NCLEX-RN PHARMACOLOGY · 2026 TEST PLAN · NGN/NCJMM ALIGNED

Angiotensin II *Receptor Blockers*

"The -SARTANS" · RAAS Inhibitors · Cardiovascular / Renal System

CLASS: ARB | SYSTEM: CARDIOVASCULAR · RENAL | PREGNANCY CATEGORY: X (BLACK BOX)

HIGH-YIELD CLASS

1 DRUG OVERVIEW

WHY WE GIVE IT · HIGH-YIELD CLINICAL USE

- **Hypertension (HTN)** — first-line, especially in patients who can't tolerate ACE inhibitors due to cough or angioedema
- **Heart Failure (HFrEF)** — reduces cardiac workload & remodeling
- **Diabetic Nephropathy** — protects kidneys in Type 2 DM (especially *losartan, irbesartan*)
- **Chronic Kidney Disease (CKD)** — slows progression by reducing glomerular pressure & proteinuria
- **Post-MI** — prevents ventricular remodeling
- **Stroke prevention** in HTN with LV hypertrophy
- KEY Used when **ACE-I causes dry cough or angioedema** — ARBs do NOT cause cough (no bradykinin buildup)

2 MECHANISM OF ACTION

BLOCK THE RECEPTOR — NOT THE ENZYME

RAAS pathway Renin → Angiotensin I → **Angiotensin II** → binds **AT_1 receptor**

→ ARBs **BLOCK Angiotensin II from binding the AT_1 receptor** on vascular smooth muscle & adrenal cortex

→ ↓ Vasoconstriction = vasodilation = ↓ SVR = **↓ BP**

→ ↓ Aldosterone release = ↓ Na^+ & H_2O retention = **↓ preload**

→ ↓ Glomerular pressure = renal & cardiac protection

ARB vs ACE-I difference: ACE-I blocks the *enzyme* (↑ bradykinin → cough/angioedema). ARBs block the *receptor* only → **no bradykinin buildup → no cough.**

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THERAPEUTIC EFFECTS

WHAT TELLS YOU IT'S WORKING

- **BP within target range** (typically <130/80 for most adults; individualized)
- **↓ Symptoms of heart failure** — less dyspnea, less edema, improved activity tolerance
- **↓ Proteinuria** on urinalysis (renal protection working)
- **Stable / improving GFR** in CKD & diabetic nephropathy
- **↓ Hospital readmission** for HF exacerbation
- **Onset:** Initial BP drop within hours; full effect **2–6 weeks** — teach patients to be patient!

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SIDE EFFECTS & ADVERSE REACTIONS

COMMON VS. SERIOUS 🚨

COMMON (MILD)

- Dizziness / lightheadedness (esp. first dose)
- Headache
- Fatigue
- Orthostatic hypotension
- Mild hyperkalemia
- **NO dry cough** (vs ACE-I) ✅

🚨 SERIOUS / LIFE-THREATENING

- **Angioedema** — RARE but possible (lower risk than ACE-I) → airway emergency
- **Severe hyperkalemia** (K^+ > 5.0) → arrhythmias, cardiac arrest
- **Acute kidney injury** — ↑ BUN/creatinine, esp. in renal artery stenosis
- **Symptomatic hypotension** — syncope, falls
- **Fetal toxicity / death** — 2nd & 3rd trimester (Black Box)
- **Hepatic injury** (rare) — monitor LFTs if symptomatic

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PRIORITY NURSING CONSIDERATIONS

ASSESS · MONITOR · HOLD · NOTIFY

✅ MONITOR

- **BP & HR** before each dose; orthostatic vitals
- **K^+** baseline + ongoing (esp. with K-sparing diuretics or potassium supplements)
- **BUN, creatinine, GFR** — baseline + within 1–2 weeks of starting
- **Daily weights** & I&O (HF patients)
- Signs of **angioedema**: lip/tongue/face swelling, hoarseness

🛑 HOLD & NOTIFY HCP

- **SBP < 90 mmHg** or symptomatic hypotension
- **K^+ > 5.0 mEq/L** (hyperkalemia)
- **Creatinine ↑ >30%** from baseline
- **Pregnancy confirmed or suspected** — STOP immediately
- **Angioedema** — discontinue, never restart, NEVER switch to ACE-I

