

POTASSIUM & HYPERKALEMIA IN CKD — INFOGRAPHIC OVERVIEW

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POTASSIUM & HYPERKALEMIA IN CHRONIC KIDNEY DISEASE (CKD)

Understanding, Prevention, and Control

Potassium is an essential mineral your body needs to function. But when kidneys can't remove extra potassium, levels can rise too high (hyperkalemia) and cause serious complications—especially in CKD.



Healthy kidneys remove extra potassium.



In CKD, potassium can build up in your body.



High potassium can affect your heart.



Managing potassium protects your health and saves lives.

WHY IT MATTERS



High potassium can cause dangerous heart rhythms.



It can be life-threatening if not treated.



Often there are no symptoms.



Common in CKD, especially in advanced stages.



1 WHAT IS POTASSIUM?

Potassium helps your body:



Maintain a normal heartbeat



Support muscle function



Transmit nerve signals



Balance fluids in your body

The right amount is important.

Too much potassium (hyperkalemia) can be dangerous.



2 WHAT CAUSES HIGH POTASSIUM (HYPERKALEMIA)?

Common causes in CKD:



Reduced kidney function



Certain medications (ACE inhibitors, ARBs, potassium-sparing diuretics, NSAIDs, etc.)



High potassium foods and salt substitutes



Constipation



Acidosis (too much acid in the blood)



Uncontrolled diabetes



Hormonal problems (low aldosterone)



Intense exercise or tissue injury



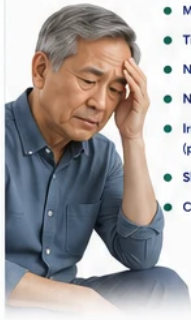
Skipping dialysis or inadequate dialysis



Sometimes, no clear cause is found. Regular monitoring helps catch high potassium early.

3 SIGNS & SYMPTOMS

Hyperkalemia may not cause symptoms. When it does, you may notice:



- Muscle weakness or heaviness
- Tiredness or fatigue
- Numbness or tingling
- Nausea
- Irregular heartbeat (palpitations)
- Shortness of breath
- Chest pain (severe cases)

HIGH POTASSIUM IS OFTEN SILENT.



Routine blood tests are the only way to know for sure.



4 HIGH-POTASSIUM FOODS: KNOW YOUR CHOICES

ENJOY (Lower Potassium Choices)



Apples, berries, grapes, pineapple, watermelon



Cabbage, cucumber, lettuce, onion, bell peppers



White rice, pasta, bread

ENJOY IN MODERATION (Medium Potassium)



Banana, orange, mango, kiwi, melon



Potato, sweet potato, corn, peas



Beans, lentils, chickpeas, tofu

LIMIT OR AVOID (High Potassium)



Avocado, tomato, coconut, dried fruits



Spinach, broccoli, beet greens, mushrooms



Nuts, seeds, chocolate, potato chips, banana chips

Portion size matters. Work with your dietitian for a plan that fits you.

5 HOW IS HIGH POTASSIUM TREATED?



Medical treatment
Medicines or IV treatments can quickly lower potassium in an emergency.



Medication review
Your doctor may adjust or stop medicines that raise potassium.



Dialysis
Dialysis removes extra potassium from your blood.



Dietary changes
Following a kidney-friendly eating plan helps keep potassium in a safe range.



Severe hyperkalemia is a medical emergency.
Get help right away if advised by your healthcare team.

6 TIPS TO KEEP YOUR POTASSIUM IN CONTROL



Get regular blood tests and follow your care plan.



Follow your kidney-friendly eating plan.



Take medicines as prescribed. Never stop or change doses on your own.



Don't skip dialysis. It keeps you and your levels balanced.



Ask questions. Your healthcare team is here to help you.



Small daily choices today can prevent big problems tomorrow. Protect your heart. Protect your health.



