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

Fludrocortisone & Aldosterone

Mineralocorticoid Replacement — The Salt & Water Hormone of the Adrenal Cortex

Generic: **Fludrocortisone acetate** · Brand: **Florinef** · Class: Mineralocorticoid (synthetic aldosterone analog)

System: Endocrine — Adrenal Cortex · High-Alert: BP & K⁺ shifts · ★ Addison's disease anchor drug

01 DRUG OVERVIEW

What & Why

Why we give it — the clinical anchor

- **Aldosterone** = the body's natural **mineralocorticoid**, made in the **zona glomerulosa** of the adrenal cortex.
- **Fludrocortisone** = synthetic aldosterone analog (~`125×` the mineralocorticoid potency of hydrocortisone) given when the adrenal gland can't make enough.
- **#1 indication: Addison's disease** (primary adrenal insufficiency) — replaces missing aldosterone.
- Also used for **congenital adrenal hyperplasia** (salt-wasting type).
- Off-label: **severe orthostatic hypotension** (autonomic neuropathy, POTS) — boosts blood volume.
- Frequently paired with a **glucocorticoid** (hydrocortisone) in Addison's: *fludrocortisone fixes the salt, hydrocortisone fixes the sugar & stress response.*

02 MECHANISM OF ACTION

How It Works

Salt in, potassium out — the two-direction pump

`TARGET` Binds `mineralocorticoid receptors` in the `distal convoluted tubule` & `collecting duct` of the kidney.
`STEP 1` ↑ Na⁺/K⁺-ATPase & ENaC channels → **Na⁺ reabsorbed** into blood.
`STEP 2` Water follows sodium → ↑ **blood volume** → ↑ **BP**.
`STEP 3` To balance the charge: **K⁺ & H⁺ are excreted** in urine → ↓ **serum K⁺**, mild **metabolic alkalosis**.
`NET` `↑ Na⁺` · `↑ H₂O` · `↑ BP` · `↓ K⁺` · `↓ H⁺`

- **Memory hook:** *"Save salt, save water, dump potassium."*
- Aldosterone is the **final step** of the `RAAS` axis (renin → angiotensin I → angiotensin II → **aldosterone**).
- Triggered physiologically by: **↓ BP, ↓ Na⁺, ↑ K⁺, angiotensin II, ACTH**.

03 THERAPEUTIC EFFECTS

"Is It Working?"

Signs of successful replacement

- **↑ BP** from previously hypotensive baseline (Addison's pts run low).
- Resolution of **orthostatic dizziness** & syncope on standing.
- Normalized serum **Na^+** (was low) and **K^+** (was high) in Addison's.
- Stable **weight** (no further volume loss; mild gain expected early).
- Improved **energy, appetite**, less salt craving.
- No more **tachycardia** from volume depletion.
- **Goal labs (Addison's pt on therapy):** `Na⁺ 135–145` · `K⁺ 3.5–5.0` · normotensive supine & standing.

04 SIDE EFFECTS & ADVERSE REACTIONS

What Goes Wrong

Side effects = the drug's MOA pushed too far

COMMON — EXPECTED

- **Hypertension** (dose-dependent — most common).
- **Edema** (peripheral, periorbital).
- **Weight gain** from fluid retention.
- **Headache**, mild dizziness.
- **Hypokalemia** — muscle cramps, weakness, fatigue.
- Mild **hyperglycemia** (glucocorticoid spillover effect).
- Sleep disturbance, mood changes.

SERIOUS — NOTIFY HCP

- **Heart failure** — new dyspnea, crackles, JVD, >2 lb/day weight gain.
- **Severe hypokalemia** ($K^+ < 3.0$) → **cardiac dysrhythmias**, U waves, flat T waves.
- **Hypokalemic periodic paralysis** — sudden muscle weakness.
- **Hypertensive crisis** (BP > 180/120).
- **Pulmonary edema** in elderly/cardiac pts.
- **Metabolic alkalosis** (H^+ loss).
- **Adrenal crisis** if stopped abruptly: hypotension, shock, hyperkalemia, hypoglycemia.

