 h	No peak	~24 h+	Never mix with other insulins; once-daily basal

MIXING RULE
"Clear before cloudy" — draw up Regular (clear) before NPH (cloudy) to avoid contaminating the clear vial.

10 THERAPEUTIC DRUG LEVELS
NARROW-INDEX DRUGS TO MEMORIZE

DRUG	THERAPEUTIC RANGE	TOXICITY SIGNS
Digoxin	0.5–2 ng/mL	N/V, yellow-green halos, dysrhythmias, bradycardia
Lithium	0.6–1.2 mEq/L	Tremor, ataxia, confusion, seizures
Phenytoin	10–20 mcg/mL	Nystagmus, ataxia, slurred speech, gingival hyperplasia
Theophylline	10–20 mcg/mL	Tachycardia, dysrhythmias, seizures
Valproic acid	50–100 mcg/mL	Hepatotoxicity, thrombocytopenia, tremor

DRUG	THERAPEUTIC RANGE	TOXICITY SIGNS
Carbamazepine	4–12 mcg/mL	Diplopia, ataxia, blood dyscrasias
Magnesium (OB)	4–7 mEq/L	Loss of DTRs, RR <12, ↓LOC, cardiac arrest
Vancomycin (trough)	10–20 mcg/mL	Nephrotoxicity, ototoxicity
aPTT (heparin)	1.5–2.5× control	Bleeding
INR (warfarin)	2.0–3.0	Bleeding (higher for mechanical valves)

11 ANTIDOTES & REVERSAL AGENTS

HIGH-FREQUENCY NCLEX PAIRINGS

DRUG / TOXIN	ANTIDOTE / REVERSAL	NOTE
Opioids	Naloxone (Narcan)	May need repeat dosing; watch re-sedation
Benzodiazepines	Flumazenil	Can precipitate seizures — use cautiously
Acetaminophen	N-acetylcysteine (NAC)	Most effective within 8–10 h
Warfarin	Vitamin K (+ FFP/PCC)	Reverses elevated INR
Heparin	Protamine sulfate	Also partial for LMWH
Magnesium sulfate	Calcium gluconate	For mag toxicity in OB
Digoxin	Digoxin immune Fab	Severe toxicity/dysrhythmia
Malignant hyperthermia / NMS	Dantrolene	Plus cooling, stop trigger
Iron	Deferoxamine	Chelation
Beta-blocker / CCB overdose	Glucagon / calcium	Glucagon for beta-blocker bradycardia
Cholinergic crisis / organophosphate	Atropine (+ pralidoxime)	Dries secretions, ↑HR
Dabigatran	Idarucizumab	Direct thrombin inhibitor reversal
Factor Xa inhibitors	Andexanet alfa	Apixaban/rivaroxaban reversal
Ethylene glycol / methanol	Fomepizole	Blocks toxic metabolite formation

12 IF → THEN DECISION RULES

HOLD PARAMETERS & FIRST ACTIONS

IF apical HR <60 before digoxin
THEN hold dose, recheck, notify provider.

IF HR <60 or SBP <90 before beta-blocker
THEN hold & reassess; never stop abruptly.

IF K^+ low before/with digoxin or loop diuretic
THEN correct K^+ first (toxicity/dysrhythmia risk).

IF RR <12 before opioid
THEN hold opioid; have naloxone ready.

IF mag sulfate + absent DTRs / RR <12 / urine <30
THEN stop mag, give calcium gluconate.

IF patient on ACE/ARB + facial/throat swelling
THEN stop drug (angioedema), protect airway, never rechallenge.

IF IV contrast scheduled + on metformin
THEN hold metformin (lactic acidosis/renal risk).

IF vancomycin causes flushing during infusion
THEN slow the rate (Red Man), not a true allergy.

IF oxytocin + tachysystole / late decels
THEN stop infusion, reposition, O_2, IV fluids.

IF antithyroid drug + sore throat/fever
THEN report immediately (agranulocytosis).

IF statin + muscle pain + dark urine
THEN hold & report (rhabdomyolysis).

IF KCl ordered IV
THEN dilute & infuse via pump — never IV push.

13 THE 8 CLASSIC PHARMACOLOGY TRAPS

WHERE TEST-TAKERS LOSE POINTS

01
STOPPING A DRUG ABRUPTLY
Beta-blockers, steroids, antiepileptics, benzos, clonidine, levodopa, antidepressants all need **tapering**.

FIX "Don't stop suddenly" is almost always correct for these classes.