WHEN TO GET HELP

Seek immediate medical care if you have:

- Chest pain
- Severe weakness
- Trouble breathing
- Very slow or irregular heartbeat
- Fainting or feeling like you'll faint



REMEMBER

- High potassium can be silent but serious.
- You have the power to keep it in control.
- Partner with your healthcare team and stay proactive.



WORKING TOGETHER

You, your kidneys, and your healthcare team— a strong partnership for a healthier life.



Stay informed. Stay in control. Stay healthy.



William Rivero, MD
Nephrologist

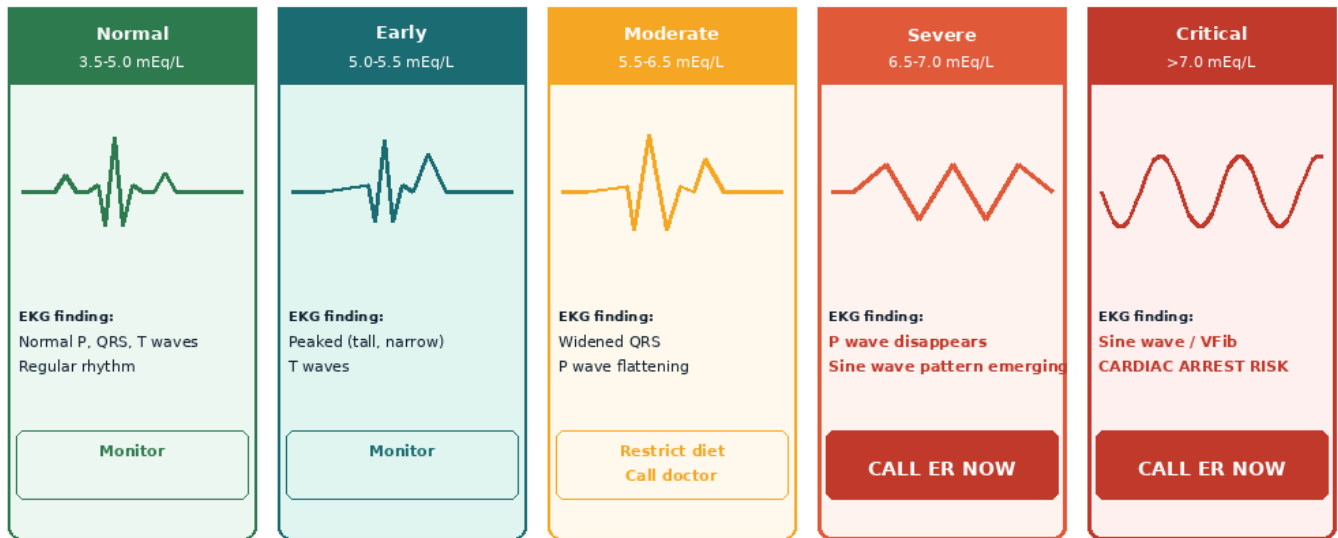
This information is for educational purposes only and does not replace professional medical advice. Always follow the advice of your healthcare team.

POTASSIUM & HYPERKALEMIA IN CKD — EKG CHANGES, TARGETS & MEDICATIONS

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EKG CHANGES WITH RISING POTASSIUM

From normal through life-threatening arrhythmia



NORMAL → EARLY → MODERATE → SEVERE → CRITICAL

Progression is not always stepwise — can deteriorate rapidly

KDIGO 2024 — TARGET POTASSIUM LEVELS BY PATIENT TYPE

Patient Type	K+ Target	Daily Diet Limit	Priority Action
CKD Stages 1-3	3.5-5.0 mEq/L	No strict limit unless trending up	Monitor K+ every 3-6 months
CKD Stages 4-5 (pre-HD)	3.5-5.0 mEq/L	1,500-2,000 mg/day	Strict diet + leaching + possible meds
Hemodialysis (pre-HD)	3.5-5.5 mEq/L	1,500-2,000 mg/day	Critical: avoid high-K food after last session
Peritoneal Dialysis	3.5-5.0 mEq/L	2,000-2,500 mg/day	More liberal; monitor monthly

