

HYPOKALEMIA

(Last updated 07/25/2019; Reviewers: Abhay Vakil, MD)

IMMEDIATE CONSIDERATIONS

FINDINGS

- **Signs & Symptoms**
 - Severe muscle weakness
 - Cardiac arrhythmias
 - Renal abnormalities
 - Glucose intolerance
- **Lab Findings**
 - ECG changes
 - PVCs
 - ST segment depression
 - Prolonged QTc
 - T wave attenuation
 - Appearance of U waves
 - Digoxin toxicity can lead to similar ECG findings
- **Predisposing Conditions**
 - GI loss of potassium
 - Vomiting
 - Diarrhea
 - Gastric tube drainage
 - Laxative overuse
 - Increased intracellular potassium shift
 - Metabolic alkalosis

- Increased insulin levels
- Marked increase in blood cell production
- Hypothermia
- Chloroquine intoxication
- Urinary loss
 - Diuretic use
 - Renal tubular acidosis
 - Hypomagnesaemia
 - Polyuria
 - Use of amphotericin B
 - Bartter's or Gitelman's syndrome
 - Primary mineralocorticoid excess
- Other causes
 - Sweating
 - Hemodialysis
 - Plasmapheresis

DIAGNOSTIC INTERVENTIONS

- **Labs**

- BUN
- Creatinine
- Magnesium level
- pH
- Urinary potassium excretion
 - Spot vs 24 hour

- Urine protein to creatinine ratio
- **Monitoring**
 - ECG
 - Serial serum potassium concentrations

THERAPEUTIC INTERVENTIONS

- **Medications**
 - **Treatment for hypokalemia should be instituted at the earliest possible juncture, especially in the presence of ECG changes**
 - Intravenous and/or oral potassium chloride administration should be instituted as soon as possible
 - Intravenous potassium replacement should be used in patients unable to tolerate oral medications potassium and/or as an adjunct to oral potassium in cases of severe hypokalemia
 - Identify and treat the underlying cause of hypokalemia

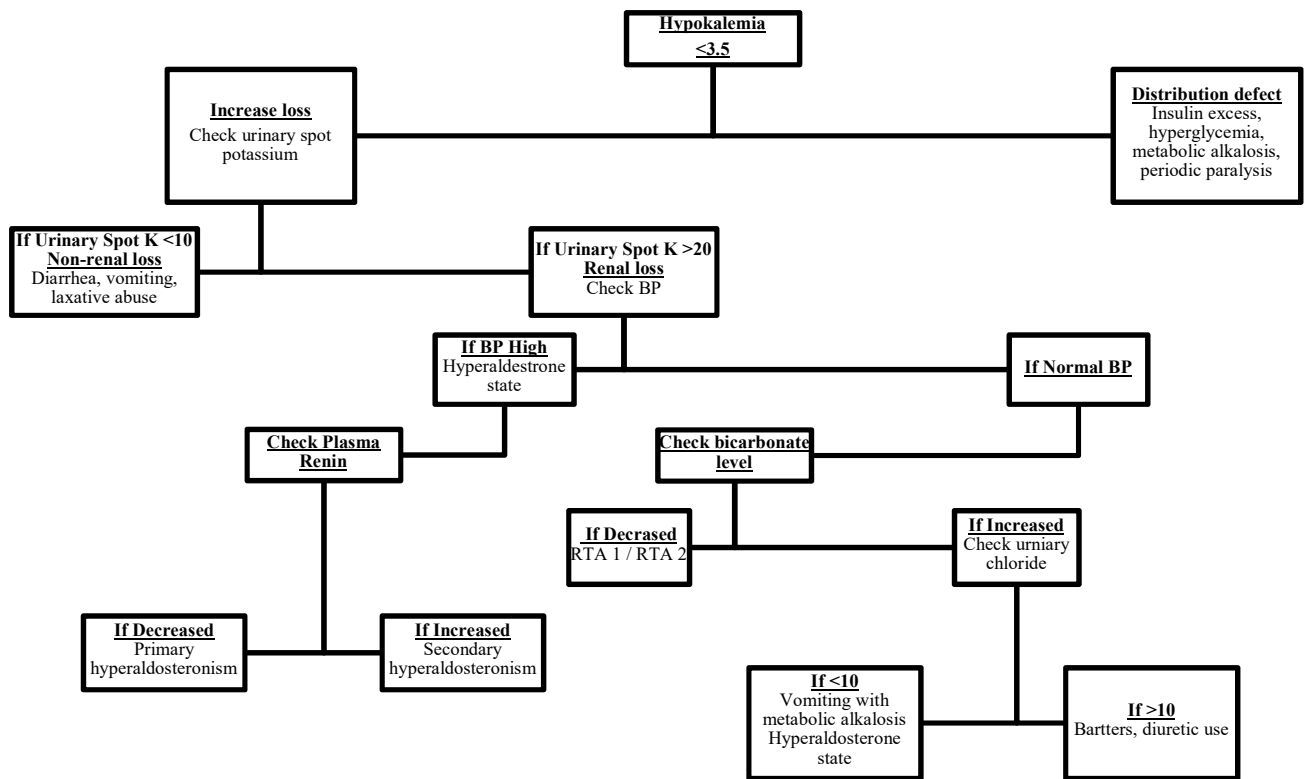
MANAGEMENT AFTER STABILIZATION

- **Follow-Up**
 - In patients with ECG changes, perform serial ECGs to monitor of correction
- **Manage Complications**
 - The most common complication after potassium replacement is hyperkalemia from overcorrection
 - Close monitoring of potassium levels is essential
 - Relatively rapid intravenous potassium replacement may be required in DKA and hyperosmolar hyperglycemic states

CAUTIONS

- Severe hypokalemia requires exponentially larger replacement needs
 - Use electrolyte replacement protocols
- IV potassium >10 meq per hour should be infused via central venous access

ALGORITHM TO DETERMINE CAUSE OF HYPOKALEMIA



REFERENCES & ACKNOWLEDGMENTS

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