05 PRIORITY NURSING CONSIDERATIONS

Assess · Monitor · Hold · Notify

Action verbs the NCLEX rewards

- → **ASSESS** baseline **BP (lying, sitting, standing)**, weight, edema, lung sounds before each dose escalation.
- → **MONITOR** daily weight (`same scale, same time, same clothes`) — gain >**2 lb/day or 5 lb/week** = report.
- → **MONITOR** serum **K⁺, Na⁺**, glucose, BP trends, I&O.
- → **HOLD** & notify provider for: BP >**160/100**, new edema/SOB, K⁺ <**3.0**, signs of HF.
- → **NOTIFY** provider for any infection, illness, surgery — **stress dosing required** to prevent adrenal crisis.
- **Contraindications:** systemic fungal infection, uncontrolled HTN, HF, hypersensitivity.
- **Drug interactions:**
  - **Loop & thiazide diuretics** → ↑↑ hypokalemia risk.
  - **Digoxin** → hypokalemia ↑ **dig toxicity** risk.
  - **NSAIDs** → ↑ Na⁺/water retention, ↓ effect.
  - **Warfarin** → ↓ anticoag effect.
  - **Phenytoin, rifampin, barbiturates** → ↑ metabolism, ↓ effect.
  - **Vaccines (live)** → avoid; immunosuppressive at high doses.

06 LABS & DIAGNOSTICS

What the Numbers Tell You

Critical values + what abnormal means

- **Serum K⁺** · normal `3.5–5.0 mEq/L` · **CRITICAL < 3.0 or > 6.0** · low = drug working, very low = dangerous.
- **Serum Na⁺** · normal `135–145 mEq/L` · trending high → over-replacement.
- **Plasma renin activity (PRA)** — used to titrate dose in Addison's; ↑ renin = under-replaced, suppressed renin = adequate.
- **BP** — supine & standing; goal: no orthostatic drop >20/10 mmHg.
- **Daily weight** — best early indicator of fluid retention.
- **Glucose** — may rise (glucocorticoid effect).
- **BUN/Creatinine** — kidney function; baseline + periodic.
- **ECG** if K⁺ abnormal: **flat T waves, U waves, ST depression** = hypokalemia.
- **Cortisol & ACTH** — confirm Addison's dx; not used for dose titration.

07 ADMINISTRATION & SAFETY

How To Give It

Route, timing, high-alert points

- **Route:** PO only (tablet) — there is no IV form.
- **Typical dose:** `0.05–0.2 mg PO daily` (Addison's); usually given **once daily in the morning** to mimic natural circadian cortisol rhythm.
- Take with **food** to ↓ GI upset.
- **NEVER stop abruptly** — risk of **adrenal crisis** (life-threatening hypotension, shock, hyperkalemia).
- **Stress dosing rule:** illness/fever/surgery → **double or triple** dose & notify provider; major trauma/surgery → IV hydrocortisone needed instead.
- **Always paired with a glucocorticoid** in Addison's (e.g., hydrocortisone) — fludrocortisone alone is not enough cortisol replacement.
- Patient should carry **medical alert ID** + emergency injectable **hydrocortisone (Solu-Cortef)** kit.
- Adjust dose for **hot weather, exercise, vomiting/diarrhea** — ↑ salt & fluid losses.

