How is it possible to have a health problem with normal blood tests?

A blood test is a very common tool that doctors use to check your state of health and risk factors of future health problems. Blood tests can be very useful in finding many abnormalities and help your doctor provide the right treatment.

But they also can be very misleading, giving you a false sense of security when the results are "normal". In other words, blood tests have their strong points, but also their limitations.

There are literally thousands of different blood tests that can be performed. Most doctors order only a few basic tests, but sometimes they add more, depending on your complaints and symptoms.

With that in mind, let's explore what is considered normal.

What is normal?

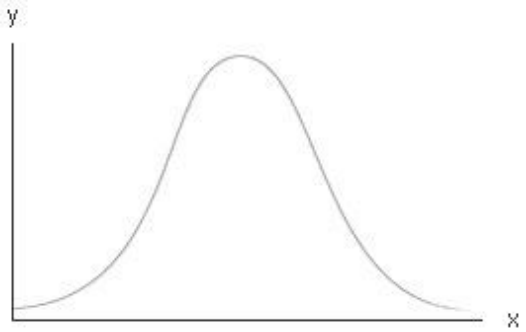
This is not as easy to figure out as you may think. Cars come with a manual which tells you that the tire pressure should be 35. Or some other definite number. But people do not come with manuals that say what your thyroid hormone level or your weight or your sodium level should be. Plus, people are different, there is sex difference, different size, height, different age, different genetic background and so on.

When it comes to weight, we can at least estimate what it should be based on the person's sex, height. and body structure. But what about your thyroid hormone levels? What is the normal number of red cells? There is a certain level that is normal for each person, but we simply do not know what it is. Remember, there is no manual. The result is - we just don't know what is normal for **you**.

What is the solution? How can we tell if you are normal or not? The solution doctors came up with is to *compare you with other people*.

The method they use is this. They take a few thousand *seemingly healthy* people (this is important because *seemingly* healthy are not necessarily *truly* healthy) and measure whatever we are interested in (thyroid level, red blood cells level, sodium, potassium, magnesium, etc.) This gives us an idea where most people are, and we call it a *reference range.* Some people call it *"normal range."*

For example, the reference range or "normal range" for iron is 30 to 160. How do they figure it out? They start by measuring iron level in a few thousand people and then use certain statistical methods to calculate the range. Different people have different levels. Someone may have a level of 26, someone 110, a third person 172, another 96, and so on. The result resembles a Bell's curve, with most people close to the middle and fewer people on the sides.



Bell-Shaped Curve

Please bear with me, because here it becomes a little technical. They add all the results from the thousands of people they have tested. Then they calculate the *average* or the *mean*. Then they determine something called a *standard deviation*. In the case of iron, based on all the numbers from thousands of people, the average is 95 and a standard deviation is 32.5.

About 70% of people will be within 1 standard deviation from the average, which in our case is 95 (average) plus or minus 32.5 (standard deviation). But this only includes 70% of people. If we use average plus/minus 2 standard deviation, it will include 95% of people. Two standard deviations is 65 (32.5 plus 32.5). The average is 95, plus or minus 65 (2 standard deviations) will give us a range of 30 to 160.

Then we say that the reference range for iron is 30 to 160. Or some people say that *normal* iron level is 30 to 160.

The same method is used to determine the reference range of every other test. Check thousands of people, find the average and the standard deviation, then add and subtract 2 standard deviations from the average and you get a "normal range.".

As I said, this method covers only 95% of people. It means is that 5% of healthy people will be outside this range, either lower or higher. That is one of the reasons why healthy people may have "abnormal" results.

Limitation of laboratory tests

Using the reference range is useful to see what is "normal" in a large group of people, but it is not very helpful when it comes to an individual person.

Suppose they check a person's iron, and it turns out to be 82. Since 82 is between 30 and 160, we call it normal. But what if their iron was always 110 and it now dropped to 82? It may not be normal at all, because it dropped almost 30 points.

So, this is one of the problems of the reference range – you can be sick, yet still in the "normal" range.

Another limitation is that the range is usually established for all people, women and men, young and old. They are all lumped together.

For example, “normal” testosterone is 280 to 800 for men over 17 years of age. This implies that a man of 90 and a man of 25 may have the same testosterone level, say 400, and we would call both of them normal. But this is wrong. A young man should have 700 to 800. A level of 400 would not be normal for a 20-year-old, even though it is in the range.

Thyroid hormones

All the limitations I mentioned also apply to the thyroid hormones. Thyroid gland makes several hormones, the two most important being T4 and T3. When doctors are checking you for low thyroid or hypothyroidism, they sometimes check T4 levels. Usually, they check another hormone called TSH (thyroid stimulating hormone). It is not made by the thyroid gland, but by another gland called pituitary, and TSH level rises when thyroid gland becomes weak. You can learn more about TSH, TRH and many other hormones from another free special report.

The “normal” level of T4 is 5 to 12. This means that the 95% of *seemingly healthy* people (adult men and women) are between 5 and 12. If your doctor checks your T4 and it is 7, you are called normal. Even if you have many symptoms of hypothyroidism, you are still called normal because your T4 is in the “normal” range. But what if your T4 has always been 10, and then you developed hypothyroidism, and now your T4 is 7? Clearly, it’s a low level for you, but since you are still in the range your doctor will not treat you. All your symptoms will be ignored because your blood test is “normal.”

This is the problem many of my patients had. They clearly had hypothyroidism, but their blood tests were “normal.” But by listening to their symptoms and complaints, by doing other, more intensive thyroid blood tests, it became clear that they had the problem, and they all got better when given proper treatment.

Now you know how it is possible to be sick and have “normal” blood tests. Which is why the blood tests are helpful, but they are not the ultimate diagnostic tool. If you have the symptoms, there is a good chance that you have the problem. If you think you need help, take advantage of free 20 min consultation.