MAYO CLINIC LABORATORIES

Test Definition: ELPSR

Electrolyte Panel, Serum

Overview

Useful For

Identifying a suspected imbalance in electrolytes or acid/base imbalance

Method Name

KS, NAS, CL: Indirect Potentiometry
HCO3: Photometric
AGAP: Calculation

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 a Kidney Transplant Test Request with the specimen.

Specimen Minimum Volume

0.4 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated	24 hours	

Clinical & Interpretive

Clinical Information

The electrolyte panel is ordered to identify electrolyte, fluid, or pH imbalance. Electrolyte concentrations are evaluated to assist in investigating conditions that cause electrolyte imbalances such as dehydration, kidney disease, lung diseases, or heart conditions. Repeat testing of the electrolyte or its components may be used to monitor the patientâ€™s response to treatment of any condition that may be causing the electrolyte, fluid or pH imbalance.

Electrolyte and acid-base imbalances can often be indicative of many acute and chronic illnesses. For this reason, the electrolyte panel is often used in the hospital and emergency settings to evaluate patients.

Reference Values

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

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

CHLORIDE
<1 year: not established
1-17 years: 102-112 mmol/L
> or =18 years: 98-107 mmol/L

BICARBONATE
Males
<1 year: not established
1-2 years: 17-25 mmol/L
3 years: 18-26 mmol/L
4-5 years: 19-27 mmol/L
6-7 years: 20-28 mmol/L
8-17 years: 21-29 mmol/L
> or =18 years: 22-29 mmol/L
Females
<1 year: not established
1-3 years: 18-25 mmol/L
4-5 years: 19-26 mmol/L

6-7 years: 20-27 mmol/L
8-9 years: 21-28 mmol/L
> or =10 years: 22-29 mmol/L

ANION GAP
<7 years: not established
> or =7 years: 7-15

Interpretation
With an imbalance of a single electrolyte, such as sodium or potassium, repeat testing may be ordered of that particular electrolyte, can be used to monitor the imbalance until remedied. With an acid-base imbalance, blood gases may be ordered, which will measure the oxygen, carbon dioxide, and pH levels in the arterial blood. These tests assist in evaluating the acuteness of the imbalance and monitoring the response to treatment.

Cautions
No significant cautionary statements

Clinical Reference
1. Oh MS: Evaluation of renal function, water, electrolytes, and acid-base balance. In Henry's Clinical Diagnosis and Management by Laboratory Methods. 22nd edition. Edited by RA McPherson, MR Pincus. Philadelphia, PA: Elsevier Saunders; 2011:chap 14
2. AACC: Lab Tests Online: Access 03/22/2017. Available at https://labtestsonline.org/understanding/analytes/electrolyes

Performance

Method Description
Potassium, Sodium, Chloride:
An ion-selective electrode (ISE) makes use of the unique properties of ion-selective membrane to develop an electrical potential (electromotive force: EMF) for the measurements of ions in solution. Selective membrane is in contact with both the test solution and an internal filling solution. Due to the selectivity of the membrane, only the ions to be measured contribute to the EMF. The membrane EMF is determined by the difference in concentration of the test ion in the test solution and the internal filling solution. The EMF develops according to Nernst equation of a specific ion in solution.(Package insert: ISE indirect Na-K-Cl for Gen 2. Roche Diagnostics; 05/2024)

Bicarbonate:
Bicarbonate reacts with phosphoenolpyruvate (PEP) in the presence of PEPC to produce oxaloacetate and phosphate. That reaction is coupled with one involving the transfer of a hydrogen ion from reduced nicotinamide adenine dinucleotide (NADH) analog to oxaloacetate using malate dehydrogenase. The resultant consumption of NADH analog causes a decrease in absorbance, which is proportional to the concentration of bicarbonate in the sample being analyzed.(Package insert: Bicarbonate reagent. Roche Diagnostics; 02/2023)

Anion Gap:
This is a calculated result. The following equation is used to calculate the anion gap (A gap):

A gap = Na - (Cl + HCO3[-])

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
80051-Electrolyte Panel (if all 4 are performed)
82435-Chloride (if all 4 are not performed)
84295- Sodium (if all 4 are not performed)
84132-Potassium (if all 4 are not performed)
82374-Bicarbonate (if all 4 are not performed)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
ELPSR	Electrolyte Panel, S	24326-1

Result ID	Test Result Name	Result LOINC® Value
AGAP	Anion Gap	33037-3
CL	Chloride, S	2075-0
HCO3	Bicarbonate, S	1963-8

NAS	Sodium, S	2951-2
KS	Potassium, S	2823-3