08 PATIENT EDUCATION

What the Patient Must Know

Survival teaching for adrenal insufficiency

- **Take every day, at the same time** — this is **lifelong** replacement, not a "PRN" drug.
- **Never skip or stop suddenly** — could trigger **adrenal crisis**.
- **Sick-day rules:** if you have fever, vomiting, diarrhea, or surgery → **call provider**; you may need a higher dose or injection.
- Wear a **medical alert bracelet**: "Adrenal Insufficiency / Steroid-Dependent."
- Carry an **emergency hydrocortisone injection** & learn how to self-administer.
- **Weigh yourself daily**; report >2 lb gain in 24 h or >5 lb in a week.
- Watch for: swelling of feet/face, SOB, severe headache, muscle cramps, weakness, irregular heartbeat → **call provider**.
- Eat a **normal-salt diet** (don't restrict unless told); don't **over**-salt either.
- Avoid **black licorice** — contains glycyrrhizin, mimics aldosterone, ↑ HTN/hypokalemia.
- Avoid **OTC NSAIDs** & large doses of decongestants without provider OK.

09 NCLEX TEST TRAPS

Where Students Lose Points

High-yield distractors decoded

TRAP 01 — DIRECTION OF K^+

Aldosterone **SAVES sodium** and **WASTES potassium**. Students flip this. Mineralocorticoid → **↓ K^+** (hypokalemia). **Spironolactone** = the OPPOSITE → **↑ K^+**.

TRAP 02 — ADDISON VS CUSHING

Addison's = LOW aldosterone & cortisol → low BP, low Na^+, **high K^+**, hyperpigmentation, salt craving. **Cushing's = HIGH** → high BP, high Na^+, **low K^+**, moon face. Fludrocortisone is for **Addison's**.

TRAP 03 — FLUDRO IS NOT ENOUGH ALONE

In Addison's, fludrocortisone **only replaces aldosterone**. Cortisol must also be replaced (hydrocortisone). Test answer: **two-drug regimen**.

TRAP 04 — "STOP THE DRUG" = WRONG

If a pt with Addison's says "I'm sick, should I skip my dose?" the correct teaching is **"DOUBLE the dose & call your provider"** — never stop. Sudden stop = **adrenal crisis**.

TRAP 05 — WEIGHT GAIN ≠ "GOOD RESPONSE"

Some weight gain is expected as volume normalizes, but **>2 lb/day** = fluid overload / HF risk. Don't reassure — **report it**.

TRAP 06 — PRIORITY SYMPTOM TO ACT ON FIRST

Given several findings, the NCLEX wants the **airway/circulation** threat first. **K^+ 2.8 with U waves on ECG** beats "headache" or "1 lb weight gain" every time → **cardiac dysrhythmia risk**.

TRAP 07 — BLACK LICORICE QUESTION

A patient on fludrocortisone reports loving black licorice candy. Correct response: **tell them to avoid it** — glycyrrhizin **potentiates** mineralocorticoid

effect → severe HTN & hypokalemia.

10 MEMORY BOOSTERS

Mnemonics, Patterns, Recall Tricks

Lock it into long-term memory

SALT *(what aldosterone does)*

S — **S**aves **S**odium & water

A — **A**cid (H^+) excreted → alkalosis

L — **L**oses potassium (K^+ out)

T — **T**argets the distal tubule

ADDISON'S *(low aldosterone picture)*

A — **A**ddison's = **A**ll values flip

D — **D**ehydration, **D**ark skin (hyperpigment.)

D — **D**iarrhea, **D**izziness

I — Increased K^+, Decreased Na^+

S — **S**alt craving, **S**hock risk

O — **O**rthostatic hypotension

FOR

N — **N**eeds replacement **LIFE**

"FLO-RINEF FLOWS" *(brand recall)*

Florinef makes blood volume **FLOW**

↑ Salt & water in → ↑ BP → restores perfusion.

flows
too

If volume "**much**" → edema, HF.

RAAS LADDER *(where aldosterone sits)*

Renin (kidney) → angiotensinogen → **A**ngiotensin I

ACE → **A**ngiotensin II (vasoconstriction)

→ **S**timulates aldosterone (final step)

Block earlier = ACE inhibitors / ARBs ↓ aldosterone

Block at receptor = spironolactone / eplerenone (K^+-sparing)

"STEROIDS NEVER STOP" *(safety rule)*

taper,
never
stop

Long-term steroid → **abruptly** ↓ **adrenal**

Sudden stop = **crisis** → hypotension, shock.

