

● ENDOCRINE SYSTEM · ADRENAL CORTEX

NGN NCLEX 2026 · HIGH-YIELD CARD

Addison's *Disease*

Primary adrenal insufficiency — the adrenal cortex can't make enough cortisol and aldosterone. Think "**everything DOWN**" (BP, Na⁺, glucose) with one critical exception: **K⁺ goes UP**.

Opposite of: Cushing's Syndrome**Classic sign:** Bronze hyperpigmentation**Crisis:** Life-threatening shock**Cornerstone tx:** Lifelong steroid replacement

01 Definition & Overview

What Is Addison's Disease?

A chronic, **primary** failure of the adrenal cortex to produce its hormones. Most commonly autoimmune destruction; other causes include TB, adrenal hemorrhage, metastatic cancer, and abrupt withdrawal of long-term steroids.

Because cortisol and aldosterone affect nearly every organ system, untreated Addison's leads to **Addisonian (adrenal) crisis** — a medical emergency marked by shock, hyperkalemia, and hypoglycemia.

C**Cortisol ↓ (Glucocorticoid)**

Regulates glucose, stress response, BP, anti-inflammation.

A**Aldosterone ↓ (Mineralocorticoid)**

Retains Na⁺ & water, excretes K⁺. Maintains BP and volume.

X**Androgens ↓ (Sex Hormones)**

Low libido, loss of body hair (especially in women).

PRIMARY ADRENAL INSUFFICIENCY

02 Pathophysiology

Step 01

Adrenal Cortex Damage

Autoimmune destruction, TB, hemorrhage, or cancer attacks the outer adrenal gland.

Step 02

Hormone Deficit

Cortisol, aldosterone, and androgens all drop below what the body needs.

Step 03

Pituitary Feedback

Low cortisol → ACTH rises from pituitary → MSH also rises → **bronze skin**.

Step 04

Systemic Collapse

Volume loss, electrolyte chaos, poor stress response → risk of adrenal crisis.

✚ Cortisol Results In

Hypoglycemia · fatigue · weakness · poor stress adaptation · GI upset · weight loss.

✚ Aldosterone Results In

Hyponatremia · hyperkalemia · hypovolemia · hypotension · salt craving · dehydration.

03 Signs & Symptoms

CHRONIC · EARLY

Gradual Addison's

- **Bronze hyperpigmentation**
Especially knuckles, elbows, gums, scars (↑ MSH)
- **Progressive fatigue & muscle weakness**
Worsens as the day goes on
- **Anorexia & weight loss**

ADDISONIAN CRISIS · LIFE-THREATENING

Acute Adrenal Crisis 🚨

- **Severe hypotension → shock**
Cool, clammy, weak thready pulse
- **Profound weakness & vascular collapse**
Patient unable to stand or speak clearly
- **High fever, then hypothermia late**

Plus nausea, vomiting, diarrhea, abdominal pain

● **Postural (orthostatic) hypotension**

Dizziness when standing; low baseline BP

● **Salt craving**

Body senses Na^+ loss from $\downarrow$ aldosterone

● **Hypoglycemia**

Sweating, shakiness, headache, irritability

● **Decreased libido, scant body hair**

From low adrenal androgens

Often from a triggering infection

● **Severe hyponatremia & hyperkalemia**

Cardiac dysrhythmias, peaked T waves

● **Severe hypoglycemia**

Altered LOC, confusion, seizures

● **Intractable N/V, severe abdominal pain**

Can mimic acute abdomen

● **Confusion → coma**

From hyponatremia + hypoglycemia + shock



Triggers: infection, trauma, surgery, stress, or abrupt steroid withdrawal.