⛔ CONTRAINDICATIONS & MAJOR INTERACTIONS

- **Pregnancy (all trimesters)** — Black Box; teratogenic, fetal renal failure
- **Bilateral renal artery stenosis** — causes acute renal failure
- **History of angioedema** with ACE-I or ARB
- **NEVER combine** ARB + ACE-I + direct renin inhibitor (aliskiren) → severe hyperK, hypotension, AKI
- **Caution with:** K-sparing diuretics (spironolactone), K supplements, salt substitutes (contain KCl), NSAIDs (↓ effect, ↑ AKI risk), lithium (↑ levels → toxicity)

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LABS & DIAGNOSTICS

CRITICAL VALUES · WHAT ABNORMAL MEANS

LAB	NORMAL RANGE	WHAT ABNORMAL MEANS
Potassium (K^+)	3.5 – 5.0 mEq/L	**↑ K^+ → arrhythmia risk** (peaked T waves on ECG). Hold ARB if >5.0.
Creatinine	0.6 – 1.2 mg/dL	↑ >30% from baseline = AKI / renal artery stenosis. Notify HCP.
BUN	7 – 20 mg/dL	↑ may indicate dehydration or worsening renal function.
GFR (eGFR)	>90 mL/min normal	Trending down = renal compromise; dose adjust if <30.
Sodium (Na^+)	135 – 145 mEq/L	Hyponatremia ↑ risk of profound hypotension on first dose.
Pregnancy test (β-hCG)	Negative required	Positive → STOP drug immediately (Black Box teratogen).
LFTs (AST/ALT)	<40 U/L	Monitor if symptoms; rare hepatic injury.

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ADMINISTRATION & SAFETY

ROUTE · TIMING · HIGH-ALERT PRECAUTIONS

- **Route:** Oral (PO) — all ARBs are oral; no IV form
- **Timing:** Once daily (most); same time each day. **Losartan** may be BID for HF
- **With or without food** — but **valsartan absorption ↓ ~40% with food** (give consistently, not the other ARBs)
- **First-dose hypotension** — give at bedtime or supervise; teach to rise slowly
- Take BP before each dose; hold & notify if SBP <90
- Avoid **salt substitutes** (contain KCl) and **NSAIDs** (↓ effect, ↑ AKI)
- Adequate hydration — but **avoid excessive fluid** in HF
- Do NOT abruptly stop in HF or post-MI patients — taper

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PATIENT EDUCATION

WHAT PATIENTS MUST KNOW

- **Take exactly as prescribed** — even when feeling well; HTN is silent
- **Rise slowly** from sitting/lying to prevent dizziness & falls
- **Avoid salt substitutes** — they contain potassium chloride → hyperK
- **Avoid NSAIDs** (ibuprofen, naproxen) — reduce drug effect & harm kidneys
- **Use reliable contraception**; if pregnancy suspected → STOP & call HCP IMMEDIATELY
- **Report** swelling of face/lips/tongue, difficulty breathing, severe dizziness, decreased urine output, muscle weakness/cramps (hyperK)
- **Daily weights** in HF — report gain >2 lb in 1 day or >5 lb in 1 week
- **Limit alcohol** & intense heat (saunas, hot tubs) → ↑ hypotension risk
- Don't stop suddenly — rebound hypertension possible
- Carry a current medication list; tell every provider you take an ARB

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NCLEX TEST TRAPS ⚠

WHERE STUDENTS LOSE POINTS

- **TRAP:** Choosing "monitor for dry cough" — ❌ WRONG. ARBs do **NOT** cause cough (that's ACE-I)
- **TRAP:** Giving ARB to a pregnant patient because BP is high — ❌ NEVER. Pregnancy = absolute contraindication
- **TRAP:** Recommending salt substitute as "heart-healthy" — ❌ contains potassium chloride → hyperkalemia
- **TRAP:** Combining ARB + ACE-I "for better BP control" — ❌ NEVER combine; ↑ AKI, hyperK, hypotension
- **TRAP:** Confusing -SARTANS (ARBs) with -PRILS (ACE-Is) or -OLOLS (β-blockers)
- **TRAP:** Holding for "just" SBP 110 — usually OK; the threshold is **<90** or symptomatic
- **TRAP:** "Take as needed for high BP" — ❌ ARBs are scheduled, NOT PRN
- **TRAP:** Switching from ACE-I to ARB after angioedema — ⚠ **cross-reactivity exists**; only with provider guidance & caution
- **PRIORITY question:** If patient has lip swelling + dyspnea after first dose → AIRWAY first (epinephrine, intubation prep), then stop drug

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MEMORY BOOSTERS

MNEMONICS · PATTERNS · QUICK RECALL

"-SARTAN" = ARB

- Lo**sartan** · Val**sartan** · Ir**besartan** · Olme**sartan** · Telmi**sartan** · Cande**sartan** · Az**ilsartan** · Eprosartan
- If it ends in **-SARTAN** → ARB. If **-PRIL** → ACE-I. Don't mix them up!

