



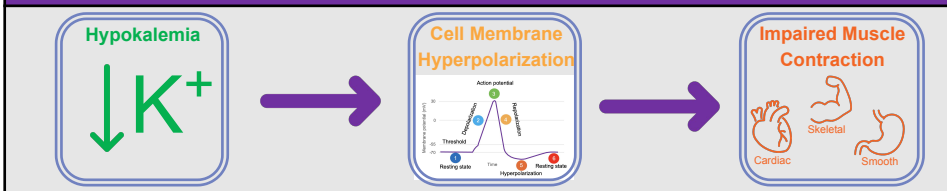
Hypokalemia is defined as a serum potassium level below the normal range for age, typically <3.5 mmol/L.

Severity	Serum K ⁺ (mmol/ L)
Mild	3.0 - 3.4
Moderate	2.5 - 2.9
Severe	< 2.5

POTASSIUM PHYSIOLOGY

Intake	K ⁺ Regulation	Excretion	Role
Obtained through diet. Daily requirements vary by age.	~98% of K ⁺ is intracellular. Uptake is regulated by β -agonists & insulin	~90% excreted by kidneys, regulated by aldosterone. ~10% via GI tract & sweat.	Maintains resting membrane potential & muscle/ nerve excitability.

PATHOPHYSIOLOGY



ETIOLOGY

Transcellular Shift	Renal Losses	Extrarenal Losses
- Alkalosis - Insulin β-agonists - Refeeding syndrome	- Meds: diuretics, antibiotics, nephrotoxins - Tubular disorders: RTA, Bartter & Gitelman syndromes - Endocrine: hyperaldosteronism, CAH - Hypomagnesemia	- Diarrhea - Vomiting - Malnutrition - Malabsorption - Cystic fibrosis

Severe Complications

- Paralysis
- Respiratory failure
- Arrhythmias
- Rhabdomyolysis



PRESENTATION

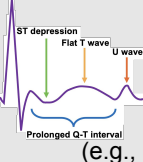
	Symptoms	Signs
General	- Often asymptomatic if mild or gradual onset - Fatigue, irritability	- Assess for dehydration - Hypertension may suggest renal or endocrine cause
Skeletal Muscle	- Symmetrical, ascending weakness - Cramps	- Reduced strength - Hypotonia - Hyporeflexia
Smooth Muscle	- Constipation - Nausea - Bloating	- Abdominal distention - Ileus
Cardiac Muscle	Palpitations	Irregular heart rate &/or rhythm

INVESTIGATIONS

- Serum tests: K⁺, Na⁺, Mg²⁺, Ca²⁺, glucose, creatinine, urea
- VBG
- ECG
- Urine K⁺:Cr ratio: Can help differentiate renal vs. GI losses

ECG Findings

- Flattened T waves
- Prominent U waves
- ST depression
- PR & QT prolongation
- Ventricular arrhythmias (e.g., Torsades de Pointes)



MANAGEMENT

Goals	Oral K ⁺ Replacement	IV K ⁺ Replacement
- Identify & treat underlying cause - Safely replete K⁺ with regular serum monitoring - Prevent complications & recurrence - Address other electrolyte deficits (e.g., Mg²⁺)	Preferred for stable patients with serum K⁺ 2.5–3.0 mmol/L	- Indicated if K⁺ <2.5 mmol/L, ECG changes, or severe symptoms - Monitor closely for overcorrection & thrombophlebitis

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