

NUTRITION

RENAL

CARDIAC

PHARMACOLOGY

NGN NCLEX 2026

Foods High & Low in Potassium

A high-yield nutrition reference for clients with CKD/ESRD, hyperkalemia, hypokalemia, diuretic therapy, ACE-I/ARBs, and digoxin. Diet directly drives serum K^+ — and serum K^+ drives the heart.

Normal Serum K^+ **3.5 – 5.0 mEq/L**

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Definition & Overview

WHY POTASSIUM MATTERS

- **Potassium (K^+)** is the major *intracellular* cation — vital for nerve conduction, skeletal/smooth muscle function, and especially **cardiac muscle contraction**.
- **90% excreted by kidneys**, 10% in stool. Any renal impairment = K^+ retention = hyperkalemia risk.
- Both **too high** and **too low** K^+ cause **lethal cardiac dysrhythmias** — diet is a frontline intervention.
- Normal range: **3.5 – 5.0 mEq/L** (memorize this — it appears on nearly every NCLEX K^+ item).

WHO NEEDS K^+ DIET TEACHING?

- ↓ CKD / ESRD / dialysis (limit)
- ↓ Hyperkalemia (limit)
- ↓ ACE inhibitors / ARBs (caution)
- ↓ K-sparing diuretics: spironolactone (limit)
- ↑ Loop diuretics: Lasix (encourage)
- ↑ Thiazides: HCTZ (encourage)
- ↑ Hypokalemia (encourage)
- ↑ Digoxin therapy (low K = dig toxicity)

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Pathophysiology

DIET → PLASMA → HEART



Dietary Intake

K⁺ from food enters GI tract



Absorption

K⁺ moves into bloodstream → ICF/ECF balance



Renal Excretion

Kidneys remove ~90% of dietary K⁺



Cardiac Effect

Serum K⁺ controls myocardial conduction

↓ HYPOKALEMIA (< 3.5)

Heart Slows, Muscles Weaken

- Flat / inverted T waves
- Prominent **U waves**
- ST depression, prolonged PR
- Risk: dysrhythmias + **digoxin toxicity**

↑ HYPERKALEMIA (> 5.0)

Heart Twitches, Then Stops

- **Tall, peaked T waves** (early)
- Wide QRS, prolonged PR
- Loss of P wave
- Risk: V-fib → **cardiac arrest**

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Signs & Symptoms

HYPOKALEMIA VS. HYPERKALEMIA

HYPOKALEMIA

$K^+ < 3.5 \text{ MEQ/L}$

- Muscle weakness, leg cramps, fatigue
- Shallow respirations (resp. muscle weakness)
- ↓ Deep tendon reflexes
- **Constipation, paralytic ileus** (↓ peristalsis)
- Polyuria, dilute urine
- Orthostatic hypotension, weak pulse

🚨 Lethal dysrhythmias + digoxin toxicity (low K potentiates dig)

🚨 U waves on ECG — classic NCLEX cue

“6 L's of LOW K” · Lethargy · Lethal arrhythmias · Leg cramps · Limp muscles · Low/shallow breaths · Lots of urine

HYPERKALEMIA

$K^+ > 5.0 \text{ MEQ/L}$

- Muscle twitching → progressing to weakness/paralysis
- Paresthesias (numbness, tingling — esp. lips/face)
- **Hyperactive bowel sounds, diarrhea**
- Irritability, anxiety
- Bradycardia, irregular pulse
- Oliguria (with renal cause)

🚨 Peaked T waves → wide QRS → V-fib / arrest

🚨 Cardiac arrest is the ultimate threat

“MURDER” · Muscle weakness · Urine ↓ · Respiratory distress · Decreased contractility · ECG changes · Reflexes

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The Foods

WHAT TO LIMIT · WHAT IS SAFE

HIGH POTASSIUM

LIMIT for renal / hyperkalemia / K-sparing patients

🍌 THE BIG 4 — MOST TESTED

 Bananas	 Oranges & OJ	 Potatoes
 Tomatoes / sauce		

FRUITS

 Avocado	 Cantaloupe / Honeydew	 Kiwi
 Apricots	 Raisins / Prunes	 Dried fruits

VEGETABLES

 Sweet potato	 Spinach	 Broccoli
 Mushrooms	 Brussels sprouts	 Winter squash

PROTEIN, DAIRY & OTHER

 Beans / lentils	 Nuts / peanut butter	 Salmon / tuna
 Milk / yogurt	 Salt substitutes	 Chocolate / molasses

⚠️ **STAR TRAP:** Salt substitutes contain potassium chloride (KCl) — they are NOT safe for renal patients, ACE-I/ARB users, or anyone on a K-sparing diuretic. This is a classic NCLEX item.

