



[Home](#) → [Medical Encyclopedia](#) → Basic metabolic panel

URL of this page: [//medlineplus.gov/ency/article/003462.htm](https://medlineplus.gov/ency/article/003462.htm)

## Basic metabolic panel

The basic metabolic panel is a group of blood tests that provides information about your body's metabolism.

### How the Test is Performed

A blood sample is needed. Most of the time, blood is drawn from a vein located on the inside of the elbow or the back of the hand.

### How to Prepare for the Test

Your health care provider may ask you to not eat or drink for 8 hours before the test.

### How the Test will Feel

You may feel slight pain or a sting when the needle is inserted. You may also feel some throbbing at the site after the blood is drawn.

### Why the Test is Performed

This test is done to evaluate:

- Kidney function
- Blood acid/base balance
- Sodium and potassium levels
- Blood sugar levels
- Blood calcium level

### Normal Results

The basic metabolic panel typically measures these blood chemicals. The following are normal ranges for the substances tested:

- BUN: 6 to 20 mg/dL (2.14 to 7.14 mmol/L)
- CO<sub>2</sub> (carbon dioxide): 23 to 29 mmol/L
- Creatinine: 0.8 to 1.2 mg/dL (70.72 to 106.08 micromol/L)
- Glucose: 64 to 100 mg/dL (3.55 to 5.55 mmol/L)

- Serum chloride: 96 to 106 mmol/L
- Serum potassium: 3.7 to 5.2 mEq/L (3.7 to 5.2 mmol/L)
- Serum sodium: 136 to 144 mEq/L (136 to 144 mmol/L)
- Serum calcium: 8.5 to 10.2 mg/dL (2.13 to 2.55 millimol/L)

Key to abbreviations:

- L = liter
- dL = deciliter = 0.1 liter
- mg = milligram
- mmol = millimole
- mEq = milliequivalents

Normal value ranges may vary slightly among different laboratories. Talk to your provider about the meaning of your specific test results.

The examples above show the common measurements for results for these tests. Some laboratories use different measurements or may test different specimens.

## What Abnormal Results Mean

Abnormal results can be due to a variety of different medical conditions, including kidney disease, breathing problems, diabetes or diabetes-related complications, and medicine side effects. Talk to your provider about the meaning of your results from each test.

## Alternative Names

SMAC7; Sequential multi-channel analysis with computer-7; SMA7; Metabolic panel 7; CHEM-7

## References

Cohn SI. Preoperative evaluation. In: Goldman L, Schafer AI, eds. *Goldman-Cecil Medicine*. 26th ed. Philadelphia, PA: Elsevier; 2020:chap 403.

Oh MS, Briefel G, Pincus MR. Evaluation of renal function, water, electrolytes, and acid-base balance. In: McPherson RA, Pincus MR, eds. *Henry's Clinical Diagnosis and Management by Laboratory Methods*. 24th ed. Philadelphia, PA: Elsevier; 2022:chap 15.

## Review Date 6/20/2023

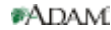
Updated by: Jacob Berman, MD, MPH, Clinical Assistant Professor of Medicine, Division of General Internal Medicine, University of Washington School of Medicine, Seattle, WA. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.



Health Content  
Provider  
06/01/2028

A.D.A.M., Inc. is accredited by [URAC](http://www.urac.org), for Health Content Provider ([www.urac.org](http://www.urac.org)). URAC's [accreditation program](#) is an independent audit to verify that A.D.A.M. follows rigorous standards of quality and accountability. A.D.A.M. is among the first to achieve this important distinction for online health information and services. Learn more about A.D.A.M.'s [editorial policy](#), [editorial process](#), and [privacy policy](#).

The information provided herein should not be used during any medical emergency or for the diagnosis or treatment of any medical condition. A licensed medical professional should be consulted for diagnosis and treatment of any and all medical conditions. Links to other sites are provided for information only – they do not constitute endorsements of those other sites. No warranty of any kind, either expressed or implied, is made as to the accuracy, reliability, timeliness, or correctness of any translations made by a third-party service of the information provided herein into any other language. © 1997-2025 A.D.A.M., a business unit of Ebix, Inc. Any duplication or distribution of the information contained herein is strictly prohibited.



National Library of Medicine 8600 Rockville Pike, Bethesda, MD 20894 U.S. Department of Health and Human Services  
National Institutes of Health