

## Overview

### Useful For

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

### Special Instructions

- [Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens](#)

### Method Name

Potentiometric, Indirect Ion-Selective Electrode

### NY State Available

Yes

## Specimen

### Specimen Type

Urine

### Necessary Information

24-Hour volume (in milliliters) is required.

### Specimen Required

**Supplies:** Sarstedt 5 mL Aliquot Tube (T914)

**Collection Container/Tube:** 24-hour graduated urine container with no metal cap or glued insert

**Submission Container/Tube:** Plastic tube or a clean, plastic aliquot container with no metal cap or glued insert

**Specimen Volume:** 5 mL

### Collection Instructions:

1. Collect urine for 24 hours.
2. Refrigerate specimen within 4 hours of completion of 24-hour collection.

**Additional Information:** See [Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens](#) for multiple collections.

### Urine Preservative Collection Options

**Note:** The addition of preservative or application of temperature controls **must occur within 4 hours of completion of the collection.**

Ambient	OK
Refrigerate	Preferred
Frozen	OK
50% Acetic Acid	OK
Boric Acid	OK

Diazolidinyl Urea	OK
6M Hydrochloric Acid	OK
6M Nitric Acid	No
Sodium Carbonate	No
Thymol	OK
Toluene	No

### Specimen Minimum Volume

1 mL

### Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

### Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Ambient	7 days	
	Frozen	30 days	

### Clinical & Interpretive

#### Clinical Information

Sodium ( $\text{Na}^+$ ) 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  $\text{Na}^+$  in the body is a reflection of the balance between  $\text{Na}^+$  intake and output. The normal daily diet contains 8 to 15 grams of sodium chloride ( $\text{NaCl}$ ) which is nearly completely absorbed from the gastrointestinal tract. The body requires only 1 to 2 mmol/day, and the excess is excreted by the kidneys, which are the ultimate regulators of the amount of  $\text{Na}^+$  (and thus water) in the body. Sodium is freely filtered by the glomeruli. Approximately 70% to 80% of the filtered  $\text{Na}^+$  is actively reabsorbed in the proximal tubules, with chloride and water passively following in an iso-osmotic and electrically neutral manner. Another 20% to 25% is reabsorbed in the loop of Henle along with chloride and more water. In the distal tubules, interaction of the adrenocortical hormone aldosterone with the coupled sodium-potassium and sodium-hydrogen exchange systems directly results in the reabsorption of  $\text{Na}^+$  and indirectly of chloride from the remaining 5% to 10% of the filtered load. It is the regulation of this latter fraction of filtered  $\text{Na}^+$  that determines the amount of  $\text{Na}^+$  excreted in the urine.

#### Reference Values

> or =18 years: 22-328 mmol/24 hours

Reference values have not been established for patients who are less than 18 years of age.

#### Interpretation

Urinary sodium ( $\text{Na}^+$ ) excretion varies with dietary intake, and there is a large diurnal variation with the rate of  $\text{Na}^+$

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excretion during the night, being only 20% of the peak rate during the day.

Sodium may be lost in the kidneys as a result of diuretic therapy, salt-losing nephropathies, or adrenal insufficiency, with the urinary Na<sup>+</sup> concentration usually more than 20 mEq/L. In these hypovolemic states, urine Na<sup>+</sup> values <10 mEq/L indicate extrarenal Na<sup>+</sup> loss. In hypervolemic states, a low urine Na<sup>+</sup> (<10 mEq/L) may indicate nephrotic syndrome in addition to non-kidney causes.

### **Cautions**

No significant cautionary statements.

### **Clinical Reference**

Delaney MP, Lamb EJ: Kidney disease. In: Rifai NF, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:1308-1309

## **Performance**

### **Method Description**

The ion-selective electrode (ISE) module performs indirect measurement of electromotive force (EMF). The ISE module measures the EMF difference between an ISE and a reference electrode. The EMF of the ISE 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: Sodium. Roche Diagnostics; V14.0 02/2018)

### **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.

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- 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**

84300

**LOINC® Information**

Test ID	Test Order Name	Order LOINC® Value
NAU	Sodium, 24 HR, U	2956-1

Result ID	Test Result Name	Result LOINC® Value
NA_24	Sodium, 24 HR, U	2956-1
TM11	Collection Duration	13362-9
VL9	Urine Volume	3167-4
NACN	Sodium Concentration	21525-1