THE WEEKEND GAP — highest-risk period for HD patients:

After 68+ hours without dialysis (Fri → Mon), potassium peaks dangerously. Strict diet Thursday night through Monday morning is critical.
From the infographic: *Skipping dialysis or inadequate dialysis is one of the 8 causes of hyperkalemia*

MEDICATIONS THAT AFFECT POTASSIUM — NEVER STOP WITHOUT NEPHROLOGIST ADVICE

Medication	Local Brand / Generic	K+ Effect	Action
ACE Inhibitors	Lisinopril, Enalapril	↑ K+ (raises)	Do NOT stop — kidney-protective; manage K via diet + binders
ARBs	Losartan, Irbesartan, Valsartan	↑ K+ (raises)	Do NOT stop; if K >5.5 consistently, discuss with nephrologist
Finerenone (Firialta)	Firialta (PH-registered)	↑↑ K+ (significant)	Check K+ at 4 weeks; do NOT combine with ACEi+ARB
Spirolactone	Aldactone	↑ K+ (raises)	Avoid CKD G4-5; K-sparing diuretic
NSAIDs	Mefenamic acid, Ibuprofen	↑ K+ + ↓ eGFR	Avoid CKD G3b+; worsens K AND kidney function
Furosemide (Lasix)	Generic available	↓ K+ (lowers)	Loop diuretic; monitor for hypokalemia (<3.5)
NaHCO3 tablets	Generic sodium bicarbonate	↓ K+ (lowers)	Corrects acidosis → K shifts back into cells; target HCO3 22-
Kayexalate (SPS)	Sodium polystyrene sulfonate	↓ K+ (lowers)	K-binder; take 6h apart from other meds

6 TIPS TO KEEP POTASSIUM IN CONTROL (FROM INFOGRAPHIC)

- ✓ **Get regular blood tests:** Routine blood tests are the ONLY way to know for sure. K is often silent even at dangerous levels.
- ✓ **Follow kidney-friendly eating plan:** Work with your nephrologist on daily limits. Apply leaching to vegetables.
- ✓ **Take medicines as prescribed:** Never stop or change doses on your own — especially ACEi/ARBs.
- ✓ **Don't skip dialysis:** It keeps you and your potassium levels balanced. Skipping is a direct cause of hyperkalemia.
- ✓ **Ask your healthcare team:** Your nephrologist, nurse, and dietitian are your partners. Bring your K results to every visit.
- ⚠ **SALT SUBSTITUTES ARE DANGEROUS:** Products like NuSalt, NoSalt, and Lo-Salt contain potassium chloride — can be fatal in CKD.

DAILY POTASSIUM TARGET: 1,500-2,000 mg/day (CKD Stage 4-5 & Dialysis) | CKD Stage 1-3: no strict limit

Leaching (peel, soak 2-4h, boil & discard water) removes 30-50% of potassium from vegetables.

from the infographic: LIMIT OR AVOID — avocado, tomato, coconut, dried fruits | spinach, broccoli, beet greens, mushrooms | nuts, seeds, chocolate, potato chips, banana chips

Food Item (Filipino / English)	Serving	K+ (mg)	% of 2,000mg	Risk
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FRUITS — HIGH POTASSIUM (strictly limit or avoid)

Abokado / avocado	1 medium (150g)	975	49%	EXTREME
Abokado / avocado (1/4 slice)	1/4 medium (38g)	244	12%	HIGH
Buko juice / coconut water	1 cup (240mL)	600	30%	EXTREME
Niyog / coconut meat (fresh)	1/2 cup (80g)	285	14%	HIGH
Saging / banana (lakatan)	1 medium (120g)	422	21%	EXTREME
Saging na saba (boiled)	1 medium (90g)	270	14%	HIGH
Mangga / mango (hinog/ripe)	1 whole (200g)	323	16%	HIGH
Pakwan / watermelon	2 cups (300g)	320	16%	HIGH
Durian	1/2 cup (80g)	436	22%	EXTREME
Papaya (ripe, large slice)	1 cup (140g)	264	13%	MOD
Prutas na tuyo / dried fruits	1/4 cup (40g)	380	19%	HIGH
Kamias / bilimbi	5 pieces (50g)	310	16%	HIGH