🧠 "ARBS HARM"

- **H** — Hyperkalemia
- **A** — Angioedema (rare, but possible)
- **R** — Renal impairment / ↑ creatinine
- **M** — Mom & baby (Pregnancy = NEVER)

"ARB" = "A RECEPTOR BLOCKER"

- **A**ngiotensin II **R**eceptor **B**locker
- Block the LOCK (receptor), not the KEY-MAKER (enzyme = ACE)
- So no bradykinin → **NO COUGH**

THE "3 K'S" TO AVOID

- **K^+** supplements
- **K**-sparing diuretics (spironolactone)
- **K**-containing salt substitutes
- → All ↑ hyperkalemia risk with ARBs

MOST TESTED ARBS · KEY DIFFERENCES

HIGH-YIELD DRUG COMPARISON FOR NCLEX

DRUG	TOP INDICATION	DISTINGUISHING FEATURE	NCLEX PEARL
Losartan Cozaar	HTN, diabetic nephropathy, HF	Most tested ARB; renal protection in T2DM	**First-line for diabetic nephropathy.** Can be BID for HF.
Valsartan Diovan · Entresto*	HF, post-MI, HTN	Component of Entresto (sacubitril/valsartan = ARNI)	**Absorption ↓ ~40% with food** — give consistently. Entresto = wash-out 36 hrs from ACE-I.
Irbesartan Avapro	Diabetic nephropathy	Strong renal protection	Used for proteinuria in T2DM.
Olmesartan Benicar	HTN	Rare cause of **sprue-like enteropathy** (chronic diarrhea, weight loss)	Suspect with chronic diarrhea on long-term therapy.
Telmisartan Micardis	HTN, CV risk reduction	Longest half-life (~24 hr); strong 24-hr coverage	Best for missed-dose forgiveness.
Candesartan Atacand	HF, HTN	Strong evidence in HFrEF	Often used when ACE-I not tolerated in HF.

ARB VS ACE INHIBITOR — NCLEX DISTINCTION

THE #1 MOST-TESTED COMPARISON IN CARDIAC PHARM

FEATURE	ACE INHIBITORS (-PRIL)	ARBS (-SARTAN)
Site of action	Block ACE *enzyme*	Block AT_1 *receptor*
Bradykinin	↑ (causes cough & angioedema)	Unchanged → **no cough**
Dry cough	~10–20% incidence	Rare
Angioedema risk	Higher (esp. African American patients)	Much lower (but NOT zero)
Hyperkalemia	Yes	Yes
Pregnancy	Contraindicated (Black Box)	Contraindicated (Black Box)
Renal protection in DM	Yes	Yes
When chosen	First line if tolerated	If ACE-I cough/intolerance
Combine together?	✕ **NEVER combine ARB + ACE-I — ↑ AKI, hyperK, hypotension**	

NCJMM

Clinical Judgment *Snapshot*

NGN · NCJMM · RECOGNIZE → ANALYZE → PRIORITIZE → ACT → EVALUATE

#1 PRIORITY RISK

Hyperkalemia leading to lethal arrhythmia & cardiac arrest. Always check K^+ before & during therapy. K^+ >5.0 = HOLD & notify.

WHAT HARMS FIRST?

First-dose symptomatic hypotension → falls/syncope. Closely behind: **angioedema** compromising the airway. Both can occur within hours of the first dose.

FIRST NURSING ACTION

Patient with **swollen lips/tongue + dyspnea** after first ARB dose: **1) Assess airway · 2) Stop the drug · 3) Call Rapid Response · 4) Prepare epinephrine + intubation equipment.** Airway always wins.

RECOGNIZE CUES

Lip/tongue swelling · stridor · K^+ >5.0 · creatinine ↑ >30% · SBP <90 · positive pregnancy test · muscle weakness · peaked T-waves on ECG.

ANALYZE & PRIORITIZE

Airway/breathing > circulation (BP) > lab abnormalities > teaching. Pregnancy → **STOP NOW.** ACE-I + ARB combo ordered → **question the order.**

EVALUATE OUTCOMES

BP at goal · stable creatinine & K^+ · ↓ proteinuria · no edema/dyspnea · patient verbalizes "no salt substitutes, no NSAIDs, no pregnancy, daily weights, rise slowly."