

Health Report

Your Lab Results Decoded

Wonder what all those numbers mean? So did we

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HOW'S YOUR BILIRUBIN LEVEL? And your BUN/creatinine ratio? Unless you enjoy reading *Dictionary of Medical Terms*, your routine lab results can seem downright cryptic. To help you decipher them, we asked Mark S. Lachs, M.D., author of *Treat Me, Not My Age*, and Marie A. Bernard, M.D., deputy director of the National Institute on Aging, to explain what all those numbers really mean.

Just be aware: Abnormal test results are fairly common, especially among older adults. "Fifty-plus folks tend to take more medications," says Lachs, "and that can throw off test results. For example, diuretics can alter sodium and potassium levels;

BLOOD
TEST #1

Comprehensive Metabolic Panel

What it does: Measures kidney and liver function, electrolyte levels

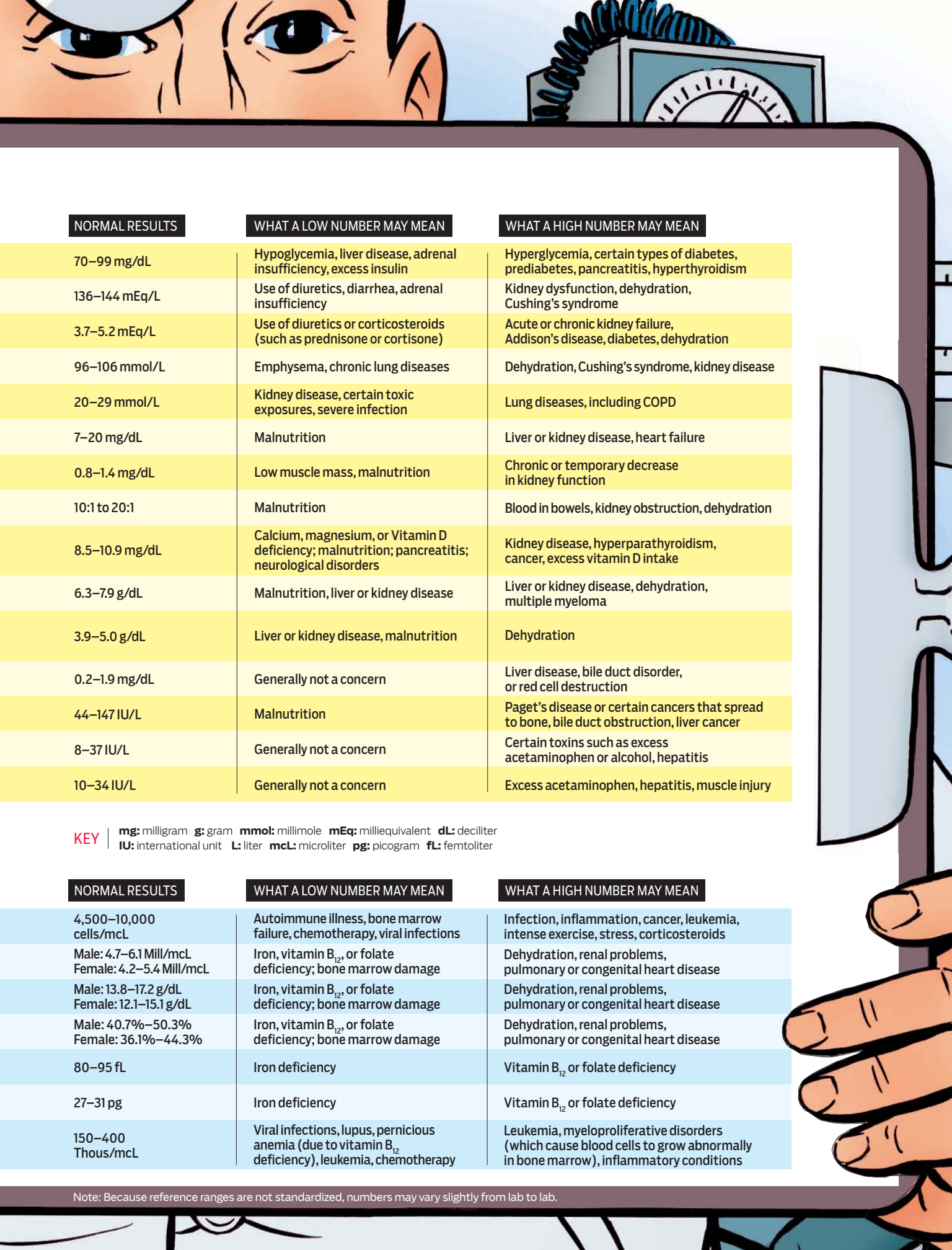
SUBSTANCE	WHAT IT IS
Glucose (fasting)	Sugar in the blood
Sodium	An electrolyte, which keeps your body in balance
Potassium	An electrolyte and mineral
Chloride	An electrolyte
Carbon dioxide	Gaseous waste product from metabolism
BUN: blood urea nitrogen	A waste product formed in liver and carried to kidneys, filtered out of blood, excreted through urine
Creatinine	A chemical waste produced by muscle metabolism
BUN/creatinine ratio	
Calcium	A mineral stored in the hard part of bones
Protein	Chains of amino acids essential for the growth and repair of cells
Albumin	Protein that keeps fluid from leaking out of blood vessels and that nourishes tissues and transports nutrients through the body
Bilirubin	A pigment in the bile, a digestive fluid produced by the liver
Alkaline phosphatase (ALP)	Enzyme found in the liver and bones
Alanine amino-transferase (ALT)	Enzyme found mostly in the liver
Aspartate amino-transferase (AST)	Enzyme found in liver, muscle, and other tissues

