

Overview

Useful For

Evaluation of electrolyte balance, cardiac arrhythmia, muscular weakness, hepatic encephalopathy, and renal failure

Method Name

Potentiometric, Indirect Ion-Selective Electrode

NY State Available

Yes

Specimen

Specimen Type

Serum

Necessary Information

Patient's age and sex are required.

Specimen Required

Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 0.5 mL

Collection Instructions:

- 1. Serum gel tubes should be centrifuged within 2 hours of collection.
- 2. Red-top tubes should be centrifuged, and the serum aliquoted into a plastic vial within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:

- [Kidney Transplant Test Request](#)
- [Renal Diagnostics Test Request](#) (T830)

Specimen Minimum Volume

0.25 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK

**Specimen Stability Information**

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated	48 hours	

**Clinical & Interpretive****Clinical Information**

Potassium is the major cation of the intracellular fluid. Disturbance of potassium homeostasis has serious consequences. Decreases in extracellular potassium are characterized by muscle weakness, irritability, and eventual paralysis. Cardiac effects include tachycardia, other cardiac conduction abnormalities that are apparent by electrocardiographic examination, and eventual cardiac arrest.

Hypokalemia (low potassium) is common in vomiting, diarrhea, alcoholism, and folic acid deficiency. Additionally, more than 90% of hypertensive patients with aldosteronism have hypokalemia.

Abnormally high extracellular potassium levels produce symptoms of mental confusion; weakness, numbness, and tingling of the extremities; weakness of the respiratory muscles; flaccid paralysis of the extremities; slowed heart rate; and eventually peripheral vascular collapse and cardiac arrest. Hyperkalemia may be seen in end-stage renal failure, hemolysis, trauma, Addison disease, metabolic acidosis, acute starvation, dehydration, and with rapid potassium infusion.

Potassium should be monitored during treatment of many conditions but especially in diabetic ketoacidosis and any intravenous therapy for fluid replacement.

**Reference Values**

<1 year: not established  
> or =1 year: 3.6-5.2 mmol/L

**Interpretation**

Potassium levels below 3.0 mmol/L are associated with marked neuromuscular symptoms and are evidence of a critical degree of intracellular depletion. Potassium levels below 2.5 mmol/L are potentially life-threatening.

High potassium can be an acute medical emergency, particularly if the potassium increases over a short period of time. At values above 6.0 mmol/L, symptoms are typically apparent. Potassium levels above 6.0 mmol/L are potentially lifethreatening. Levels above 10.0 mmol/L are, in most cases, fatal.

**Cautions**

No significant cautionary statements

**Clinical Reference**

Tietz Textbook of Clinical Chemistry. Fourth edition. Edited by CA Burtis, ER Ashwood, DE Bruns. WB Saunders Company, Philadelphia, 2006;27:984-987; 2006;46:1754-1757

Performance

Method Description

Ion-selective electrode (ISE) (indirect potentiometry). The ISE module performs indirect measurement of electromotive force (EMF). The ISE module measures the EMF difference between an ion-selective electrode and a reference electrode. The EMF of the ion-selective electrode is dependent on the ion concentration of the sample. The EMF of the reference electrode is constant. An electronic calculation circuit converts EMF of the sample to the ion concentration of the sample.(Package insert: Roche Diagnostics ISE reagent; Indianapolis, IN, 2006)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

Same day/1 to 2 days

Specimen Retention Time

1 week

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact [Customer Service](#).

Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

84132

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
KS	Potassium, S	2823-3

Result ID	Test Result Name	Result LOINC® Value
KS	Potassium, S	2823-3