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LAB GUY TECH TIP

Can H-B Instrument Thermometers be used on humans?

The Short Answer Is No!

These thermometers are not certified or approved for use on humans – a very big deal.

Liquid-in-Glass Thermometers

- An accurate reading cannot be obtained because the temperature will start to reset as soon as it removed from the body
- The thermometer scales are too tight to obtain the accuracy needed for human temperature measurements

Electronic Digital Thermometers

- Even those with probes are not designed for accurate body temperature, the refresh rate of readings is too fast among other issues

Infrared Laser Thermometers

- These thermometers are designed to measure surface temperatures, not body temperature
- Pointing a laser at anyone, particularly around the face is dangerous and can cause permanent damage

By the way, these thermometers are also not suitable for use on your pets, but if I've got your curiosity going keep reading for some lively discussion on facts behind these reasons. Meanwhile we're proud to offer some of the finest laboratory thermometers available in the market, because humans need those too!

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Why aren't laboratory thermometers suitable or approved for human use?

There are different reasons..

Depending on the type of thermometer in question.

These very popular thermometers have 2 really important reasons why they can't be used on people.

The first reason deals with our ability to take an accurate reading on the thermometer before the temperature drops. Unless the thermometer you have is a "maximum registering" thermometer, the temperature you read, even if you read it immediately after removing it from the person, will not be an accurate reading. This is because in those few short seconds, the temperature will move.

That is why a 'maximum registering' thermometers is crucial.

These thermometers are types you would need to "shake-down" to be able to use it again, and laboratory thermometers are simply not designed with this feature.

These old-time, "shake-down" thermometers we grew up with were actually designed to go to the temperature, and STAY at that temperature until the doctor or nurse held it up to read it. That makes sense because in the short time from the patient's mouth to the doctor's reading, the temperature would have started going back down to room temperature.

This may not seem like a big deal, but remember 98.6 degrees in normal and 99 degrees is a low fever. Just 0.4 degrees made the difference between sick or not sick. So it was important that the liquid inside the thermometer didn't move until the temperature was read.

On a side note, just how did they manage to design a thermometer with this 'maximum registering' capability? Easy. At the bottom of each thermometer, just above the bulb of liquid, the small capillary inside that the liquid travels up has a 'trap', a little 'S' turn designed into it!

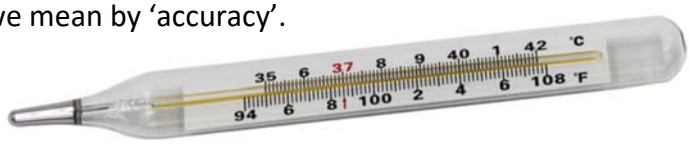
This is just like a small version of your sink's 'S'-trap below the drain. The dimensions of that small capillary varied depending on the length of the thermometer and the temperature range of the thermometer. This enabled the liquid (mercury) to stay at the highest temperature it reached until it could be accurately read and recorded.

So then to get the liquid back down into the bulb, yup, you guessed it, the nurse or the doctor had to 'shake it down', getting the liquid passed the 's' bend and back to the bulb.

And, YES, you are right in thinking that it took some pretty skilled glasswork to make these!

The second reason laboratory thermometers cannot be used in humans deals with "range and accuracy". A regular old oral thermometer is about 3 inches long with 2 inches being the scale. That scale started at 94 degrees and went up to 108 degrees. That is a 14 degree spread in the 2 inches of distance. That gave plenty of room to etch plenty of scale-lines so anyone could easily see the difference between 98.6 and 98.9.

Not so on most lab thermometers. Small lab thermometers are about 6 inches long, with about 4 inches used for the scale. But the ranges on lab thermometers are much larger. Even our 6-inch lab thermometer with a relatively short range of 50 degrees to 110 degrees would have a 60 degree spread in that 4-inch scale. That is DOUBLE the range/distance ratio on the human oral thermometer. That means there is less room to etch those range lines, so it would be quite difficult to see the difference between 98.6 and 98.9 degrees. And that is what we mean by 'accuracy'.



Infrared "laser" Thermometers

How awesome and easy it would be just to stand 3-feet away from a sick person and point the Infrared beam at their forehead and then instantly get their temperature reading?

This would be cool, but unfortunately, it does not work that way.

First, infrared thermometers are dangerous, and could cause eye damage if that is where the laser beam is pointed.

That, and also infrared thermometers will NOT get an accurate body temperature. 98.6 degrees is a human's normal CORE temperature—the inside temperature — which stays pretty much at 98,6 degrees regardless whether we are in a hot or cold place.

On the other hand, an infrared thermometer only measures SURFACE temperature! Homan surface temperature WILL vary wildly depending on if we are in a hot or cold environment, and even if we are wet or dry, or active or sleeping. An infrared laser beam thermometer is a really slick way to measure how hot a running motor gets, or how cold a school ground flagpole in the winter will become, but for measuring our body's temperature… not so much.

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Electronic / Digital thermometers

Electronic thermometers made for laboratory use are simply not designed for humans. The 'refresh' rate (the amount of time in between digital readings) is too slow, and the reading becomes far too variable meaning a far less accurate final temperature reading.

And let's not forget about that whole "certified and approved for human use" regulation:

Electronic laboratory thermometers simply are not…

So that is the skinny on using lab thermometers on people.

To sum it up in three words:

DON'T. DO. IT!

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