

Recording temperature: Electronic thermometers

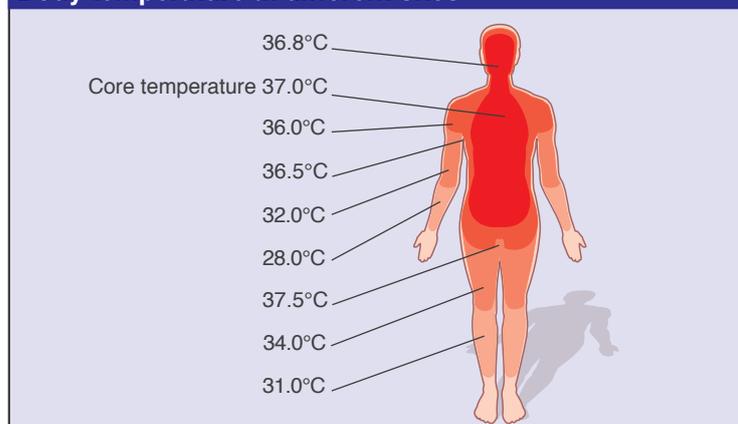
Demonstrated by Richard Hatchett, Education Consultant, Clinical Skills Ltd; formerly Head of Education and Standards, Nursing and Midwifery Council, and Deputy Head of School, The Royal Marsden School of Cancer Nursing and Rehabilitation

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Recording a patient's temperature is one of the most commonly performed clinical skills. Modern devices for recording temperature are very easy to use. It is vital to perform the task carefully in order to obtain an accurate measurement, because the result will form part of a holistic assessment, influencing decisions about the patient's care and treatment, and helping staff to assess whether the patient's condition is improving or deteriorating. To allow comparison between recordings, use the same method and approach each time you measure a patient's temperature; for example, do not use a tympanic method and then an oral method.

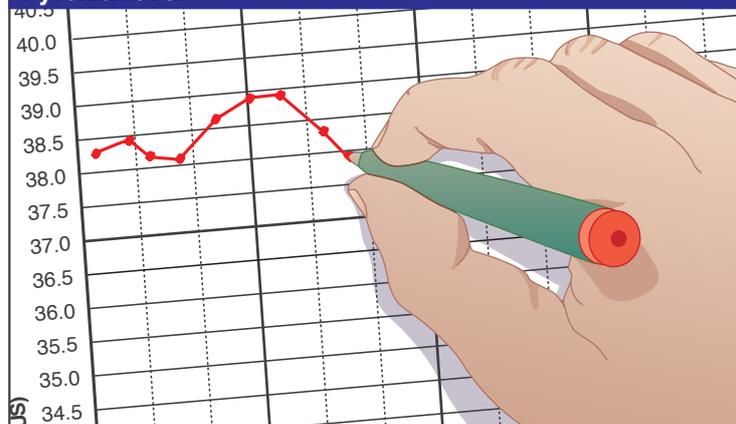
It is very rare to see mercury devices in practice due to the risk of spillage and ingestion of mercury. If you have no choice but to use a mercury device, stay with the patient. Never use a mercury device for patients who may bite the glass, such as children or those prone to seizures. This procedure shows how to record temperature with an electronic thermometer. If you are unfamiliar with the device, or it is a different type to the one you normally use, always refer to the manufacturer's instructions to ensure that you correctly perform each step. It may be helpful to ask the advice of a knowledgeable colleague.

Body temperature at different sites



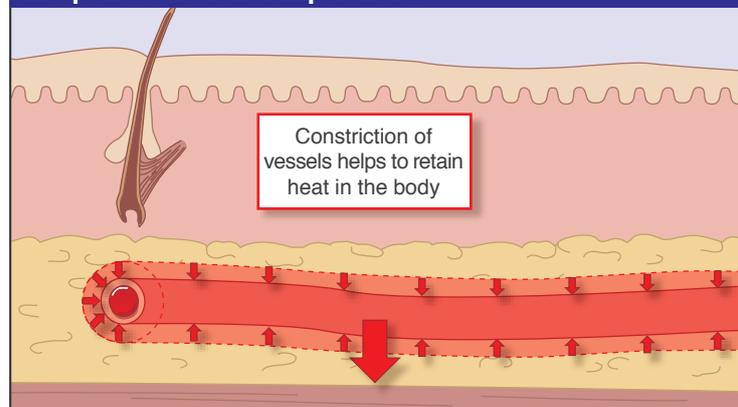
There is no clearly defined 'normal' body temperature. Temperature varies between individuals, age groups and gender (Sund-Levander *et al.*, 2002), and throughout the day. Core temperature is generally regarded as 37°C (Marieb, 2015). Oral temperature is slightly lower at around 36.8°C. Variations in temperature for different body sites are shown above. If you are recording temperature at these sites, you will need to take these variations into account. Always look at the trend of recordings, as well as individual figures, and use the data as part of a holistic assessment when planning care.

