MAYO CLINIC LABORATORIES

Test Definition: NAS

Sodium, Serum

Overview

Useful For
Assessing acid-base balance, water balance, water intoxication, and dehydration

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
-Cardiovascular Test Request Form (T724)

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 (preferred)	14 days	
	Ambient	14 days	

Clinical & Interpretive

Clinical Information

Sodium is the primary extracellular cation. Sodium is responsible for almost one-half the osmolality of the plasma and, therefore, plays a central role in maintaining the normal distribution of water and the osmotic pressure in the extracellular fluid compartment. The amount of sodium in the body is a reflection of the balance between sodium intake and output.

Hyponatremia (low sodium) is a predictable consequence of decreased intake of sodium, particularly that precipitated or complicated by unusual losses of sodium from the gastrointestinal tract (eg, vomiting and diarrhea), kidneys, or sweat glands. Renal loss may be caused by inappropriate choice, dose, or use of diuretics; by primary or secondary deficiency of aldosterone and other mineralocorticoids; or by severe polyuria. It is common in metabolic acidosis. Hyponatremia also occurs in nephrotic syndrome, hypoproteinemia, primary and secondary adrenocortical insufficiency, and congestive heart failure. Symptoms of hyponatremia are a result of brain swelling and range from weakness to seizures, coma, and death.

Hypernatremia (high sodium) is often attributable to excessive loss of sodium-poor body fluids. Hypernatremia is often associated with hypercalcemia and hypokalemia and is seen in liver disease, cardiac failure, pregnancy, burns, and osmotic diuresis. Other causes include decreased production of antidiuretic hormone (ADH; also known as vasopressin) or decreased tubular sensitivity to the hormone (ie, diabetes insipidus), inappropriate forms of parenteral therapy with saline solutions, or high salt intake without corresponding intake of water. Hypernatremia occurs in dehydration, increased renal sodium conservation in hyperaldosteronism, Cushing syndrome, and diabetic acidosis. Severe hypernatremia may be associated with volume contraction, lactic acidosis, and increased hematocrit. Symptoms of hypernatremia range from thirst to confusion, irritability, seizures, coma, and death.

Reference Values

<1 year: not established
> or =1 year: 135-145 mmol/L

Interpretation

Symptoms of hyponatremia depend primarily upon the rate of change in sodium concentration, rather than the absolute level. Typically, sodium values less than 120 mEq/L result in weakness; values less than 100 mEq/L result in bulbar or pseudobulbar palsy; and values between 90 and 105 mEq/L result in severe signs and symptoms of neurological impairment.

Symptoms associated with hypernatremia depend upon the degree of hyperosmolality present.

Cautions
No significant cautionary statements

Clinical Reference
Tietz Textbook of Clinical Chemistry. Edited by CA Burtis, ER Ashwood. WB Saunders Company. Philadelphia, PA, 1994

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

84295

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
NAS	Sodium, S	2951-2

Result ID	Test Result Name	Result LOINC® Value
NAS	Sodium, S	2951-2