VEGETABLES — HIGH POTASSIUM (strict limits; leach before eating)

Kamote / sweet potato (boiled)	100g	437	22%	EXTREME
Gabi / taro (boiled)	1/2 cup (100g)	319	16%	HIGH
Kamatis / tomato	2 medium (240g)	474	24%	EXTREME
Kalabasa / squash	1 cup (116g)	286	14%	MOD
Kangkong (raw)	1 cup (56g)	312	16%	HIGH
Malunggay / moringa leaves	1/2 cup (50g)	337	17%	HIGH
Ampalaya / bitter melon (raw)	1 cup (94g)	296	15%	MOD
Spinach (raw, or any dark leafy)	1 cup (30g)	167	8%	MOD
Broccoli (raw)	1 cup (91g)	288	14%	MOD
Monggo / mung beans (cooked)	1/2 cup (100g)	369	18%	HIGH
Patani / lima beans (cooked)	1/2 cup (85g)	484	24%	EXTREME
Garbanzos / chickpeas (cooked)	1/2 cup (82g)	239	12%	MOD
Mais / corn (fresh boiled)	1 ear (103g)	325	16%	HIGH
Sibuyas / onion (cooked)	1/2 cup (105g)	234	12%	MOD

HIGH-POTASSIUM PROTEIN SOURCES

Tuyo / dried fish	1 piece (~50g)	400	20%	HIGH
Daing na bangus	1 piece (100g)	407	20%	HIGH
Tahong / mussels	6 pcs (90g)	267	13%	MOD
Talaba / oysters	6 pcs (90g)	235	12%	MOD
Tokwa / tofu (firm)	100g	121	6%	MOD
Itlog na maalat / salted egg	1 large (60g)	135	7%	MOD

HIGH-POTASSIUM DRINKS

Buko juice / coconut water	1 cup (240mL)	600	30%	EXTREME
Orange juice (commercial)	1 cup (248mL)	496	25%	HIGH
Tomato juice	1 cup (243mL)	535	27%	EXTREME
Guava juice (commercial)	1 cup (250mL)	354	18%	HIGH
Sports drinks (Gatorade, Pocari)	1 bottle (500mL)	195	10%	MOD

POTASSIUM & HYPERKALEMIA IN CKD — SAFE & MODERATE POTASSIUM FOODS

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GREEN (SAFE) < 150 mg/serving | **AMBER (MODERATE) 150-250 mg** | **CORAL (HIGH) 250-400 mg**

from the infographic — ENJOY (lower K): apples, berries, grapes, pineapple, watermelon | cabbage, cucumber, lettuce, onion, bell peppers | white rice, pasta, bread

