

Is my blood glucose meter accurate?

How the results you get from your blood glucose meter compare with a lab test or another meter.

Our OneTouch[®] Commitment

We are proud that you have placed your trust in OneTouch[®]. As a leader in diabetes care, our goal is to support you in the management of your diabetes with the highest quality products and services. OneTouch[®], a partner in your diabetes care.

Many people expect that all blood glucose meters will give the exact same result... but there are many reasons why they don't.

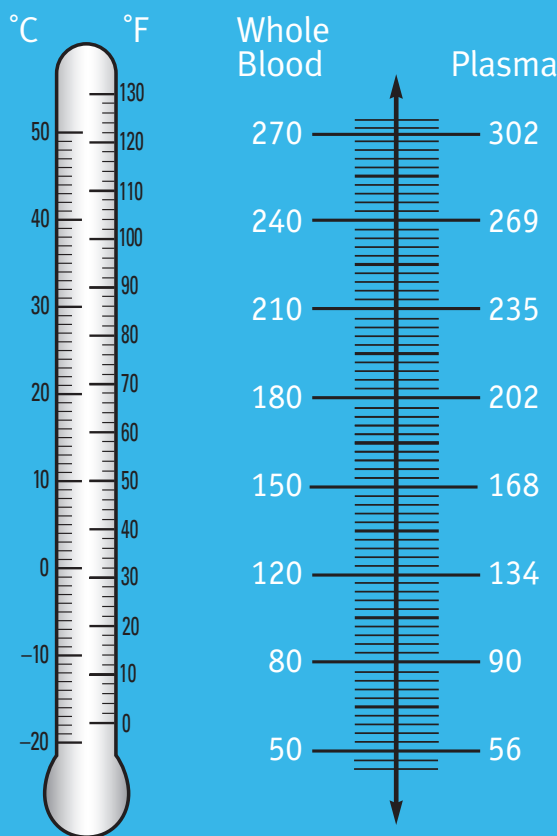
My new meter gives me a different result than my old meter for the same test. Does that mean my meter isn't accurate?

No. What you are most likely noticing is the different way meters represent results. There are meters that give “plasma” results and meters that give “whole blood” results. You may notice this difference because you have purchased a new meter and are comparing it with your old one, or are comparing it with a lab test result you've received from your doctor.

Many people expect that all blood glucose meters will give the exact same result, and expect that it will be the same as their lab test result. After all, they're measuring the same thing — the amount of glucose in your blood. But meters and lab equipment measure different parts of the blood and therefore give seemingly different results.

In this brochure you will learn more about these differences, how to compare your blood glucose result to another meter, and how to compare it to your lab test results.

Think of the Celsius and Fahrenheit scales — both measure the same thing yet show a different number.



What is accuracy?

Let's first consider how accuracy is defined. In the medical community a home blood glucose meter's test result is considered clinically accurate if it falls within $\pm 20\%$ * of an accepted reference result, usually a lab test. What that means is, the only way to be certain that a meter is accurate is to compare the result (using the same blood sample) with that of a lab test.

Why is my home test result so different from my lab result?

Simply put: home meters and lab equipment measure blood differently, making the results you're noticing quite normal. Both tests are accurate representations of your blood glucose levels. Think of the Celsius and Fahrenheit scales — both measure the same thing yet show a different number. The same is true of the way various meters represent results. Some show whole blood results and some show plasma results.

How is my meter set — or calibrated?

While all blood glucose meters use whole blood to measure glucose, lab equipment uses only the plasma portion of the blood, meaning that the red blood cells are removed before glucose is measured. Because of this difference in sample types, whole blood test results are approximately 12% lower than plasma test results. For an accurate comparison of the two, you must first know whether your meter is set — or "calibrated" to read whole blood or plasma.

You will find a list of OneTouch® Meters and their calibration type on the following pages.

*Defined by the error-grid analysis method of Clarke WL., et al. In "Evaluating Clinical Accuracy of Systems for Self-Monitoring of Blood Glucose," *Diabetes Care*, Vol. 10, No. 5 (1987), 622-628.

OneTouch® whole blood-calibrated meters



OneTouch® II



OneTouch® Basic®



OneTouch® Profile®

How do I compare my meter with my lab test result?

Once you find out whether your meter is whole blood- or plasma-calibrated, comparing your results is easy to do. Whole blood-calibrated meters require you to do a quick conversion to compare their results with laboratory test results. To compare a lab result with one of the meters pictured at left, you must first convert the lab result into its whole blood equivalent by dividing it by 1.12. If your lab result is 112, you divide 112 by 1.12 which equals 100. In this example the number 100 represents the “whole blood” equivalent of the lab’s “plasma” glucose value. Simply compare your meter’s whole blood result with the result of this equation.

WHOLE BLOOD-CALIBRATED METER EXAMPLE

LAB RESULT = 112

$112 \div 1.12 = 100$	Converted Result
$100 \times 0.20 = 20$	Variance
$100 + 20 = 120$	High Range
$100 - 20 = 80$	Low Range

**Acceptable meter range:
80–120 (± 20% of 100)**



Remember: a home blood glucose meter’s test result is considered clinically accurate if it falls within +/-20% of an accepted reference result, usually a lab test. So, if your meter’s result fell between 80 and 120 (+/-20%), it is considered accurate.*

*Defined by the error-grid analysis method of Clarke WL., et al. In “Evaluating Clinical Accuracy of Systems for Self-Monitoring of Blood Glucose,” *Diabetes Care*, Vol. 10, No. 5 (1987), 622–628.