LOW POTASSIUM

SAFER choices for renal / hyperkalemia patients

🍏 SAFE FRUITS

 Apples / applesauce	 Blueberries	 Strawberries
 Grapes	 Pineapple	 Watermelon (small)
 Peaches (canned)	 Pears	 Plums

🥬 SAFE VEGETABLES

 Lettuce	 Cucumber	 Bell peppers
 Cabbage	 Cauliflower	 Onions
 Green beans	 Carrots (limit)	 Corn (limit)

🍞 GRAINS & STARCHES

 White bread	 White rice	 Pasta
 Bagels	 Plain crackers	 Refined cereals

🥚 PROTEIN & DAIRY (MODERATE)

 Eggs	 Chicken (small)	 Lean beef (small)
 Cheese	 Cracker	 Yogurt

Cottage cheese

Cream cheese

Rice / almond milk

✓ **KITCHEN TRICK:** Soaking and double-boiling potatoes (peel, cube, soak 2+ hours, drain, boil in fresh water) can **leach out ~50% of the potassium** — making them safer for renal patients.

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Priority Nursing Interventions

ABCS · SAFETY · PRIORITIZATION

HYPOKALEMIA · K < 3.5

Goal: Restore K⁺ Safely

1. **A · B** Assess respirations & cardiac rhythm — weak resp. muscles → hypoventilation; ECG for U waves, dysrhythmias.
2. **DRUG** Administer oral KCl **with food + full glass of water**; do not crush ER tablets.
3. **IV K⁺** **NEVER push IV potassium.** Always dilute, run on a pump, max **10–20 mEq/hr**, central line preferred for higher concentrations.
4. **DIET** Teach high-K foods: bananas, oranges, potatoes, tomatoes, spinach, dried fruits.
5. **SAFETY** Hold loop/thiazide diuretics if ordered; check serum **magnesium** (low Mg blocks K replacement).
6. **DIG** If on digoxin → assess for toxicity (N/V, halos, bradycardia).

HYPERKALEMIA · K > 5.0

Goal: Stabilize Heart, Shift K⁺, Remove K⁺

1. **A · B · C** Obtain ECG immediately — peaked T waves, wide QRS = emergency. Place on cardiac monitor.
2. **STABILIZE** IV **calcium gluconate** first if ECG changes — protects the myocardium (does NOT lower K).
3. **SHIFT** IV insulin + D50, sodium bicarb, or albuterol nebulizer — drives K⁺ *into* cells.
4. **REMOVE** Sodium polystyrene sulfonate (Kayexalate) PO/PR, patiomer, loop diuretics, or **dialysis** (definitive in ESRD).
5. **DIET** Strict low-K diet; eliminate salt substitutes, bananas, potatoes, tomatoes, oranges.
6. **HOLD** Hold ACE-I, ARBs, K-sparing diuretics, and any KCl supplements.

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Pharmacology DRUGS THAT MOVE POTASSIUM

↑ Drugs That RAISE K⁺

ACE inhibitors (-pril): lisinopril, captopril, enalapril

ARBs (-sartan): losartan, valsartan

K-sparing diuretics: spironolactone, eplerenone, triamterene

KCl supplements: Klor-Con, K-Dur, K-Lyte

NSAIDs (long-term)

Heparin, TMP-SMX

⚠ Caution with high-K foods & salt substitutes.
Combining 2+ of these drugs greatly increases hyperkalemia risk.

↓ Drugs That LOWER K⁺

Loop diuretics: furosemide (Lasix), bumetanide, torsemide

Thiazides: HCTZ, chlorthalidone, metolazone

Corticosteroids: prednisone, methylprednisolone

Beta-2 agonists: albuterol (high doses)

Insulin (shifts K into cells)

Laxatives (chronic abuse)

⚠ Encourage high-K foods & monitor serum K⁺. Lasix + digoxin = high risk for dig toxicity from hypokalemia.

RX Treats Hyperkalemia

Calcium gluconate IV — cardiac membrane stabilizer (1st with ECG changes)

Insulin + D50 IV — shifts K into cells

Sodium bicarbonate — shifts K (esp. acidosis)

Albuterol nebulizer — shifts K

Kayexalate (SPS) PO/PR — removes via stool

Patiromer (Veltassa) — chronic binder

Dialysis — definitive in ESRD

📖 Memorize the order: **STABILIZE → SHIFT → REMOVE**. Calcium does NOT lower K — it only protects the heart.