02
CONFUSING PREVENTION VS RESCUE
LABAs, ICS, montelukast, allopurinol are **preventive** — not for acute attacks. Albuterol/colchicine treat acute.

FIX Match controller vs reliever to the scenario's timing.

03
IGNORING THE HOLD PARAMETER
Digoxin (HR<60), opioids (RR<12), beta-blockers (HR/BP), mag (DTRs/RR) all have a value to check FIRST.

FIX Assess the gating vital/lab before administering.

04
PREGNANCY CONTRAINDICATIONS
ACE/ARBs, warfarin, statins, tetracyclines, many AEDs, isotretinoin are **teratogenic**.

FIX Flag pregnancy/childbearing age — choose the safe alternative.

05
MISSING THE FOOD/DRUG INTERACTION
Warfarin↔vit K, MAOI↔tyramine, levodopa↔protein, tetracycline/iron↔dairy, grapefruit↔CCB/statin.

FIX Scan the diet/timing clue in the stem.

06
NORMAL VS ADVERSE EFFECT
Rifampin orange fluids, iron black stools, levodopa dark urine = **harmless & expected**, not toxicity.

FIX Don't "report" an expected benign effect.

07
THE WRONG ANTIDOTE PAIRING
Heparin↔protamine, warfarin↔vit K, opioid↔naloxone, mag↔calcium gluconate, acetaminophen↔NAC.

FIX Memorize the reversal table cold.

08
ORDER OF INHALERS / MIXED INSULIN
Bronchodilator before steroid inhaler; "clear before cloudy" when mixing insulin.

FIX Sequence questions test these two rules constantly.

14 NGN QUESTION PATTERNS
HOW MEDS ARE TESTED IN 2026

RECOGNIZE CUES
Spot adverse effects vs expected effects in the chart.
"Which findings indicate an adverse drug reaction?"

ANALYZE CUES
Link a symptom cluster to drug toxicity (digoxin, lithium, mag).
"These findings are consistent with ___ toxicity."

PRIORITIZE HYPOTHESES
Decide which medication concern is most urgent.
"Which client/medication requires immediate attention?"

GENERATE SOLUTIONS
Select correct nursing actions/teaching for the drug.
"Which 3 instructions should the nurse include?"

TAKE ACTION
Choose to hold, give, or notify based on a parameter.
"What should the nurse do before administering?"

EVALUATE OUTCOMES
Judge therapeutic effectiveness vs need to escalate.
"Which findings show the medication is effective?"

15 NGN BOW-TIE — WORKED EXAMPLE
DIGOXIN TOXICITY

ACTIONS TO TAKE
- Hold the digoxin dose & notify provider
- Obtain digoxin level & serum potassium
- Anticipate digoxin immune Fab if severe

DIGOXIN TOXICITY
Nausea + yellow-green halos + bradycardia + level >2 ng/mL

PARAMETERS TO MONITOR
- Apical heart rate & cardiac rhythm (ECG)
- Serum digoxin level & potassium
- Resolution of GI & visual symptoms

MOST LIKELY CAUSE
Digoxin accumulation — frequently precipitated by **hypokalemia** (often from concurrent loop diuretics) or renal impairment.

RISK IF UNTREATED
Life-threatening dysrhythmias and cardiac arrest — correcting potassium and reversing with Fab is key.

16 PATIENT MEDICATION-TEACHING CHECKLIST
ADHERENCE · SAFETY · WHEN TO CALL

TEACH BEFORE DISCHARGE ✓
- ☑ Take exactly as prescribed; never stop abruptly (esp. steroids, beta-blockers, AEDs, antidepressants)
- ☑ Finish the full antibiotic course even when feeling better

- ☑ Warfarin: keep vitamin-K intake consistent; report bleeding/bruising; carry ID
- ☑ Rinse mouth after inhaled steroids; use bronchodilator first
- ☑ Rise slowly with antihypertensives (orthostatic hypotension)
- ☑ Don't double doses; use a pill organizer/reminder system
- ☑ Know which effects are normal (orange/dark fluids) vs report-worthy
- ☑ Diabetics: recognize/treat hypoglycemia; rotate sites; sick-day rules
- ☑ Avoid grapefruit with statins/CCBs; avoid alcohol with sedatives/metronidazole
- ☑ Use sunscreen with photosensitizing drugs (fluoroquinolones, amiodarone, tetracyclines)
- ☑ Report sore throat/fever on antithyroid drugs or clozapine (low WBC)
- ☑ Keep an up-to-date med list & allergy band; tell all providers

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