Pyrexia/fever



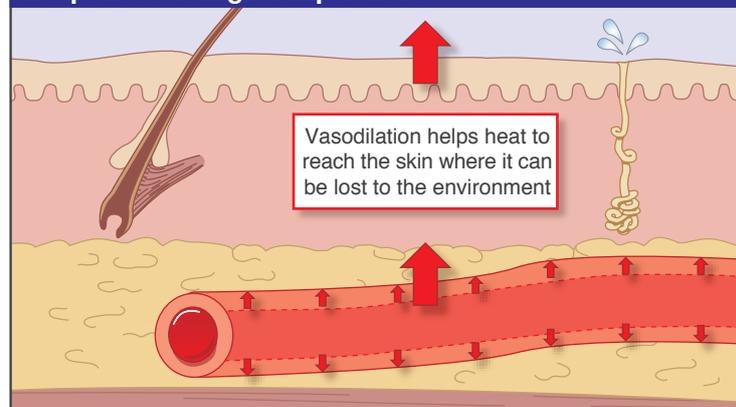
Pyrexia (fever) is defined as a rise in body temperature above the normal range for the patient. The body raises its thermoregulatory point in order to fight infection, causing pyrexia with accompanying clinical signs such as shivering. Hyperthermia, by contrast, simply means a high temperature: causative factors may be external, such as hot weather or exercise, or internal, such as pyrexia. Raised temperatures up to 38°C are defined as a low-grade pyrexia; 38–40°C constitutes moderate to high-grade pyrexia. Monitor elevated temperature at regular intervals and consider the cause. Usually no action is needed for low-grade pyrexia, which is a normal reaction of the body to infection. Follow medical advice and current best practice for reducing pyrexia.

Responses to low temperatures



The body maintains its core temperature within normal limits (normothermia) by responding to temperature fluctuations. If body temperature drops, short-term responses include shivering and vasoconstriction (Marieb, 2015). Shivering creates heat from muscle movement. Blood vessels under the skin constrict to retain warm blood in the centre of the body and prevent it cooling further.

Responses to high temperatures

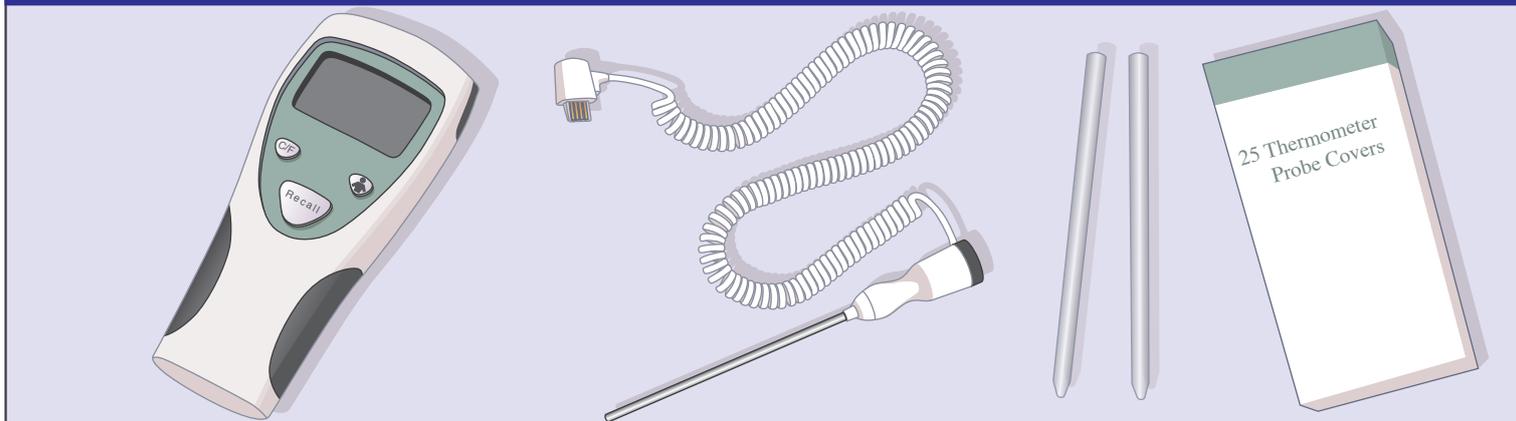


To allow the body to cool, blood vessels dilate, allowing heat loss through the skin (Marieb, 2015). Sweating cools the body via water evaporation. The body loses heat via four main methods: convection, conduction, radiation and water evaporation.