Sick day = **increase**, not skip.

Most-Tested Mineralocorticoid Concepts at a Glance

Aldosterone is the body's hormone; fludrocortisone replaces it. Spironolactone & eplerenone *block* it. Knowing which direction each one pushes K^+ and Na^+ wins NCLEX questions.

CONCEPT	ALDOSTERONE (ENDOGENOUS)	FLUDROCORTISONE (FLORINEF)	SPIRONOLACTONE (ALDACTONE)
Action on the receptor	Native **agonist**	**Agonist** — synthetic mimic	**Antagonist** — blocks it
Effect on Na^+ / H_2O	**↑ retain**	**↑ retain**	**↓ retain (excretes)**
Effect on K^+	**↓ (excretes)**	**↓ (excretes)**	**↑ (K^+-sparing)**
Effect on BP	↑	↑	↓ (diuretic)
Primary indication	Physiologic — RAAS activation, hypovolemia	**Addison's disease**, salt-wasting CAH, severe orthostatic hypotension	HF, resistant HTN, primary hyperaldosteronism, ascites, PCOS
#1 NCLEX adverse effect	(N/A)	**HTN, hypokalemia, fluid overload / HF**	**Hyperkalemia**, gynecomastia
Diet teaching	—	Avoid **black licorice**; normal salt; report swelling	Avoid **K^+-rich foods** & salt substitutes (KCl)
Lab to watch first	Renin, aldosterone, Na^+, K^+	**K^+ & BP**	**K^+ & Cr**
Memory cue	"Salt-saver, K-waster"	"Florinef **flows** volume back in"	"Spares K, spills Na"

★ NGN / NCJMM — CLINICAL JUDGMENT SNAPSHOT

Think Like the *NCLEX*

Q1 · #1 PRIORITY RISK

Severe hypokalemia leading to lethal cardiac dysrhythmias.

Fludrocortisone **drives K^+ out** of the body. K^+ < 3.0 with flat T waves & U waves on ECG can rapidly progress to **torsades / V-fib**. This outranks BP elevation, weight gain, and edema in any priority question.

Q2 · WHAT HARMS FIRST?

Fluid overload & sudden BP spike — minutes to hours.

Even before the K^+ trends down, **volume retention** can flood the lungs in elderly or cardiac patients: crackles, JVD, dyspnea, frothy sputum = **acute pulmonary edema**. Hypokalemia & alkalosis develop over days, but volume overload can hit overnight.

Q3 · FIRST NURSING ACTION

Assess BP, lung sounds, & the latest serum K^+ — **before** giving the dose.

If BP >**160/100**, lungs have crackles, or K^+ <**3.0** → **HOLD the dose** and notify provider. If patient is acutely ill / vomiting, anticipate a **stress-dose order** (don't simply withhold — adrenal crisis lurks).

Q4 · RECOGNIZE THE CUE

"My heart feels fluttery and my legs are weak." → think K^+.

Muscle weakness + palpitations + recent diuretic or fludrocortisone start = **hypokalemia until proven otherwise**. Get an ECG and a stat K^+ before the next dose.

Q5 · TAKE ACTION

Sick & vomiting on Florinef? **Stress-dose, don't skip.**

Teach the patient to **double or triple** their replacement during illness/surgery and call the provider. If they can't keep pills down → emergency **IM hydrocortisone** + ER. Skipping doses = **adrenal crisis = shock**.

Q6 · EVALUATE OUTCOMES

Therapy is working when BP normalizes **without** edema or hypokalemia.

Goal: supine & standing BP within target, daily weight stable, K^+ 3.5–5.0, Na^+ 135–145, no orthostatic drop, no new edema, patient reports more energy and less salt craving.