Na^+ ↓

HYPONATREMIA

K^+ ↑

HYPERKALEMIA

Glucose ↓

HYPOGLYCEMIA

Cortisol ↓

ACTH ↑ (PRIMARY)

04 Priority Nursing Interventions

A

Airway & Circulation

- **Monitor BP** frequently; watch for orthostasis and shock
- **Continuous ECG** — hyperkalemia risk for dysrhythmias
- **Assess LOC** — hyponatremia + hypoglycemia alters mental status

B

Balance Fluids & Labs

- **IV access x2**; administer **0.9% NS** for volume
- Strict **I&O, daily weights** (same scale, same time)
- Monitor Na^+ , K^+ , glucose, cortisol, ACTH

C

Cortisol Replacement

- Administer **IV hydrocortisone** in crisis (priority drug)
- Never miss or delay scheduled doses
- **Stress-dose** for illness, surgery, or trauma

S

Safety & Support

- Quiet environment; **minimize stressors** (noise, visitors, procedures)
- Protect from infection; screen all visitors
- High-carb, **high-sodium** diet; small frequent meals

! Addisonian Crisis — Emergency Protocol

01

Call for Help

Notify HCP; treat as a medical emergency. Do not leave the patient.

02

IV Fluids

Rapid **0.9% NS** bolus to restore volume and Na⁺.

03

IV Hydrocortisone

Give immediately — the single most important drug.

04

Correct Glucose & K⁺

D50 for hypoglycemia; treat hyperkalemia per protocol. Cardiac monitor.

05 Pharmacology

DRUG / CLASS	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
Hydrocortisone Cortef · Solu-Cortef (IV)	Replaces cortisol (glucocorticoid). Drug of choice in Addison's and crisis.	Hyperglycemia, weight gain, moon face, GI upset, infection risk, osteoporosis, mood changes.	Give with food; never stop abruptly . Stress-dose for illness/surgery. Monitor glucose, BP, weight.
Prednisone Oral glucocorticoid	Alternative cortisol replacement; longer-acting oral agent.	Cushingoid features, hyperglycemia, GI bleed, mood swings, cataracts with chronic use.	Morning dose mimics natural rhythm. Taper slowly. Avoid crowds; watch for infection.
Fludrocortisone Florinef · mineralocorticoid	Replaces aldosterone → retains Na ⁺ & water, excretes K ⁺ .	Hypertension, edema, hypokalemia, weight gain, headache.	Monitor BP, weight, K⁺ . Report edema or rapid weight gain. Teach high-sodium intake as ordered.
Dextrose 50% (D50) Emergency glucose	Rapidly corrects severe hypoglycemia during adrenal crisis.	Hyperglycemia, vein irritation, fluid overload.	Give via large IV; recheck glucose in 15 minutes. Protect airway.
0.9% Normal Saline IV volume expander	Restores intravascular volume and sodium in crisis.	Fluid overload, pulmonary edema in susceptible patients.	Monitor lung sounds, JVD, I&O. Titrate per MAP/BP response.

06 NCLEX Test Traps

Addison's EVERYTHING DOWN

- ⚡ BP (hypotension, shock)
- ⚡ Na⁺ (hyponatremia)
- ⚡ Glucose (hypoglycemia)
- ⚡ Cortisol
- ⚡ Weight (loss, anorexia)
- ⚡ K⁺ (hyperkalemia — the exception)
- ⚡ Skin pigmentation (bronze)

Cushing's EVERYTHING UP

- ⚡ BP (hypertension)
- ⚡ Na⁺ (hypernatremia)
- ⚡ Glucose (hyperglycemia)
- ⚡ Cortisol
- ⚡ Weight (central obesity, moon face)
- ⚡ K⁺ (hypokalemia — the exception)
- ⚡ Striae / bruising / thin skin



Never stop steroids abruptly

Sudden withdrawal of long-term corticosteroids is the most common cause of Addisonian crisis. Always **taper**.



Stress = more steroid, not less

Surgery, infection, trauma, emotional stress all **increase** cortisol needs. Missed stress dosing triggers crisis.



Bronze skin is pathologic, not a tan

Hyperpigmentation on **non-sun-exposed** areas (gums, palmar creases, scars) points to primary adrenal insufficiency.



Priority in crisis = fluids + hydrocortisone

Not just fluids. Not just steroid. Students who skip hydrocortisone miss the correct answer.



Don't confuse with DI or SIADH

DI = dilute urine + hypernatremia. SIADH = concentrated urine + hyponatremia. Addison's = hyponatremia **with** hyperkalemia and hypotension.