Do not undertake or attempt any procedure unless you are, or have supervision from, a properly trained, experienced and competent person. Always first explain the procedure to the patient and obtain their consent, in line with the policies of your employer or educational institution.

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Electronic thermometers



It is common to use electronic thermometers to record an axillary or oral temperature in clinical practice. They can also measure rectal temperature when fitted with the appropriate probe, but this route is not routinely used in adults. Electronic thermometers are easy to use and provide a reading very quickly, saving time in practice. To help reduce cross infection, you must use a clean disposable probe cover each time you use the device. There are many different makes and models of electronic thermometer, so check the manufacturer's instructions to ensure that you know how to use the device correctly; never assume that you know how the device works if you are unfamiliar with it. Ensure that the device is regularly calibrated according to the manufacturer's instructions.

Explain the procedure to the patient



Explain to the patient what you would like to do, and obtain their consent. Decontaminate your hands.

Food and drink



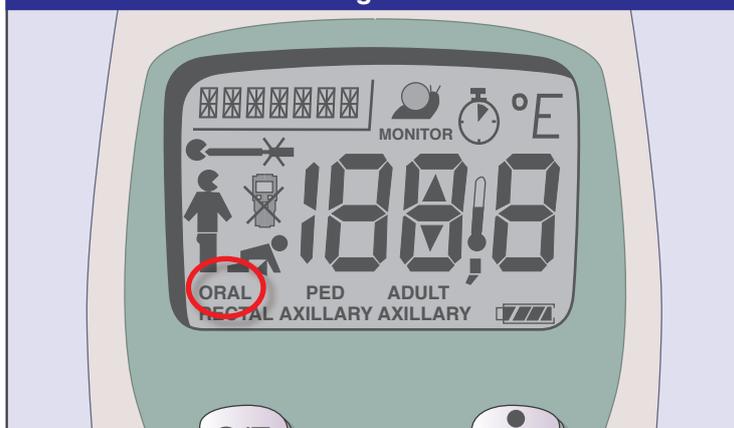
You should not take an oral temperature reading until at least 20–30 minutes after the patient has eaten or drunk hot or cold foods because this could distort the reading (Whelan & Hughes, 2016).

Remove the probe from the device



Ensure that the device is clean. If not, clean it, following the manufacturer's instructions, and then decontaminate your hands again. Most electronic thermometers will have different types of probe for oral/axillary recordings and for rectal temperature recordings. Ensure that the correct probe is attached for an oral recording. If an on/off switch is present, turn the device on. Some devices will switch on automatically when the probe is withdrawn from the well.

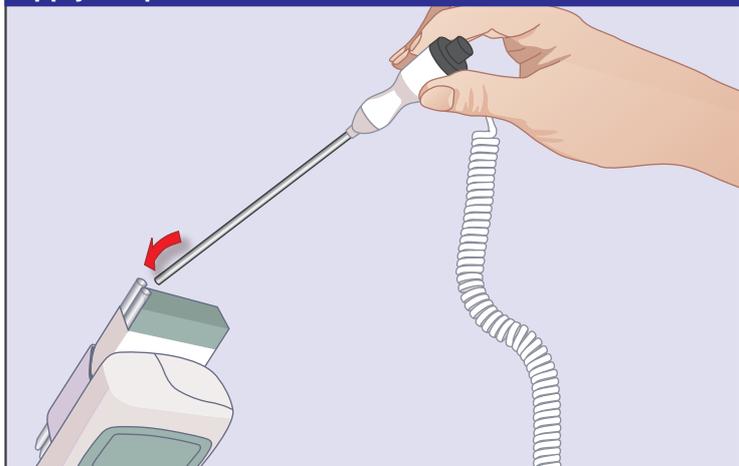
Select the correct recording site



If the device shows an 'error' message, do not use it; refer to local policy and the manufacturer's instructions in order to correct it. If the device can record temperatures from various body sites, ensure that you have selected the 'oral' option in the display window. If this is not shown, there will be a mode button to allow you to select different sites for the recording, such as oral, axilla and rectum.