BLOOD
TEST #2

Complete Blood Count (CBC)

What it does: Measures essential components of the blood

SUBSTANCE	WHAT IT IS
White blood cell count (WBC)	White blood cells defend the body against infection
Red blood cell count (RBC)	Red blood cells pick up oxygen from the blood and deliver it to tissues throughout the body
Hemoglobin	Oxygen-carrying pigment in red blood cells
Hematocrit	The percentage of red blood cells in the blood
Mean corpuscular volume (MCV)	Average size of red blood cells
Mean corpuscular hemoglobin (MCH)	The amount of hemoglobin in red blood cells
Platelet count	Measures number of platelets—colorless blood cells integral to clotting



NORMAL RESULTS	WHAT A LOW NUMBER MAY MEAN	WHAT A HIGH NUMBER MAY MEAN
70–99 mg/dL	Hypoglycemia, liver disease, adrenal insufficiency, excess insulin	Hyperglycemia, certain types of diabetes, prediabetes, pancreatitis, hyperthyroidism
136–144 mEq/L	Use of diuretics, diarrhea, adrenal insufficiency	Kidney dysfunction, dehydration, Cushing's syndrome
3.7–5.2 mEq/L	Use of diuretics or corticosteroids (such as prednisone or cortisone)	Acute or chronic kidney failure, Addison's disease, diabetes, dehydration
96–106 mmol/L	Emphysema, chronic lung diseases	Dehydration, Cushing's syndrome, kidney disease
20–29 mmol/L	Kidney disease, certain toxic exposures, severe infection	Lung diseases, including COPD
7–20 mg/dL	Malnutrition	Liver or kidney disease, heart failure
0.8–1.4 mg/dL	Low muscle mass, malnutrition	Chronic or temporary decrease in kidney function
10:1 to 20:1	Malnutrition	Blood in bowels, kidney obstruction, dehydration
8.5–10.9 mg/dL	Calcium, magnesium, or Vitamin D deficiency; malnutrition; pancreatitis; neurological disorders	Kidney disease, hyperparathyroidism, cancer, excess vitamin D intake
6.3–7.9 g/dL	Malnutrition, liver or kidney disease	Liver or kidney disease, dehydration, multiple myeloma
3.9–5.0 g/dL	Liver or kidney disease, malnutrition	Dehydration
0.2–1.9 mg/dL	Generally not a concern	Liver disease, bile duct disorder, or red cell destruction
44–147 IU/L	Malnutrition	Paget's disease or certain cancers that spread to bone, bile duct obstruction, liver cancer
8–37 IU/L	Generally not a concern	Certain toxins such as excess acetaminophen or alcohol, hepatitis
10–34 IU/L	Generally not a concern	Excess acetaminophen, hepatitis, muscle injury