Watch K⁺ before giving potassium-sparing effects

Aldosterone loss already causes hyperkalemia. Avoid K⁺-sparing diuretics, ACE inhibitors, and ARBs when possible.

07 Patient Education

Priority 01

Take Meds for Life

Steroid replacement is lifelong. **Never stop abruptly.** Set alarms; carry a backup supply when traveling.

Priority 02

Sick Day Rules

Double or triple your dose during fever, flu, vomiting, dental work, or surgery. When in doubt, call your HCP.

Priority 03

Emergency Kit

Wear a **medical alert bracelet**. Carry an IM hydrocortisone injection kit for emergencies; teach family how to use it.

04

Diet & Fluids

Maintain adequate sodium intake; increase fluids/salt in hot weather or with heavy sweating. Small frequent meals help with hypoglycemia.

05

Recognize Crisis Early

Report: severe weakness, dizziness, persistent N/V, diarrhea, abdominal pain, confusion, or rapid weight loss.

06

Daily Self-Monitoring

Weigh daily at the same time. Track BP if possible. Note fatigue patterns and skin changes.

07

Infection Prevention

Stay current on vaccines (flu, pneumonia, COVID). Avoid crowds during outbreaks. Practice good hand hygiene.

08

Follow-Up Labs

Keep appointments for Na⁺, K⁺, glucose, cortisol, and ACTH monitoring to fine-tune dosing.

09

Stress Awareness

Emotional stress counts too. Plan ahead for weddings, exams, work deadlines; discuss dose adjustments with HCP.

08 Memory Boosters

THE BIG IDEA

"Addison's = A-Downs"

*Everything is **DOWN** — BP, Na⁺, glucose, cortisol, weight, energy — **except K⁺, which***

MNEMONIC

The 8 A's of Addison's

A

Anorexia

Loss of appetite, weight loss

A

Abdominal pain / N·V·D

goes up. Picture the patient sinking into a chair: low pressure, low sugar, low salt.

Mirror image of Cushing's: if you can picture one, flip every arrow to get the other.

GI upset is classic

A Apathy & fatigue
Profound tiredness, depression

A Ashen / bronze skin
Hyperpigmentation from ↑ MSH

A Asthenia
Muscle weakness, poor endurance

A Adaptation poor
Can't handle stress; risk of crisis

A Aldosterone low
↓ Na⁺ + ↑ K⁺ + hypotension

A Acidosis / hyperkalemia
Electrolyte emergency risk

WORD PLAY

"Addi-SON needs SALT & SUN(screen)"

SALT: salt cravings, hyponatremia — give Na⁺.

SUGAR: hypoglycemia — watch glucose.

SUN: bronze pigmentation (non-sun-exposed areas too).

STEROIDS: lifelong replacement, never stop.

PATTERN RECOGNITION

Instant Lab Pattern

⚡ **Na⁺ + BP + Glucose + Cortisol**
Four "downs" all at once = Addison's

⚡ **K⁺ + ACTH + Pigmentation**
Three "ups" confirm primary adrenal insufficiency



Trigger + Crisis

Stress/infection/missed dose → sudden decompensation

NCJMM · CLINICAL JUDGMENT

Applying the Model to Addison's Disease

Scenario: A 52-year-old with known Addison's arrives in the ED after 2 days of vomiting from the flu. BP 78/46, HR 128, T 38.7°C, glucose 58, Na⁺ 126, K⁺ 5.9. Skin is bronze; patient is lethargic and confused.

Recognize

Cues

Hypotension, tachycardia, fever, hypoglycemia, hyponatremia, hyperkalemia, altered LOC, bronze skin.

Analyze

Pattern

Illness + vomiting + missed steroids in an Addison's patient = **Addisonian crisis.**

Prioritize

Actions

IV access, rapid 0.9% NS, **IV hydrocortisone**, D50 for hypoglycemia, continuous cardiac monitoring.

Evaluate

Outcomes

BP ↑, HR ↓, glucose > 70, Na⁺ & K⁺ normalize, LOC improves, patient stabilizes.