

What is ‘normal’ body temperature? Some experts say it’s not really 98.6

Medical experts have complained that normal body temperature varies widely, and should be personalized for each patient.

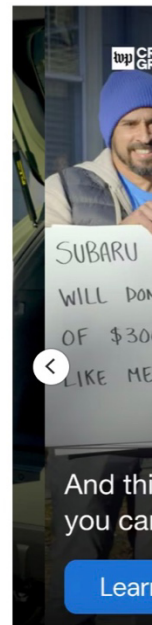


By [Marlene Cmons](#)

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For many people, body temperature may differ from the 98.6 degrees Fahrenheit that is considered normal, experts say, (iStock)



Julie Parsonnet’s then-mother-in-law had been feeling ill, but her body temperature did not suggest a fever. It hovered at 98.6 degrees Fahrenheit, long regarded as the standard for normal, and never rose above it. Yet, “I remember her saying ‘That’s high for me,’ ” Parsonnet said of the incident 20 years ago.

After blood tests revealed a life-threatening bacterial heart infection, she was treated, and recovered. But “had the doctor not drawn the cultures, she might have died,” said [Parsonnet](#), professor of medicine, epidemiology and population health at Stanford University.

Medical experts have complained that the traditional metric for normal body temperature, first introduced in the 19th century, should be revised downward,

noting that the normal temperature for many people is often at least one degree lower than 98.6 degrees. Others propose doing away with the standard.

“Since the 1990s, experts have been saying they should lower the norm,” said Adele Diamond, professor of developmental cognitive neuroscience at the University of British Columbia, whose research challenges the assumption that 98.6 degrees is normal. “What I am saying is, they should personalize it.”

She suggests physicians establish a normal baseline temperature for individual patients, much as they do for blood pressure and other vital signs.

“There is no reason why doctors can’t do this routinely,” she said. “There is a need to individualize it.”

Why a change in body temperature is important

Body temperature is a valuable tool — although not the only one — for detecting illness.

A fever — a rise in body temperature — is one of the ways our immune system responds to an invading microbe, and often suggests an infection. Experts regard a reading higher than 100 degrees as a reliable indicator of fever. An abnormally low temperature also can signal a serious condition.

Fluctuations in body temperatures

Body temperatures, like other physical, mental and behavioral changes, follow their own 24-hour circadian rhythms, which is why they fluctuate during the day, experts say.

“Temperature continues to rise during the day,” said Ivayla Geneva, a physician at Crouse Hospital and State University of New York-Upstate Medical University in Syracuse, whose research has focused on body temperature circadian rhythms. “It peaks about two hours before an individual goes to sleep and is lowest about two hours before waking up.”

Parsonnet and her colleagues conducted a study published in the fall that analyzed 618,306 oral temperature readings from adult outpatients at Stanford Health Care between 2008 and 2017 and found that their normal temperatures ranged from 97.3 to 98.2 degrees, with an average of 97.9 degrees.

They tracked the time of day the temperatures were taken, in addition to each patient's age, gender, weight, height, Body Mass Index, medications and health conditions. To avoid skewing the results, the scientists excluded participants taking drugs that affect body temperature and those who were ill.

They also found that men tend to have lower temperatures than women and that normal readings decrease with age, and confirmed that temperatures were lowest in the early mornings and highest in late afternoon.

"Every day I have patients with a temperature of 98.6 tell me that this is high for them," Parsonnet said. "When patients come in and say: 'I don't feel well and this temperature is not normal for me,' you should listen to them." Your symptoms should be taken seriously even if your reading isn't above 98.6 degrees, she said.

The 98.6 degrees measurement as the norm instilled in public consciousness in 1868 after German physician Carl Reinhold August Wunderlich published a book containing data from thousands of patients and more than 1 million temperature readings, describing 98.6 degrees as the "mean average" of a range of normal temperatures.

"Wunderlich never called 98.6 *the* normal temperature, but *a* normal temperature," said Philip Mackowiak, professor of medicine at the University of Maryland School of Medicine and a medical historian who has written about Wunderlich and the debate over what is normal. "It was what he believed to be the mean temperature of his massive data set."

Moreover, research suggests that normal body temperature has decreased from 98.6 degrees by about 0.05 degrees every decade since the 19th century to about 97.9 degrees, probably the result of better living conditions and health care that reduce inflammation, which causes temperature to rise.

In the 1860s, life expectancy was in the 40s, Parsonnet said. "People were walking around with tuberculosis, terrible dental disease, rheumatic heart diseases, skin infections and lots of other things," she said. "Good health lowers your temperature because you're not working so hard to stay well. The less you have to work, the lower your body temperature."

Many factors can influence body temperature

Many factors — apart from circadian rhythms — can influence body temperature. These include food, alcohol, weather, exercise, soaking in a hot tub or swimming in cold water, and taking certain medications such as beta blockers and antipsychotics.

Conversely, some conditions — such as hypothyroidism, which is an underactive thyroid — can lower it. Temperature can also drop to dangerously low levels with sepsis, a life-threatening infection, experts say.

“Some of the most severe illness — particularly sepsis — can drop the temperature, meaning the thermoregulatory system is about to collapse,” Mackowiak said. “A temperature in the low 90s, for example, would be alarming.”

You can figure out what is normal for you

Take your temperature once in the morning and once in the evening for several days to get a sense of your normal range. (Experts say a rectal measurement usually is the most accurate, but add that an oral thermometer is fine and more reliable than an axillary — under the armpit — device. But don’t eat or drink anything hot or cold before taking your temperature orally.)

There also is an online tool available at a Stanford University [link](#) that can calculate what is normal for you.

“Everybody has their own signature temperature profile,” Mackowiak said. “If you know what your own maximum daily normal temperature is, and you get a reading above that, it may be an indication that you are on the way to an infection or illness, and you can catch it at an early stage.”



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<https://www.washingtonpost.com/wellness/2023/12/19/normal-body-temperature-986-fluctuations/>