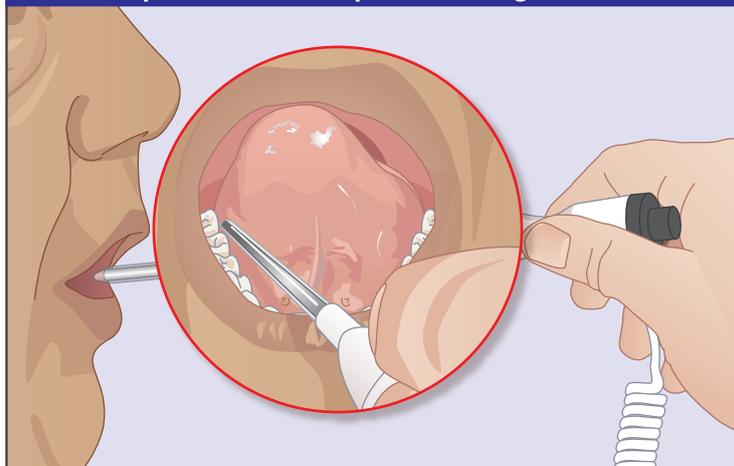
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Apply the probe cover



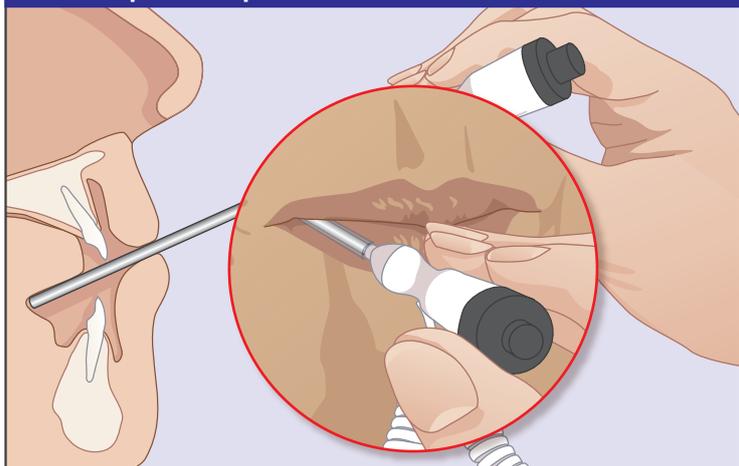
You must use the correct probe covers for the specific device. Push the probe into a cover (held in a pack, usually attached to the back of the device) until it clicks into place.

Place the probe under the patient's tongue



Explain again to the patient what you are going to do. Ask the patient to open their mouth. Gently place the probe under the tongue in the left or right posterior sublingual heat pocket – as with other temperature recording devices.

Hold the probe in position



Ask the patient to close their lips onto the probe, while you hold it in place.

Wait for the reading to display



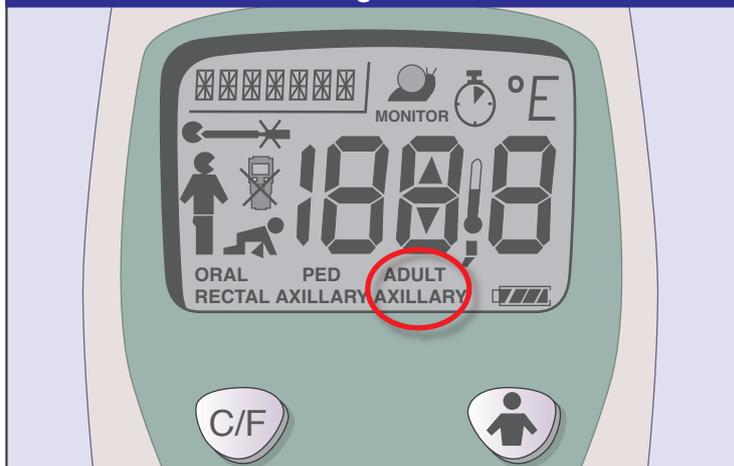
After a short delay, the device will beep and display the temperature reading.

Using the axillary site



The axillary route provides a lower temperature (approximately 0.6°C) than an oral recording (Timby, 2012). It is used for patients in whom it is not possible or safe to gain an oral or tympanic reading, such as in those who may bite the thermometer or who find other methods distressing.