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NCLEX Test Traps

WHERE STUDENTS LOSE POINTS

TRAP 1

"Salt substitute" sounds harmless — but it is **potassium chloride**. NEVER for CKD, K-sparing diuretic, ACE-I, or ARB patients. *Many students assume it's just regular salt.*

TRAP 2

Strawberries are LOW in potassium — not high. Don't assume all fruits are high-K. **Berries (blueberries, strawberries, cranberries) and apples are safe.**

TRAP 3

Apple juice ≠ Orange juice. Apple, cranberry, and grape juice are LOW-K. Orange, prune, and tomato juice are HIGH-K. *Read the juice carefully on the question.*

TRAP 4

IV potassium is NEVER pushed. Always diluted, on a pump, max 10–20 mEq/hr peripheral. *A push of KCl will cause cardiac arrest — period.*

TRAP 5

Lasix (loop) → patient needs MORE K, not less. Loops & thiazides waste K — encourage bananas, oranges, potatoes. *Spironolactone is the OPPOSITE — limit those same foods.*

TRAP 6

Hypokalemia + Digoxin = TOXICITY. Low K potentiates dig — watch for N/V, yellow halos, bradycardia. *Check K⁺ before every dig dose in at-risk patients.*

TRAP 7

Calcium gluconate does NOT lower potassium. It only stabilizes the cardiac membrane. *After calcium, you still must shift (insulin/D50) and remove (Kayexalate, dialysis) the K.*

TRAP 8

"Peaked T waves" → think HIGH K. "U waves" & flat T waves → think LOW K. *Memorize this pairing — it appears as image / drag-and-drop NGN items.*

TRAP 9

Bowel sounds reverse. HYPOkalemia → *hypoactive* bowel / ileus. HYPERkalemia → *hyperactive* bowel / diarrhea. *Easy to flip when tired — high K = high bowel activity.*

TRAP 10

Coconut water and sports drinks with K count as high-K beverages. *A "healthy" drink can blow a renal patient's potassium out of range.*

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Patient & Family Education

DISCHARGE TEACHING ESSENTIALS

1

Read every label — look for “potassium chloride,” “KCl,” or “K⁺” on processed foods, salt substitutes, and seasonings.

2

Avoid salt substitutes if you have kidney disease or take a K-sparing diuretic, ACE-I, or ARB — they contain potassium chloride.

3

For renal patients: limit bananas, oranges, potatoes, tomatoes, avocados, beans, dried fruits, milk, and chocolate.

4

Soak & double-boil potatoes (peel, cube, soak 2+ hrs, drain, boil in fresh water) to cut potassium roughly in half.

5

For diuretic users (Lasix, HCTZ): include high-K foods daily — bananas, oranges, potatoes, tomatoes, melons.

6

Take KCl tablets with a full glass of water and food — never crush extended-release. Sit upright 30 minutes after.

7

Report immediately: muscle weakness, palpitations, irregular heartbeat, severe cramps, numbness, or fainting.

8

Keep all labs. Routine serum K⁺ checks are non-negotiable on diuretics, ACE-I/ARBs, KCl, or with kidney disease.

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Memory Boosters

MNEMONICS & PATTERN RECOGNITION

B · A · N · A · N · A · S

HIGH-K Foods to LIMIT

- B** Bananas, **B**eans, **B**ran, **B**roccoli
- A** Avocado, **A**pricots
- N** Nuts, **N**ectarines
- A** Active salt substitutes (KCl)
- N** "Naked" potatoes (with skin)
- A** All dried fruit (raisins, prunes, dates)
- S** Spinach, **S**weet potato, **S**almon

A · B · C · P · P

LOW-K Foods that are SAFE

- A** Apples, **A**pplesauce
- B** Berries (blueberries, strawberries, cranberries)
- C** Cucumbers, **C**auliflower, **C**abbage
- P** Pineapple, **P**ears, **P**eaches (canned)
- P** Pasta, white rice, white bread

QUICK PATTERN RULE

HIGH-K foods tend to be

Big · Bright · Beautiful

(banana, potato, tomato, spinach, avocado).

LOW-K foods tend to be

Pale · Plain · Petite

(apple, lettuce, cucumber, white bread, pasta).

K⁺ ECG SHORTCUT

LOW K =

U waves & flat T

("U" for "Under" the line)

HIGH K =

Peaked T waves

("T" tents up like a teepee — too much K)

PERSONAL STUDY REFERENCE · NGN NCLEX 2026 · FOODS HIGH & LOW IN POTASSIUM