OneTouch® plasma-calibrated meters



OneTouch® Ultra®



OneTouch® UltraSmart®



OneTouch® SureStep®



InDuo®



OneTouch® FastTake®

What if my blood glucose meter isn't calibrated for whole blood?

Some blood glucose meters, like the ones pictured at left, are already calibrated to give a “plasma” test result. If you have one of these meters, you do not have to convert your readings — they can be directly compared with your lab test result.

I have a plasma-calibrated meter but I still get a dramatically different result from my lab test!

Even though your home meter gives a result that is directly comparable to a lab test — you still need to factor in the +/-20% range. That means, if your lab result is 200, your plasma-calibrated meter would be accurate if it gave you a result anywhere between 160 and 240.

PLASMA-CALIBRATED METER EXAMPLE

LAB RESULT = 200

$$200 \times .20 = 40$$

Variance

$$200 + 40 = 240$$

High Range

$$200 - 40 = 160$$

Low Range

Acceptable meter range:

160–240 (± 20% of 200)

I've done all the conversions and still my readings are way off my lab results. What do I do?

If your result falls outside the +/-20% range, once any necessary conversion is made, you should **contact LifeScan at 1-800-227-8862** for assistance and possible replacement of your meter.



Remember, at higher blood glucose values the variance seems more dramatic. As the numbers get larger, so does the acceptable variance... 20% of 200 is much larger than 20% of 120 because the calculation is based on a percentage.

Comparing the test results of two meters.

No two meters, even the same models from the same manufacturer, will give identical test results every time. In the end, the best way to check the accuracy of your meter is in a lab under controlled conditions. Because most people don't have the equipment to do this, the best you can do when comparing two meters is to make sure you perform the tests at the same time using blood samples taken from two different fingersticks.

Remember to make the mathematical conversion described earlier if you are comparing the results of a whole blood-calibrated meter with a plasma-calibrated meter. While all this cannot determine either meter's absolute accuracy, it will allow you to make general comparisons.

We've included a handy conversion chart at the end of this brochure to help you with the conversions.

Your HCP needs to know.

Each time you change your meter or begin using more than one meter to do your testing, be sure you know how each meter is calibrated. And be sure to tell your healthcare professional if and when you change meters, to determine if any changes are needed in your treatment program or target blood glucose ranges.

Testing is key to successful care.

Frequent self-monitoring of blood glucose is the key to successful diabetes care. Blood glucose test results help you and your healthcare professional determine the effectiveness of medication, diet, and exercise. By maintaining your blood glucose level as close to normal as possible, you may reduce your risk of complications involving the eyes, kidneys, and nervous system by up to 60%.

Tips on comparing your meter result with a lab test.

1. Make sure your meter is clean and properly coded to match the test strips you are using.
2. Perform a check strip and/or a control solution test to ensure your meter and test strips are performing properly.
3. Know how your meter is calibrated and whether or not you must make a conversion before comparing results.
4. Do not eat for 4 hours before your lab test.
5. Make sure blood samples for both tests are drawn at the same time. Once blood has been drawn for your lab test, prick your finger and perform a test with your meter.
6. Request that the lab test be done within 30 minutes of drawing the blood.
7. Ask the laboratory technician if your hematocrit (red blood cell count) is normal. If it isn't, your meter test result may be inaccurate.
8. If you are severely dehydrated from excessive vomiting, diarrhea, or urination, your meter test result may be inaccurate.

Whole blood/plasma equivalents, mg/dL

whole blood	plasma	whole blood	plasma	whole blood	plasma	whole blood	plasma	whole blood	plasma	whole blood	plasma
50	56	110	123	170	190	230	258	290	325	350	392
52	58	112	125	172	193	232	260	292	327	352	394
54	60	114	128	174	195	234	262	294	329	354	396
56	63	116	130	176	197	236	264	296	332	356	399
58	65	118	132	178	199	238	267	298	334	358	401
60	67	120	134	180	202	240	269	300	336	360	403
62	69	122	137	182	204	242	271	302	338	362	405
64	72	124	139	184	206	244	273	304	340	364	408
66	74	126	141	186	208	246	276	306	343	366	410
68	76	128	143	188	211	248	278	308	345	368	412
70	78	130	146	190	213	250	280	310	347	370	414
72	81	132	148	192	215	252	282	312	349	372	417
74	83	134	150	194	217	254	284	314	352	374	419
76	85	136	152	196	220	256	287	316	354	376	421
78	87	138	155	198	222	258	289	318	356	378	423
80	90	140	157	200	224	260	291	320	358	380	426
82	92	142	159	202	226	262	293	322	361	382	428
84	94	144	161	204	228	264	296	324	363	384	430
86	96	146	164	206	231	266	298	326	365	386	432
88	99	148	166	208	233	268	300	328	367	388	435
90	101	150	168	210	235	270	302	330	370	390	437
92	103	152	170	212	237	272	305	332	372	392	439
94	105	154	172	214	240	274	307	334	374	394	441
96	108	156	175	216	242	276	309	336	376	396	444
98	110	158	177	218	244	278	311	338	379	398	446
100	112	160	179	220	246	280	314	340	381	400	448
102	114	162	181	222	249	282	316	342	383	402	450
104	116	164	184	224	251	284	318	344	385	404	452
106	119	166	186	226	253	286	320	346	388	406	455
108	121	168	188	228	255	288	323	348	390	408	457

As a leading maker of blood glucose monitoring systems, LifeScan offers a complete family of products to meet virtually any testing need.

For more information call our
24-hour Customer Service Line
1-800-227-8862
or visit www.LifeScan.com

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