KEY | **mg:** milligram **g:** gram **mmol:** millimole **mEq:** milliequivalent **dL:** deciliter
IU: international unit **L:** liter **mL:** milliliter **pg:** picogram **fL:** femtoliter

NORMAL RESULTS	WHAT A LOW NUMBER MAY MEAN	WHAT A HIGH NUMBER MAY MEAN
4,500–10,000 cells/mcL	Autoimmune illness, bone marrow failure, chemotherapy, viral infections	Infection, inflammation, cancer, leukemia, intense exercise, stress, corticosteroids
Male: 4.7–6.1 Mill/mcL Female: 4.2–5.4 Mill/mcL	Iron, vitamin B ₁₂ , or folate deficiency; bone marrow damage	Dehydration, renal problems, pulmonary or congenital heart disease
Male: 13.8–17.2 g/dL Female: 12.1–15.1 g/dL	Iron, vitamin B ₁₂ , or folate deficiency; bone marrow damage	Dehydration, renal problems, pulmonary or congenital heart disease
Male: 40.7%–50.3% Female: 36.1%–44.3%	Iron, vitamin B ₁₂ , or folate deficiency; bone marrow damage	Dehydration, renal problems, pulmonary or congenital heart disease
80–95 fL	Iron deficiency	Vitamin B ₁₂ or folate deficiency
27–31 pg	Iron deficiency	Vitamin B ₁₂ or folate deficiency
150–400 Thous/mcL	Viral infections, lupus, pernicious anemia (due to vitamin B ₁₂ deficiency), leukemia, chemotherapy	Leukemia, myeloproliferative disorders (which cause blood cells to grow abnormally in bone marrow), inflammatory conditions

Note: Because reference ranges are not standardized, numbers may vary slightly from lab to lab.

2/3 VERTICAL AD

your HEALTH

heparin can decrease your platelet count.” (These are real abnormalities that may need further treatment.) Plus, many older adults have chronic conditions that require more frequent

testing—and the more you’re tested, the greater the likelihood of error. Finally, normal ranges are based on population averages, so normal for you might be slightly out of that range and of no significance. For instance, if you have Gilbert’s syndrome, a common, mild liver condition, you’d show elevated bilirubin, which could otherwise signal a serious liver dysfunction. “If you have known abnormalities, be sure to remind your doctor each time you get tested,” says Lachs.

It’s a good idea to schedule a doctor’s appointment *after* undergoing lab work. That way, you can discuss any unusual results face-to-face. ■

Lipid Panel

BLOOD TEST #3

Measures coronary artery disease risk

DESIRED LEVELS

Total cholesterol:
<200mg/dL

HDL: >40 mg/dL

LDL: <130 mg/dL

Triglycerides:
<150 mg/dL

THESE FACTORS CAN THROW OFF RESULTS

- > Running or any high-intensity exercise can cause slight dehydration and show up as kidney insufficiency.
- > A sunburn can elevate white blood cell count, which typically signals inflammation.
- > Got a sick spouse or child but feel fine yourself? A nonsymptomatic cold virus can raise or lower white blood cell count.
- > An improper blood draw can cause a potassium spike; eating too much licorice can make it drop.
- > A specimen that sits for too long before testing by the lab can skew blood sugar readings. —H.S.L.