Select the correct recording site

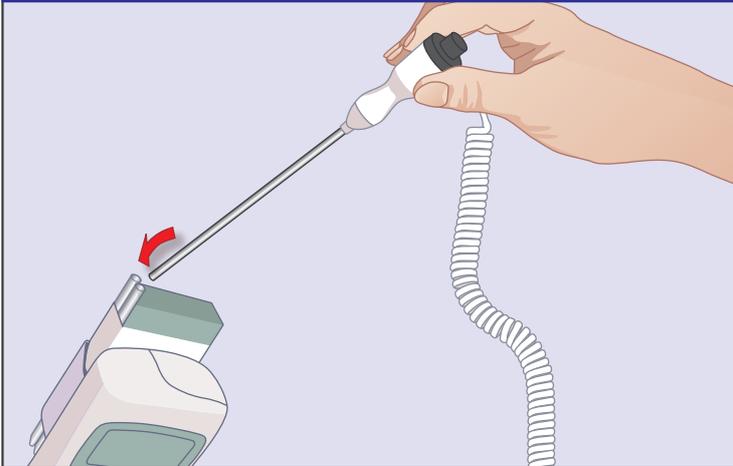


After explaining the procedure to the patient, ensure that you have selected the correct mode on the device: there are usually two separate axillary modes for adults and children. Ensure that you use the correct probe for the axillary route. If in doubt, seek advice.

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Apply the probe cover



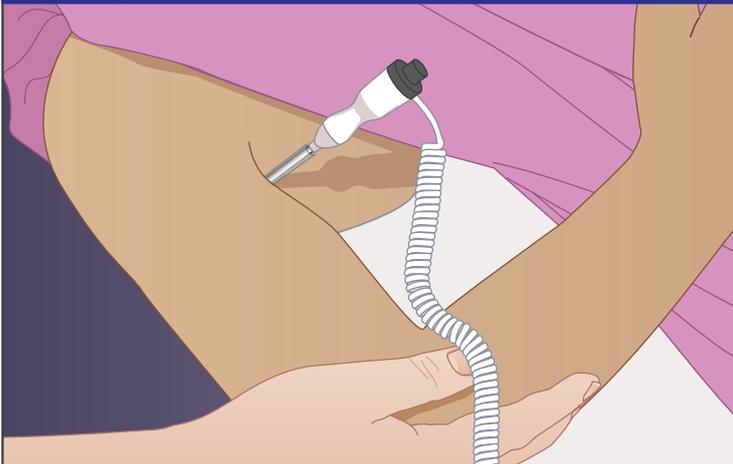
As before, insert the probe into a cover. Follow the manufacturer's instructions for placement.

Place the probe in the patient's axilla



Reassure the patient and place the probe in the patient's axilla.

Ensure good skin contact with the probe



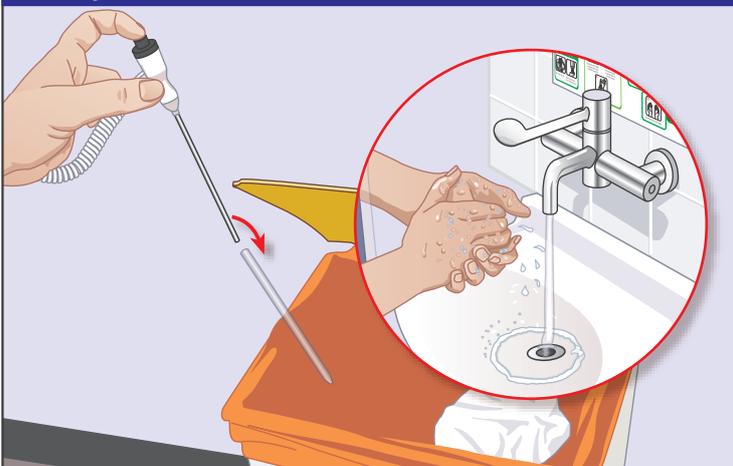
Support the arm close against the body so that skin is in good contact around the cover. Hold the device in place until the machine beeps and displays the reading. This will normally take approximately 10–15 seconds.

Wait for the reading to display



The device will emit a beep and display the temperature reading.

Wash your hands



Remove the probe cover and discard it into the clinical waste. Some devices have an eject button which you press so you do not have to touch the cover. Decontaminate your hands. Ensure that the patient is comfortable and provide the patient with information about their clinical status as required.

Documentation



Record the temperature immediately in the notes or chart. Assess the temperature reading, its trend and other parameters. Consider any actions that may need to be taken, such as informing another member of clinical staff.