Food Item (Filipino / English)	Serving	K+ (mg)	% of 2,000mg	Risk
FRUITS — SAFE TO ENJOY (lower potassium)				
Mansanas / apple (no skin)	1 medium (120g)	148 ↓	7%	SAFE
Peras / pear (no skin)	1 medium (160g)	116 ↓	6%	SAFE
Ubas / grapes (red or green)	15 pcs (90g)	176 ↓	9%	MOD
Pinya / pineapple (fresh)	1 cup (165g)	180 ↓	9%	MOD
Pakwan / watermelon (small slice)	1 cup (150g)	170 ↓	8%	MOD
Melon / cantaloupe	1/2 cup (80g)	184 ↓	9%	MOD
Strawberry / strawberries	1 cup (152g)	220 ↓	11%	MOD
Blueberries	1 cup (148g)	114 ↓	6%	SAFE
Dalandan / mandarin orange	1 medium (76g)	132 ↓	7%	SAFE
Singkamas / jicama	1/2 cup (65g)	105 ↓	5%	SAFE
Canned peaches in water (drained)	1/2 cup (100g)	85 ↓	4%	SAFE
Canned pears in water (drained)	1/2 cup (100g)	74 ↓	4%	SAFE
VEGETABLES — SAFE (low K; leach for extra reduction)				
Repolyo / cabbage (raw or boiled)	1/2 cup (75g)	109 ↓	5%	SAFE
Upo / bottle gourd (boiled)	1/2 cup (100g)	80 ↓	4%	SAFE
Sayote / chayote (leached)	1/2 cup (100g)	124 ↓	6%	SAFE
Pipino / cucumber (fresh)	1/2 cup (60g)	76 ↓	4%	SAFE
Labanos / white radish (boiled)	1/2 cup (100g)	100 ↓	5%	SAFE
Talong / eggplant (grilled)	1/2 cup (50g)	62 ↓	3%	SAFE
Okra (boiled)	5 pieces (50g)	108 ↓	5%	SAFE
Patola / sponge gourd (boiled)	1/2 cup (100g)	90 ↓	4%	SAFE
Bell pepper (green/red, raw)	1/2 cup (75g)	131 ↓	7%	SAFE
Pechay / bok choy (boiled)	1/2 cup (85g)	176 ↓	9%	MOD
Sitaw / string beans (boiled)	1/2 cup (55g)	100 ↓	5%	SAFE
Ampalaya (boiled, water discarded)	1/2 cup (50g)	148 ↓	7%	SAFE
Kangkong (boiled, water discarded)	1/2 cup (50g)	156 ↓	8%	MOD
Sibuyas dahon / spring onion	2 stalks (15g)	69 ↓	3%	SAFE
Kamote (leached: soaked + boiled)	1/2 cup (100g)	215 ↓	11%	MOD
GRAINS, STARCHES & RICE — mainstay of a low-potassium Filipino diet				
Kanin / plain white rice (rinsed)	1 cup (186g)	55 ↓	3%	SAFE
Sinangag / garlic fried rice	1 cup (180g)	57 ↓	3%	SAFE
Lugaw / plain rice porridge	1 bowl (300mL)	48 ↓	2%	SAFE
Bihon / rice vermicelli (cooked)	1 cup (150g)	28 ↓	1%	SAFE
Sotanghon / glass noodles (cooked)	1 cup (150g)	22 ↓	1%	SAFE
Puting tinapay / white bread	2 slices (60g)	50 ↓	2%	SAFE
Pandesal (plain)	2 pieces (50g)	45 ↓	2%	SAFE
Rice crackers (plain)	4 pieces (25g)	26 ↓	1%	SAFE
Kamoteng kahoy / cassava (boiled)	100g	180 ↓	9%	MOD
EGGS & PROTEIN SOURCES — safe choices				
Puti ng itlog / egg white (2 large)	2 large whites	108 ↓	5%	SAFE
Whole egg (boiled)	1 large (50g)	63 ↓	3%	SAFE
Chicken breast (boiled)	100g	220 ↓	11%	MOD
Tilapia (boiled, broth discarded)	100g	302 ↓	15%	MOD
Bangus (boiled, broth discarded)	100g	290 ↓	14%	MOD
SAFE BEVERAGES				
Tubig / plain water	1 glass (240mL)	0 ↓	0%	SAFE
Brewed black coffee (no milk)	1 cup (240mL)	116 ↓	6%	SAFE
Plain unsweetened tea	1 cup (240mL)	88 ↓	4%	SAFE
Calamansi juice (unsweetened)	1 glass (240mL)	100 ↓	5%	SAFE
Clear soda (Sprite, 7-Up)	1 can (355mL)	4 ↓	0%	SAFE
Rice milk (no K additives)	1 cup (240mL)	80 ↓	4%	SAFE
Instant 3-in-1 coffee	1 sachet (18g)	90 ↓	4%	SAFE

COMMON FILIPINO MEALS (ULAM) — POTASSIUM AT A GLANCE

Food Item (Filipino / English)	Serving	K+ (mg)	% of 2,000mg	Risk
Kare-kare with bagoong (1 tbsp)	1 cup (250g)	1800	90%	EXTREME
Ginisang monggo (with malunggay)	1 cup (200g)	800	40%	HIGH
Sinigang na baboy (fresh kamote leaves)	1 bowl (400mL)	620	31%	HIGH
Adobo with kamatis / tomatoes	1 cup (250g)	600	30%	HIGH
Pinakbet (with kamatis + kalabasa)	1 cup (200g)	590	30%	HIGH
Utang bisaya (with sitaw + kamote)	1 cup (200g)	480	24%	HIGH
Tinola (manok, with sayote)	1 bowl (350mL)	310	16%	MOD
Sinigang na isda (no kamote leaves)	1 bowl (350mL)	320	16%	MOD
Adobong manok (no kamatis)	1 cup (250g)	265	13%	MOD
Nilagang baka (broth discarded)	1 cup (250g)	290	14%	MOD
Ginisang upo with egg white	1 cup (200g)	160	8%	SAFE
Plain sinangag + boiled egg white	1 plate	105	5%	SAFE
Lugaw with ginger (plain)	1 bowl (300mL)	55	3%	SAFE
Boiled chicken breast + rice + upo	1 plate	298	15%	MOD

LEACHING TECHNIQUE — REDUCES POTASSIUM BY 30-50%

- Step 1: Peel & cut small:** Remove skin; cut into thin, small pieces. Thinner pieces leach more effectively.
- Step 2: Soak in warm water:** Immerse in a large volume of warm water for 2-4 hours. Change water twice during soaking.
- Step 3: Drain & rinse:** Discard soaking water. Rinse thoroughly under running water.
- Step 4: Boil in fresh water:** Cook in new water; discard the boiling water. NEVER use this water as soup base.
- Step 5: Season carefully:** Avoid high-K condiments: no buko juice, no kamatis sauce, no salt substitutes.

Works best on: kangkong, sitaw, ampalaya, sayote, kalabasa, kamote, spinach, kangkong

DOES NOT WORK ON: liquids (buko juice), dried fruits, dried beans (must soak separately before cooking)

SALT SUBSTITUTES CAN BE FATAL IN CKD — from the infographic (cause #3: high-K foods & salt substitutes)

NuSalt, NoSalt, Lo-Salt, and similar "salt-free" products contain potassium chloride instead of sodium chloride.

SMART SWAPS — HIGH-K → LOWER-K FILIPINO ALTERNATIVES

Saging (banana) 422mg	Apple (no skin) 148mg or canned peaches (drained) 85mg
Buko juice 600mg/cup	Calamansi juice 100mg or plain water + calamansi
Kamote 437mg/100g	Cassava (small, boiled) 180mg or kamoteng kahoy leached
Avocado 975mg	No safe equivalent — avoid entirely in CKD Stage 4-5+
Kangkong 312mg (raw)	Cabbage (leached) 109mg or upo 80mg
Monggo soup (with malunggay)	Clear upo/sayote soup with egg white (no legumes)
Kare-kare + bagoong	Ginisang upo + chicken breast boiled + 1/4 tsp bagoong with calamansi
Kamatis in adobo/sauces	Plain adobo without tomatoes; use vinegar for sourness
Lugaw with malunggay & atay	Plain lugaw + egg white + ginger (no organ meats, no malunggay)
Sports drinks (Gatorade 195mg)	Plain water; ask doctor about electrolyte solutions

Full guide with EKG diagrams, medication table, interactive K+ calculator:

williamriveromd.com/guides/potassium-hyperkalemia-ckd.html